



# ISDH 2024

## International Symposium on Dental Hygiene 2024

July 11 – 13, 2024 | COEX, Seoul, South Korea

*Dental Hygienists, the Center of Oral Health*

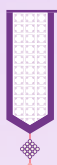
### Abstract Book



KOREAN DENTAL  
HYGIENISTS ASSOCIATION



# Contents



Invited Presentations .....	005
Oral Presentations .....	025
Poster Presentations .....	127
Commercial Presentations .....	303
Index of Authors .....	323



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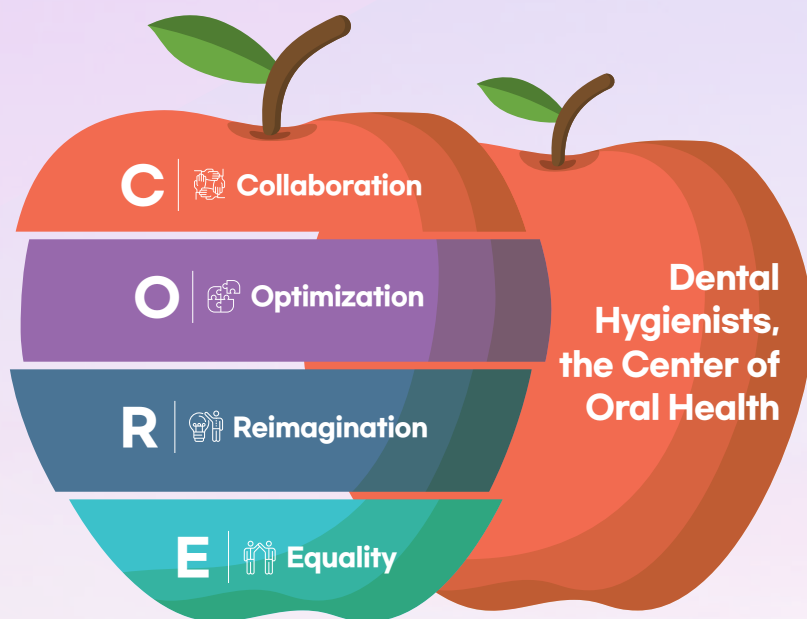
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## ISDH 2024 Theme



### Collaboration

Contents related to cooperation and communication with patients, colleagues, and other professionals in order to fulfill the role of a dental hygienist in enhancing the oral health of the public



### Optimization

Contents related to achieving optimal job performance through enhancing the capabilities of dental hygienists



### Reimagination

Contents related to innovation and new technologies in the field of dental hygiene, including research, education, and clinical aspects



### Equality

Contents regarding special treatments, oral health services, and public oral policies needed for vulnerable populations such as infants, children, the elderly, pregnant women, individuals with disabilities, and those with specific conditions



# ISDH 2024

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on Dental Hygiene 2024

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# Invited Presentations



## Revolutionizing Dental Hygiene: A central Focus for Oral and General Health

JoAnn Gurenlian

American Dental Hygienists' Association (ADHA), USA

### Abstract

In the dynamic landscape of oral health, dental hygienists have emerged as the driving force, playing a pivotal role in not only oral health but also contributing significantly to overall well-being. This presentation aims to shed light on how dental hygienists can be positioned at the center of a transformative movement, breaking free from archaic concepts of what dental hygiene has been and creating a paradigm shift in oral healthcare.

We will explore how dental hygienists are no longer mere implementers of procedures; they are partners in health, collaborating with patients and other healthcare professionals. By fostering strong patient relationships, dental hygienists become advocates for preventive care, emphasizing patient education and engagement. Through interdisciplinary collaboration, they seamlessly integrate oral health into the broader spectrum of general health, recognizing the interconnectedness of the two.

The optimization of dental hygienists' capabilities is the key to unlocking their full potential. By staying abreast of the latest research and innovations, dental hygienists can maximize their impact in clinical care. This section of the presentation explores how empowering dental hygienists with advanced tools and knowledge enables them to deliver unparalleled care.

Innovation is the driving force behind the reimagined role of dental hygienists. By embracing a forward-thinking mindset, dental hygienists can become catalysts for change, pushing the boundaries of traditional education and practice and embracing novel approaches to career pathways and improving patient outcomes. Lastly, this presentation will emphasize the commitment of dental hygienists to equality. Their role extends beyond individual patients to address the diverse needs of all groups ensuring that oral health is a right for everyone.

This presentation envisions a future where dental hygienists are not only leaders in oral health but also trailblazers transcending conventional boundaries, laying the foundation for a profession that is shaping the future of healthcare.

### Learning Outcomes

1. Appreciate the pivotal role dental hygienists play in collaboration and the need to develop skills to establish strong partnerships with both patients and other healthcare professionals.
2. Explore effective communication strategies to engage and educate patients, becoming advocates for preventive oral and general health.
3. Recognize the value of using the latest advancements in dental hygiene research, technology, and education, to optimize clinical practice and improve patient outcomes.
4. Think creatively and reimagine their roles, fostering a mindset of adaptability and forward-thinking to drive positive change in the profession.
5. Promote inclusivity and accessibility in all dental hygiene settings, ensuring that their services address the unique requirements of all individuals, regardless of background or socioeconomic status.

# Advanced Instrumentation for Treatment of Moderate to Advanced Periodontitis

**Anna Matsuishi Pattison**

Pattison Institute, USA

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## Abstract

The non-surgical treatment of moderate to severe periodontitis is a significant challenge for all clinicians. Detecting and removing tenacious or burnished calculus is one of the most frustrating and challenging tasks we face. Effective root instrumentation requires knowledge of new evidence about the microscopic structure of tenacious subgingival calculus and its attachment to the root. This course emphasizes the importance of thorough subgingival calculus removal and the means to achieve it using the newest hand instruments and ultrasonic tips.

Anna Pattison will discuss the most common errors that cause incomplete calculus removal. Periodontal endoscopy videos will show the effectiveness of various ultrasonic and hand instruments.

Recommendations for ideal hand and ultrasonic instrument selection based on this knowledge will be discussed along with ideas to reinvigorate your instrumentation techniques. Practical videos from the Pattison Institute will demonstrate how alternative positions and fulcrums can help you to avoid fatigue and improve effectiveness.

## Learning Outcomes

Upon completion of the course, the participant will be able to:

1. Describe the structure of tenacious calculus and its attachment to the root.
2. Describe why residual or burnished calculus occurs and how to avoid it.
3. Discuss key concepts to thoroughly remove tenacious subgingival calculus.
4. Identify the best hand instruments, ultrasonic tips and advanced techniques for detection and removal of tenacious calculus.

## The Future Oral Health Practitioner

**Nicole Stormon**

The University of Queensland, School of Dentistry, Australia

### Abstract

“Oral health practitioners” are a unique group of oral healthcare providers that have varying titles and scopes of practice across the globe. Oral health practitioners have a shared purpose of delivering preventive oral healthcare. Oral diseases remain highly prevalent in the population despite these professions practicing prevention for over a century. This presentation explores how oral health practitioners can effectively address the diverse needs of populations affected by oral diseases.

Understanding the historical context, current characteristics, and future trajectories of the Dental Hygienist, Dental Therapist and Oral Health Therapist workforces can help inform workforce planning and meeting the oral health needs of populations. The Australian Oral health workforce studies conducted in 2020 and 2023 provide a national picture of well utilized professions. The principal place of employment for Hygienists, Therapists and Oral Health Therapists were telling of the historical context to the occupations in private and community-based practice. Oral health therapists are projected to be the primary Oral health practitioner in Australia with no Dental Therapists being trained, and few Dental Hygienist graduates.

By breaking life course trajectories through targeted prevention strategies, Oral health practitioners can contribute significantly to overall health and well-being. This presentation will explain the prevalence and burden of oral disease in the global context and life course trajectories. A life course trajectory in oral health refers to the pattern and progression of an individual's oral health experiences and outcomes over the course of their life. It encompasses the continuum of oral health from early childhood through adolescence, adulthood, and into older age. Emphasizing prevention as a cornerstone, we explore how practitioners can proactively address the diverse oral health needs of populations, breaking life course trajectories and ushering in a new era of resilient, empathetic, and forward-thinking oral health professionals.

### Learning Outcomes

1. Appreciate the diverse group of Oral health practitioners, including Dental Hygienists, Dental Therapists and Oral Health Therapists, and their shared commitment to preventive oral healthcare.
2. Appreciate the historical context, current characteristics, and future trajectories of Oral health workforces.
3. Analyze the prevalence and burden of oral diseases on a global scale.
4. Learn practical skills in implementing targeted prevention strategies as oral health practitioners, recognizing their role in breaking life course trajectories of oral diseases.

# Sustainable Smiles: care for your teeth, care for the planet

## Cathryn Carboon

Dental Hygienists Association of Australia, Victorian State Chair, Australia

### Abstract

#### Background

Globally 3.5 billion toothbrushes and 1.5 billion toothpaste tubes end up in landfill and our oceans every year; contributing to environmental pollution, with a devastating effect on our wildlife. Whilst dental caries still remains a global burden, leading to extensive restorative treatments which are resource intensive and increase greenhouse emissions.

#### Methods

The entire oral healthcare community, including the dental industry, recognise that we have a collective social responsibility to provide oral hygiene products and clinical care that improves oral health in a sustainable manner. A reduction of our carbon footprint in dentistry is achieved first and foremost through oral health promotion with a strong focus on prevention and recycling, resulting in fewer dental treatments and less oral care waste, which in turn reduces our environmental impact.

#### Results

Sustainable Smiles, launched in Australia in 2021, is a dental hygiene led, community-based oral care recycling program, which showcases oral health promotion through a sustainability lens. The program involves positive collaboration within the community and education sectors and can be implemented into dental practices. Sustainable Smiles empowers communities to 'think green' with their daily oral hygiene habits and encourages families to begin recycling their oral care waste. The program includes advocacy for school-based fluoride varnish programs, as a proactive approach to reducing dental caries, highlighting the importance of reduction via prevention.

#### Conclusion

Dental hygienists are the best placed members of the dental team to reimagine our oral healthcare journey. We can make a difference within the dental profession to initiate sustainable practices and in-turn help care for the environment by addressing the issue of global oral care waste. Hygienists can raise awareness and start the conversation about sustainability in oral health. Let's make our planet smile... the future is in our hands.

### Learning Outcomes

1. Review the evidenced-based movement towards sustainable dentistry.
2. Raise awareness of the impact of oral care waste in the environment.
3. Learn how to engage schools, communities and patients in sustainable initiatives, including recycling oral care waste through TerraCycle.
4. Understand how to integrate sustainability into oral health promotion projects.



## A study on development of plaque detection program using artificial intelligence

Jaeyoung Lee

Dept. of Dental Hygiene, College of Health Science, Dankook University, South Korea

### Abstract

**Objectives:** To evaluate oral hygiene, disclosing evaluation of dental plaque is a very important diagnostic method. Various indices are applied to disclosing and evaluation of these dental plaque, and they are determined by visual inspection by dental experts. In order to develop an image analysis program that can be more helpful in the quantitative evaluation, we tried to devise and evaluate an automatic scoring system by using artificial intelligence in the quantitative evaluation method of dental plaque using tooth staining agent.

**Methods:** The plaque disclosing solution used for deep learning training and 5,000 images were used for learning. Labeling for quantitative evaluation of images was performed by two dental experts, and the dataset was divided into training data, verification data, and test data sets to form an artificial intelligence structure. In order to improve the accuracy of dental plaque, multi-model design and learning were conducted, and step-by-step dental plaque separation and detection results were confirmed.

**Results:** As a result of this study, A data conversion success rate of over 99% was secured in the parsing process for individual tooth data in tooth photos and the post-parsing DB process, and a normalization process was established for AI analysis in tooth image photos. Also, this program accuracy of 99.45% and precision of 93.92% were shown, and the separation of teeth from the image and the calculation of the tooth-colored range were numerically derived.

**Conclusions:** It was able to derive that the introduction of artificial intelligence in dental plaque color image analysis to evaluate oral hygiene is highly applicable

### Learning Outcomes

Through the development of a dental biofilm scoring system using artificial intelligence, a method to manage oral care more easily has been derived.

# The Mental Dental Connection: Both Mind and Mouth Matter

**Tammy Filipiak**

American Dental Hygienists Association, USA

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## Abstract

The importance of mental health and wellness has resulted in a growing awareness of the many factors that impact wellness, as well as factors that can have a negative impact on mental health and wellness. Dental Hygienists are essential health care providers who can experience compassion fatigue as a cost of caring for others.

Review of current research and information related to burn out, workforce issues and career satisfaction of dental hygienists will be reviewed. Also discussed, will be the importance of partnering/collaborating with other health care providers/entities for development of continued knowledge to influence change for the future with both patients and providers.

This course will review important considerations for providers in developing healthy coping strategies, as well as how to identify behaviors and discuss mental health concerns with patients. The importance of communication, conflict management and how to have crucial conversations will be discussed.

## Learning Outcomes

1. Upon completion of this session the participant will be able to identify high stress/anxiety behaviors and factors that influence provider burn out
2. Upon completion of this session the participant will be able to identify mental/behavioral factors with patients that can influence dental treatment
3. Upon completion of this session the participant will understand how to access additional resources to support patients and colleagues

# The Future of Oral Health: Reimagining Dental Hygiene Through CORE values

**Rachael England**

Rachael England DrPH Consulting, UK

## Abstract

Oral diseases continue to pose a significant public health challenge affecting in excess of 3.5 billion people. Untreated oral disease disproportionately affects underserved and marginalized communities and with a rapidly aging population in South Korea, urgent action is needed. The World Health Organization Global Oral Health Action Plan (GOHAP) sets out six key targets to tackle the burden of oral disease, and Dental Hygienists (DH) play a key role.

**Collaboration:** DHs are the only healthcare professionals and members of the oral health team whose primary function continues to be the prevention of oral diseases and promotion of overall wellness. New practice arrangements with broader community-based and multi-disciplinary collaborations have emerged that embed oral health into primary healthcare led by the DH

**Optimization:** GOHAP calls for innovative oral health workforce models that foster task shifting and autonomous working. This strategy increases the deployment of DHs to underserved populations, for example through Artificial Intelligence (AI) and Teledentistry. Staying abreast of AI and advanced technologies is crucial for achieving GOHAP.

**Reimagination:** The rapid advancement of AI and digital technologies presents a unique opportunity for DHs to reach a wider community and deliver health education directly to individuals. To support these changes regulatory cobwebs must be swept aside to allow innovation, freedom and flexibility.

**Equality:** Many of the causes of oral health inequality lie outside of the dental clinic door. However, DHs as trusted members of their communities can influence policy change at a local and national level. It is essential that DHs are empowered to speak up for those who cannot speak for themselves.

Embracing the CORE values centres the DH as a key stakeholder in achieving the targets of the GOHAP.

## Learning Outcomes

1. Understand the Evolving Role of Dental Hygienists in Collaborative Health Care: Participants will learn about the expanded role of dental hygienists in preventive oral care and their integration into multi-disciplinary health teams.
2. Explore Innovative Strategies for Optimizing Oral Health Services: Attendees will gain insights into the implementation of innovative oral health workforce models, such as task shifting and autonomous working, as recommended by the World Health Organization's Global Oral Health Action Plan.
3. Examine the Impact of Digital Technologies and Artificial Intelligence in Dental Hygiene: The objective is to explore how advancements in technology, particularly artificial intelligence and digital tools, can be leveraged to extend the reach and effectiveness of dental hygiene services.
4. Identify Strategies for Promoting Equality and Reducing Oral Health Disparities: This objective aims to equip participants with knowledge and strategies in influencing policy changes and advocating for marginalized communities.

## Minimally Invasive Non-Surgical Therapy (MINST) & Is It Relevant to Dental Hygiene?

**Claire McCarthy**

Kings College London, UK

### Abstract

Non-surgical therapy is the cornerstone of periodontal treatment, and the mainstay of clinical Dental Hygiene. Methods and principles of instrumentation have evolved over the years, with a gradual shift towards a less invasive, atraumatic instrumentation technique facilitated by modern, specialised, and site-specific equipment.

In addition, how we deliver non-surgical therapy today is heavily grounded in our understanding of the etiology of periodontal disease and the regeneration process. A minimally invasive approach has long been adopted in medicine, and in restorative dentistry, as well as in periodontal surgery. More recently, a minimally invasive technique for non-surgical treatment emerged in the literature, and it is now embedded into many post-graduate programs, yet the concept is still in its infancy within the field of dental hygiene.

Minimally invasive non-surgical therapy (MINST) encompasses a philosophy of preservation and a precise method of root surface instrumentation. The MINST approach has a significant body of research and long term follow up data that demonstrates considerable clinical and radiographic improvements can be achieved in advanced defects using non-surgical therapy alone.

This session is designed to introduce the modern concept of minimally invasive non-surgical therapy, MINST, as it applies to the profession of dental hygiene.

### Learning Outcomes

1. Explain the rationale and philosophy of minimally invasive non-surgical therapy (MINST) and how it applies to clinical dental hygiene.
2. Summarize the current literature and evidence specific to MINST.
3. Discuss the clinical considerations practical techniques to facilitate the MINST approach.
4. Describe the MINST step-by-step protocol to promote papilla preservation, accelerate healing and facilitate periodontal regeneration.

## Fluorescence-Based Screening: Advancing Oral Disease Detection

**Baekil Kim**

Professor and Chair, Department of Preventive Dentistry & Public Oral Health, Yonsei University College of Dentistry, South Korea

### Abstract

The progression of the disease can be divided into a subclinical and a clinical phase based on the patient's subjective symptoms. Identifying diseases in their subclinical phase is challenging due to the absence of distinct symptoms. Early detection offers the advantage of halting disease progression. In traditional dentistry, surgical intervention has been mainly performed after using a dentist's visual inspection and dental radiography as representative diagnostic methods in the clinical phase. However, in medicine, various screening tests that can easily identify subtle changes in the subclinical phase have been developed. Since traditional dentistry has focused on image evaluation using visual inspection and radiography, it would be advantageous for new screening and diagnosis technologies in dentistry to be image-based. Several fluorescence-based technologies, commercialized and utilized in dental clinics, are prevalent. This presentation highlights QLF (Quantitative Light-induced Fluorescence) among them.

QLF is an oral screening and diagnostic technology that can detect various autofluorescence reactions from oral tissue. QLF uses visible blue light instead of radiation, so it is safe for the human body and easy to use in clinical settings. The principle of this technology involves two main aspects. The first principle is to detect bacterial activity from oral biofilm, and the second principle is to evaluate the mineral content of the tooth. By utilizing these two principles, it can be used not only for screening to detect pathogenic dental biofilms and dental calculus, but also for detecting incipient dental caries, secondary caries, tooth cracks, oral malodor and periodontal inflammation. This presentation will introduce the latest research results of QLF that can be used as a new screening technology emerging in dentistry.

### Learning Outcomes

In traditional dentistry, dentist-centered diagnostic tests in the clinical phase have been emphasized, but in the future, the importance of screening tests by dental hygienists in the subclinical phase will be highlighted. Dental hygienists can play an important role in oral disease prevention by easily detecting oral biofilm using fluorescence-based screening.

# The Impact of Service Learning

**Cassandra Holder Christiansen**

University of Tennessee Health Science Center, USA

## Abstract

Service learning is a form of experiential learning where students engage in activities outside of the classroom that develop knowledge and critical thinking skills while addressing community needs. Some of the core values of service learning are:

Core Values :

Celebrate: Diversity, Growth, Innovation, Each Other

Cultivate: Kindness, Courage, Connections, Love of Learning

Prepare: Leaders, Responsible Citizens, Lifelong Learners, Agents of Change

common terms associated with service learning are civic engagement, community development, advocacy, philanthropy, social change, volunteerism, community service and experiential learning. This type of learning seems best suited for various areas of social science.

One might wonder how service-learning be implemented in dental and dental hygiene education, and does it have value for the learner?

This presentation will demonstrate that student dental professionals' benefit from service learning in two major ways. On a social level students become more aware and invested in their communities, so they understand its needs and challenges, especially for residents of under resourced communities. Secondly, they have an opportunity to engage with individuals where they live, work, or play. This provides an opportunity for the learner to consider how social determinants of health impact the patients that they treat.

• It is critical that the student reflect on their participation in the activity. It is helpful for them to consider these questions:

- What did you learn about the topic?
- What did you learn about yourself?
- How do you now think differently?

Through service learning, students:

- Learn more about their relationship with the communities they engage with.
- Learn more about their capacity for serving others.
- Refine their decision-making abilities.
- Better understand the meaning of responsible citizenship
- Grow in their awareness of cultural differences.

## Learning Outcomes

1. Understand the concept of Service Learning
2. Appreciate how service learning connects to the social determinants of health.
3. Discover how service learning can be implanted in dental and dental hygiene education.

# How to prevent and respond to accidental ingestion or aspiration of foreign bodies in dentistry

Youngju Park

Seoul National University Dental Hospital, South Korea

## Abstract

### Introduction

Accidental ingestion or aspiration of foreign bodies is one of the emergency situations that can occur in dentistry. It can lead to life-threatening accidents as well as serious complications in patients.

At Seoul National University Dental Hospital, two accidental swallowing occurred in 2018 and 2019, and four occurred in 2021. Such incidences kept continuing to increase. However, our hospital had experienced difficulties preventing and responding to accidents due to the lack of educational materials for medical staff on accidental swallowing.

Therefore, a team is formed to conduct Quality Improvement(QI) activity contributing patient safety and aimed to create an educational manual for enhancing dental professional's understanding of accidental ingestion and aspiration. The manual consists of the basic concepts of accidental ingestion and aspiration, how to respond when an incident occurs, and how to prevent them.

### Method

The effectiveness of the QI activity was evaluated by comparing the incidence of accidental swallowing and the results of survey before and after performing this activity. The analysis involved comparing frequency statistics using SPSS Statistics software.

### Results and Discussion

The analysis of the results showed that the incidence of accidental swallowing had decreased by 50%, from four occurrences in 2021 to two in 2022 (as of November 3, 2022).

### Conclusion

Accidental ingestion or aspiration that may occur during dental treatment can hinder patient safety and lead to serious accidents, so proper prevention and response in preparation for this is extremely important. Through this QI activity, we were able to contribute to improving patient safety and decreasing the number of accidental swallowing as a result of educating medical staff on countermeasures and preventive measures for accidental patient swallowing.

## Learning Outcomes

You can learn the following about accidental ingestion and aspiration.

1. Basic concepts
2. Causes
3. Prevention and response to the incidents
4. Ultimately, apply them to your practice to improve patient safety.

## Rebranding oral health: essential oral health care and primary oral health workforce

Hyewon Lee

Seoul National University, World Federation of Public Health Associations, South Korea

### Abstract

In this session, I would like to 1) analyze current primary oral health workforce discussion based on three major WHO global oral health resources and 2) visualize current oral health workforce status, challenges, and opportunities based on the recent global survey on oral health workforce conducted by the World Federation of Public Health Associations (WFPHA)' Oral Health Workgroup in collaboration with the International Federation of Dental Hygienists and the Global Maternal and Child Oral Health Center.

While the scope of practice, competencies, and training requirements of the oral health workforce vary considerably across the globe, what worries us is the inequality of the availability of the oral health workforce tightly related to global oral health inequality. Less than 2% of dentists and 0.3% of all "dental assistants and therapists" worldwide work in low-income countries. Almost two-thirds of all "dental assistants and therapists" work in the European Region and the Region of the Americas; only about 4% work in the African Region. To enhance this data and expand our discussion on oral health workforce development to deliver essential oral health care focusing on prevention and promotion, the WFPHA Oral Health Working Group has launched a global oral health workforce survey. This project explores and visually represents oral health workforce models, innovative approaches, and global challenges. Oral health experts in dental public health and workforce development designed the survey questions based on WHO country profiles, Global Oral Health Action Plan, and other resources on the scope of practice of each oral health workforce model, categorized by oral health education, assessment, fluoride application, SDF application, Atraumatic Restorative Treatment (ART), and restorative care. The survey also collected information about the primary employment sector for each oral health workforce model, main challenges, such as shortage and/or maldistribution, and the nation's efforts to address those challenges aligned with national oral health workforce plans. This session will showcase findings from this survey and how we need to direct our efforts to ensure essential oral health care, including essential dental medicine, is delivered through a competent workforce model to achieve universal health coverage.

### Learning Outcomes

1. Audience will have analytic understanding of workforce discussion from the WHO Global Oral Health Action Plan, WHO Global Oral Health Status Report, and WHO Global Oral Health Strategy to reimagine the future primary oral health workforce models to ultimately achieve oral health equality.
2. Preliminary findings from the World Federation of Public Health Associations' Global Oral Health Workforce Survey will be presented to map out current oral health workforce status, challenges, and opportunities.

# Our Critical Role in The Oral Care of Head and Neck Cancer Patients from Diagnosis Onwards

**Jocelyn Harding**

Mouth Cancer Foundation, UK

## Abstract

A proactive and collaborative approach to mouth care for head and neck cancer patients is crucial throughout their journey from diagnosis to aftercare. The emotional impact of such a diagnosis can often overshadow the importance of oral care, making it necessary for healthcare professionals, especially dental hygienists, to take an optimising leading role in educating and supporting patients and collaborating with fellow healthcare professionals.

This presentation will address the complex and varied challenges patients face throughout their journey from diagnosis to aftercare. There are seven aspects to the dental hygienists role in managing such patients.

They are:

### 1. Educating Patients:

- Before Diagnosis: Establish educational programs that provide information on the importance of oral care.
- After Diagnosis: Tailor information to the specific needs of each patient.

### 2. Preventive Measures:

- Before Treatment: Emphasise the significance of maintaining good oral health before treatment during and after therapy.
- During Treatment: Implement preventive measures to reduce treatment-related complications.

### 3. Collaborative Care:

- In Hospital: Foster collaboration between dental hygienists, oncologists, and other healthcare professionals.
- Primary Care: Ensure a smooth transition from hospital to primary care.

### 4. Individualised Care Plans:

- Treatment Variability: Recognise diverse treatment approaches for each patient and tailor their oral care plans accordingly.
- Post-Surgery and Therapy: Develop comprehensive care plans that address the challenges of healing post-surgery and therapy.

### 5. Psychosocial Support:

- Balancing Expectations: Acknowledge the emotional toll of a cancer diagnosis and its impact on oral care priorities.
- Communication Skills: Develop effective communication strategies

### 6. Long-Term Follow-Up:

- Transition to Primary Care: Ensure a smooth transition from hospital- to primary care.
- Regular Monitoring: Implement long-term monitoring strategies to address potential late effects of treatment on oral health.

### 7. Professional Development:

- Continuous Learning: Encourage dental hygienists to stay informed about advancements in head and neck cancer treatments.
- Interdisciplinary Training: Foster interdisciplinary training programs.

## Learning Outcomes

To understand the difficulties of mouth care for head and neck cancer patients before, during and after treatment.

To feel supported with practical suggestions for managing long-term oral effects.

# A behavioral economic approach to dental hygiene: redesigning oral health interventions

**Namhee Kim**

Yonsei University, South Korea

## Abstract

The field of public dental health primarily focuses on encouraging positive oral health behaviors, with dental hygienists taking the lead in both private dental clinics and community-based public sectors. In many countries, dental hygienists are recognized as the foremost educators for promoting changes in oral health behavior, thanks to their extensive knowledge and commitment to evidence-based practices.

However, insufficient evidence is available regarding whether changes in oral health behavior are sustainable over the long term. Oral health behavior change interventions have focused on short-term results, while neglecting the psychosocial and behavioral mechanisms of change by which people maintain oral health behaviors.

How can we explain the gap between knowledge and action in oral health, and how might we use that knowledge to improve and maintain oral health behaviors?

Behavioral economics and public health have recently emerged as a new paradigm for behavioral interventions designed to enhance population health outcomes and promote equality. This approach offers valuable insights into individuals' decision-making processes and actions concerning their oral health. This presentation will shed light on the oral health interventions that are most effective in encouraging individuals to sustain healthy behaviors within their social context.

The information presented herein will help dental hygienists advance their competencies for their clients and encourage social responsibility for the population.

## Learning Outcomes

To narrow "know-how" and "know-do" gaps

1. Comprehend what behavioral economics adds to public oral health
2. Understand why people do not maintain healthy behavior despite their best intentions
3. Explain what we can do to reconcile behavioral interventions with changing oral health habits
4. Interpret why, after an intervention has ended, people revert back to existing habits
5. Distinguish between the compliers and non-compliers and use this to inform target-specific behavioral interventions
6. Leverage the interrelationship between behavioral economics, dental hygiene, and academia and promote the integration of these disciplines to redesign oral health interventions effectively.

## Using cultural safety and social determinants to address equity in oral health

Julie Satur

University of Melbourne Dental School, Australia

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### Abstract

Internationally there are widening disparities in oral health related to social, economic, environmental and cultural determinants of health. There is a very strong and consistent association between socioeconomic status (income, occupation and educational level) and the prevalence and severity of oral diseases (WHO 2023). When these are overlaid with cultural dislocation and the outcomes of poverty and inequality, oral health outcomes are poor. For many populations, including in Australia, Canada the US, and UK, considerable social disadvantage and inequity in oral health occurs in Indigenous and culturally dislocated peoples.

There is an important challenge for health practitioners to work beyond the biomedical and consider the impact of the intersectional impacts on oral health. While environmental conditions and funding for dental care is a challenge for governments and economies, enabling prevention and effective health promotion remains the challenge for practitioners. Considering how social conditions affect equity in oral health and access to care for the people we work with acts as a lens for person-centred care. We need to ask ourselves, how often we are successful in improving oral health with our clients-particularly for those who have different social and cultural backgrounds to our own?

There is an emerging discourse around social responsibility and equity, cultural competence and cultural safety and the obligations of educators, regulators and practitioners. Cultural Safety requires that we consider how our social power as health professionals positions us in ways that may present barriers to access and oral health. Using a cultural safety framework helps us to consider social history, hierarchies, and the impact of cultural dislocation and poverty on oral health and offers competencies that can be applied in our work. This presentation will draw on these frameworks to inform our practice with disadvantaged people to contribute to equity in oral health.

### Learning Outcomes

1. To consider the impact of social and cultural determinants on equity in oral health
2. To understand how the concepts of social power and cultural safety can be used to address inequity
3. To apply these concepts to our interactions and practice in preventing disease and promoting oral health

## Basic research towards achieving evidence-based oral hygiene practice

**Natsumi Fujiwara**

Tokushima University Graduate School, Japan

### Abstract

Given Japan's aging demographic, the importance of oral health care is escalating, playing a pivotal role in averting not only common dental issues but also systemic diseases like cancer, aspiration pneumonia, and diabetes mellitus. Our ongoing basic research aims at evidence-based oral hygiene practice, with recent data focusing on: i) the impact of 2-methacryloyloxyethyl phosphorylcholine (MPC)-polymer on *Candida*, and ii) the role of *Fusobacterium nucleatum* in oral cancer progression.

The MPC-polymer, mimicking a biomembrane with a phospholipid polar group, proves effective in reducing protein adsorption, bacterial adhesion, and inhibiting cell attachment. Treating denture acrylic resin with MPC-polymer suppressed *C. albicans* adherence, not solely through its antibacterial effect. *F. nucleatum*, a Gram-negative anaerobic oral bacterium, commensal in the human oral cavity, plays a role in periodontal disease. Exposure of *F. nucleatum* to oral cancer cells stimulates cancer invasion. Our current focus involves exploring OSCC cell-secreted proteins contributing to *F. nucleatum* aggregation.

Additionally, we've developed an oral exercise program tailored for independent elderly individuals in Tokushima Prefecture. This initiative resulted in enhanced oral functions—increased tongue pressure, enhanced lip closing force, and reduced tongue thrusting. Participants also demonstrated improved oral health literacy.

In summary, our research underscores the vital link between oral health and overall well-being. Innovative approaches, such as MPC-polymer application and targeted oral exercise programs, hold significant promise for enhancing oral care practices and outcomes, especially within the aging population.

### Learning Outcomes

1. Awareness of oral health challenges in aging
2. Appreciation for evidence-based research
3. Understanding biomimetic materials
4. Contribution of oral bacteria to oral cancer progression

## Let's make toothbrushing the priority for people with disabilities; practical tips and evidence to support people with disabilities achieve better toothbrushing routines

Catherine Waldron

Irish Dental Hygienists Association, Ireland

### Abstract

#### Background

The oral health of people with disabilities is poorer than the general population. They require more tailored support to have any hope of achieving a similar level of oral health to that of the general population. Research has shown that some oral hygiene interventions show benefit, but results are inconsistent. The formal and informal carer has been shown to play an important role in relation to providing the regular support that is needed.

#### Presentation content

I will focus on toothbrushing and outline why I believe toothbrushing needs to be the priority when caring for people with disabilities. I will provide practical tips for us to use in the clinic and for us to share with carers for use at home, to aid easier, more effective, and consistent toothbrushing for people who need some support and encouragement. I will intersperse practical tips with the evidence that is available to support the suggestions. Finally, I will direct you to some of the resources that are available for people who need support.

### Learning Outcomes

1. Be aware of some of the barriers to oral health for people with disabilities.
2. Learn some techniques to overcome the challenges of toothbrushing for people with disabilities.
3. Be aware of the evidence that exists in relation to oral hygiene for people with disabilities.
4. Learn about the value of designing tailored mouth care plans and agreeing the plan with patients and carers.
5. Learn how to set achievable oral hygiene goals.
6. Identify oral hygiene resources that can support you.

## Oral cavity and endometriosis: Interdisciplinarity in the interception and management of the pathology

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### Abstract

The endometriosis is a chronic benign inflammatory disease that affect the female genital organs, in which the functional endometrium tissue is present in position other than the physiological inner lining of the uterus. Some studies show a common pathogenesis between periodontal disease and endometriosis, due to altered levels immunomodulators level .

Purpose of this work was evaluating the possible correlations between endometriosis and periodontal diseases, the role of nutrition, the importance of pelvic cavities physiotherapy and the impact on life quality. The research involved dental hygienists, nutritionists, physiotherapists, psychologists, dentists, gynecologists.

Specific objective: Developing a specific clinical indications based on the analysis of the collected data and creating a supportive interprofessional network, to validate the correlations between the endometriosis and oral cavity diseases

Target: 4079 Women affected by endometriosis, between 15 - 45 years recruited from dedicated communities on Facebook

Materials and Methodology : A survey has been conducted thanks to a questionnaire composed of 45 questions, about: endometriosis status, kind of therapy, presence of any sign and symptoms in oral cavity, presence of periodontal problems, self-perception of the oral health status, presence of other autoimmune diseases and oral hygiene, eating habits, physical activity practiced, life quality. The study and their data was conducted from April to June 2022 . Work is in progress

Results: Data analysis showed that 45,9 % of the women received the diagnosis beyond the seventh year from the appearance of the correlated symptomatology and 49,7% present the stage IV. In the oral cavity 34,9% reported the coexistence of gingivitis, gingival bleeding, periodontitis, aphthous stomatitis, dry mouth not resolved and/or worsened because the underestimation of the correlation between symptoms reported and endometriosis.

### Learning Outcomes

1. Dental Hygienist can play an important role in preventive oral care in women affected by endometriosis, because the correlation between periodontal and oral diseases .Not only for the effects of pharmacological therapies but also due to altered levels of immunomodulators
2. The objective is to expand information among a greater number of the three million women, many of whom are unaware, regarding the prevention of oral pathologies
3. Establish a network with other medical professionals, including dentist and dental hygienist to avoid or reduce the repercussions of the symptoms on the physical, mental and social well-being, therefore on the quality of life of these women
4. Improve the diagnostic and therapeutic strategies



# ISDH 2024

## International Symposium on Dental Hygiene 2024

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*Dental Hygienists, the Center of Oral Health*



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on Dental Hygiene 2024

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# Oral Presentations



## Oral Presentation

Programme Code	Title	Authors
O-001	Detection of dental calculus with biofluorescence	<b>Sun-Young Lee<sup>1,2</sup>, Hyung-Suk Lee<sup>3</sup>, Eung-Song Lee<sup>3</sup>, Baek-Il Kim<sup>3*</sup></b> <sup>1</sup> Department of Dental Hygiene, Sahmyook Health University, South Korea <sup>2</sup> Department of Preventive Dentistry & Public Oral Health, Yonsei University College of Dentistry, South Korea <sup>3</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea
O-002	High-quality instructional videos enhanced dental students' comprehension of periodontal instrumentation.	<b>Amy Destaffany<sup>1</sup>, Manti Lehn<sup>1</sup>, Karo Parsegian<sup>1*</sup></b> <sup>1</sup> Diagnostic Sciences and Surgical Dentistry, University of Colorado School of Dental Medicine, USA
O-003	The effectiveness of power versus manual toothbrushes on plaque removal and gingival health in children -a systematic review and meta-analysis-	<b>Dagmar Else Slot<sup>1*</sup></b> <sup>1</sup> Periodontology, ACTA, Netherlands
O-004	Oral health determinants- views from hypertensive persons with long-term experience of PAP-treated obstructive sleep apnea.	<b>Hanna Ahonen<sup>1,3*</sup>, Margit Neher<sup>5</sup>, Eleonor I Fransson<sup>5</sup>, Anders Broström<sup>4,5</sup>, Ulrika Lindmark<sup>2,3</sup></b> <sup>1</sup> Department of Odontology and Oral Health, School of Health and Welfare, Jönköping University, Jönköping, Sweden <sup>2</sup> Department of Health Sciences, Karlstad University, Karlstad, Sweden <sup>3</sup> Centre for Odontology and Oral Health, School of Health and Welfare, Jönköping University, Jönköping, Sweden <sup>4</sup> Department of Clinical Neurophysiology, University Hospital Linköping, Linköping, Sweden <sup>5</sup> School of Health and Welfare, Jönköping University, Jönköping, Sweden
O-005	Bridge the Gap	<b>Yvonne Howell<sup>1*</sup>, Sviatlana Anishchuk<sup>1</sup></b> <sup>1</sup> Dublin Dental University Hospital, Trinity College Dublin, Ireland
O-006	Expert usability evaluation of a mobile application for systematic caries management in children and adolescents	<b>Yu Min Kang<sup>1</sup>, An-na Yeo<sup>2</sup>, Su-young Lee<sup>3*</sup></b> <sup>1</sup> Pedodontics, Cariu Dental Clinic, 618th Dental company (AS), Dental Health Activity-Korea, USFK Army, South Korea <sup>2</sup> Department of Dental Hygiene, Daejeon Health Institute of Technology, South Korea <sup>3</sup> Department of Dental Hygiene, Namseoul University, South Korea
O-007	The efficacy of dental biofilm removal in critical areas depending on the contact surface amount	<b>Jeongmin Heo<sup>1*</sup></b> <sup>1</sup> Dental hygiene, Kyungnam College of Information & Technology, South Korea
O-008	Examining ergonomics through a novel interprofessional lens of corrective exercise to preserve career satisfaction and longevity for dental hygienists	<b>Brian Wilkinson<sup>1</sup>, Melody McGee<sup>2*</sup></b> <sup>1</sup> School of Physical Therapy & Athletic Training, Pacific University, USA <sup>2</sup> School of Dental Hygiene Studies, Pacific University, USA
O-009	An autoethnography of a foreign researcher: a study of the quality of life of patients with oral cancer in Vietnam	<b>Sherry Priebe<sup>1*</sup></b> <sup>1</sup> Sherry Priebe's Dental Hygiene, University of British Columbia, Canada
O-010	Advice and Information about toothbrushing as available on websites of professional dental care associations	<b>Therese Elkerbout<sup>1*</sup>, Tim Thomassen<sup>1</sup>, Fridus van der Weijden<sup>1</sup>, Dagmar Else Slot<sup>1</sup></b> <sup>1</sup> periodontology, ACTA, Netherlands
O-011	Patient autonomy and preference for dental decision-making with periodontitis patients	<b>Ji-Young Jung<sup>1</sup>, Kyung-A Ko<sup>1</sup>, Ran Lee<sup>1</sup>, Junhewk Kim<sup>1</sup>, Jung-Seok Lee<sup>1*</sup></b> <sup>1</sup> Department of Periodontology, Research Institute for Periodontal Regeneration, Yonsei University College of Dentistry, South Korea
O-012	Chlorhexidine mouthwash with or without alcohol in relation to effect on parameters of plaque and gingivitis. -Systematic review and meta-analysis-	<b>B.W.M. Van swaaij<sup>1,2*</sup>, M. Joostens<sup>1</sup>, G.A. Van der Weijden<sup>1</sup>, L. De Vries<sup>1</sup>, D. Slot<sup>1</sup></b> <sup>1</sup> Department of Periodontology, Academic Centre for Dentistry Amsterdam (ACTA), University of Amsterdam, Netherlands <sup>2</sup> Department of Dental hygiene, Hogeschool Arnhem Nijmegen, University of Applied Sciences, Nijmegen, The Netherlands, Netherlands

Programme Code	Title	Authors
O-013	Effectiveness of a simulation program using humanoid patient robot in dental hygiene clinical training	<b>Naoko Adachi<sup>1*</sup>, Hitomi Suzuki<sup>2</sup>, Masayo Sunaga<sup>3</sup>, Atsuhiko Kinoshita<sup>3</sup>, Kumiko Sugimoto<sup>1</sup>, Naomi Yoshida<sup>2</sup>, Kayoko Shinada<sup>1</sup></b> <sup>1</sup> Department of Preventive Oral Health Care Sciences, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan <sup>2</sup> Department of Oral Health Care Education, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan <sup>3</sup> Department of Educational Media Development, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan
O-014	Dental hygienists at the centre of a global oral health workforce survey.	<b>Leonie Short<sup>1*</sup>, Lynn Bethel-Short<sup>2</sup>, Rachel Martin<sup>3</sup>, Puneet Gupta<sup>4</sup>, Cleopatra Matanhire<sup>5</sup>, Seema Kumar<sup>6</sup>, Kenneth Eaton<sup>7</sup>, Gloria Kim<sup>8</sup>, Hyewon Lee<sup>9</sup></b> <sup>1</sup> Oral Health Care Training and Education, Seniors Dental Care Australia, Australia <sup>2</sup> Consultant, Medicaid Dental Services, USA <sup>3</sup> Director, The Resilience Arena, Australia <sup>4</sup> Public Health Dentistry, Government College of Dentistry, India <sup>5</sup> Dentistry, University of Zimbabwe, Zimbabwe <sup>6</sup> Dentistry, Ministry of Health, Cook Islands <sup>7</sup> Chair, Platform for Better Oral Health in Europe, United Kingdom <sup>8</sup> Secretariat, WFPFA Oral Health Working Group, South Korea <sup>9</sup> Department of Dentistry, Seoul National University, South Korea
O-015	Enhancement of oral hygiene behavior and oral health outcomes following the theory-based educational intervention	<b>Rieski Prihastuti<sup>1</sup>, Daisuke Hinode<sup>2*</sup>, Makoto Fukui<sup>2</sup>, Omar M. M. Rodis<sup>3</sup>, Yoshizo Matsuka<sup>1</sup></b> <sup>1</sup> Stomatognathic Function and Occlusal Reconstruction, Graduate School of Biomedical Science, Tokushima University, Japan <sup>2</sup> Hygiene and Oral Health Science, Graduate School of Biomedical Science, Tokushima University, Japan <sup>3</sup> International Oral Health Science Education, Graduate School of Biomedical Science, Tokushima University, Japan
O-016	Supporting student wellbeing in the oral health curriculum	<b>Melanie Aley<sup>1*</sup></b> <sup>1</sup> Sydney Dental School, The University of Sydney, Australia
O-017	How mentoring students shapes early career faculty development	<b>Melanie Aley<sup>1*</sup>, Tabitha Acret<sup>1</sup>, Ashleigh Ayo<sup>1</sup>, Jacqueline Biggar<sup>1</sup>, William Carlson-Jones<sup>1</sup>, Kyle Cheng<sup>1</sup>, Melinda Lawther<sup>1</sup>, Patrick Westhoff<sup>1</sup></b> <sup>1</sup> Sydney Dental School, The University of Sydney, Australia
O-018	Teaching Oral Health Literacy	<b>Lene Madsen<sup>1</sup>, Bo Danielsen<sup>1*</sup></b> <sup>1</sup> School of Oral Health Care, University of Copenhagen, Denmark
O-020	Historic moment for vulnerable Canadians: dental hygienists, key players in increasing access to oral care	<b>Sylvie Martel<sup>1</sup>, Ondina Love<sup>1*</sup></b> <sup>1</sup> Dental Hygiene, Canadian Dental Hygienists Association, Canada
O-021	Antibacterial and remineralization effects of orthodontic adhesive containing zinc-phosphate-based glass	<b>Myung-Jin Lee<sup>1*</sup></b> <sup>1</sup> Dental hygiene, Baekseok University, South Korea
O-022	Development of force-control guide visual/haptic education tool for calculus exploration education	<b>Soo-Auk Park<sup>1*</sup></b> <sup>1</sup> Dental hygiene, Namseoul University, South Korea
O-023	The User Perception of Fluoride Mouthwashes: The World Beyond Effectiveness.	<b>Lars Toonen<sup>1,2*</sup>, Bregje van Swaaij<sup>1,2</sup>, Mark Timmerman<sup>3</sup>, Fridus Van der Weijden<sup>2</sup>, Dagmar Slot<sup>2</sup></b> <sup>1</sup> Department of Dental Hygiene, Hogeschool Arnhem Nijmegen (HAN), University of Applied Sciences, Nijmegen, Netherlands <sup>2</sup> Department of Periodontology Academic Centre for Dentistry Amsterdam (ACTA), University of Amsterdam, and Vrije Universiteit Amsterdam, Netherlands <sup>3</sup> Department of Dentistry, Section Implantology and Periodontology Radboud University, Medical Center (Radboud UMC), Netherlands
O-024	Dental Detectives: screening children for sleep apnea during routine dental appointments	<b>Lancette Vanguilder<sup>1*</sup></b> <sup>1</sup> Owner, Hygienist for Health, USA

Programme Code	Title	Authors
O-025	Development of AI deep learning algorithms for the assessments of clinical dentistry plaque conditions	Jinsun Jeong <sup>1</sup> , <u>LING WANG</u> <sup>1</sup> , Da Hyeon Yoon <sup>2</sup> , Kyeong-Seop Kim <sup>3</sup> , Jeong Hwan Kim <sup>4</sup> <sup>1</sup> School of Nursing and Rehabilitation, Shandong University, China <sup>2</sup> Dental hygienist, Seoul deep sleep dental clinic, South Korea <sup>3</sup> Department of Biomedical Engineering, College of Science and Technology, Konkuk University, South Korea <sup>4</sup> Research and Development (R&D), Medicalpark, Inc., South Korea
O-026	Comparison of four types of oral microbial samples for periodontal evaluation	<u>Ran Lee</u> <sup>1</sup> , Yuan Park <sup>1</sup> , Ji Young Jung <sup>1</sup> , Kyung A Ko <sup>1</sup> , Jin Young Park <sup>1</sup> , Jung Seok Lee <sup>1</sup> <sup>1</sup> Periodontology, Yonsei University College of Dentistry, South Korea
O-027	Risk of post-operative bleeding after dentoalveolar surgery in patients taking anticoagulants: a cohort study using the common data model	<u>Joo Yeon Lee</u> <sup>1</sup> , Seung Hyun Park <sup>1</sup> , Ui Won Jung <sup>1</sup> , Jae Kook Cha <sup>1</sup> <sup>1</sup> Periodontology, Yonsei university of seoul, South Korea
O-028	Dental implant maintenance among Dutch dental hygienists	Anouk Loeffen <sup>1,2</sup> <sup>1</sup> Dental Hygiene, HAN University of Applied Sciences, Netherlands <sup>2</sup> Periodontology, Academic Centre for Dentistry Amsterdam, Netherlands
O-029	The effect of cetylpyridinium chloride compared to chlorhexidine mouthwash on scores of plaque and gingivitis	<u>Emmy Rowan Windhorst</u> <sup>1</sup> , Maud Joostens <sup>1</sup> , Eveline van der Sluijs <sup>1</sup> , Dagmar Else Slot <sup>1</sup> <sup>1</sup> Periodontology, Academic Center Dentistry Amsterdam, Netherlands
O-030	Sweet Revolution: Xylitol and Pear in Anticariogenic Gummy Candies for Sustainable Oral Health	<u>Luis Soares Luis</u> <sup>2,3,4</sup> , Marisa Gaspar <sup>2,3</sup> , Ana Cristina Rodrigues <sup>2,3,4</sup> , Henrique Luis <sup>1,2,4</sup> <sup>1</sup> Faculdade de Medicina Dentária, UICOB, Universidade de Lisboa, Portugal <sup>2</sup> Center for Innovative Care and Health Technology (ciTechcare), Polytechnic of Leiria, Leiria, Portugal <sup>3</sup> Escola Superior de Saúde, Polytechnic of Leiria, Leiria, Portugal <sup>4</sup> Faculdade de Medicina Dentária, RHODEs, Universidade de Lisboa, Portugal
O-031	Developing a prototype for a dental product trading service using the Design Thinking model	<u>Yu-Rim Lee</u> <sup>1</sup> , Kyoung-Yeon Kim <sup>2</sup> , Seong-Min Lim <sup>2</sup> , Gi-Yun Jang <sup>2</sup> , Hyeon-Bin Lee <sup>2</sup> , Nam-Hee Kim <sup>2</sup> <sup>1</sup> Department of Dental Hygiene, Yonsei University Graduate School, South Korea <sup>2</sup> Department of Dental Hygiene, MIRAE Campus, Yonsei University, South Korea
O-032	Relationship between antimicrobial resistance and dental products with chlorhexidine	<u>Veronika Chuchmová</u> <sup>1</sup> <sup>1</sup> Department of Public Health, Masaryk University, Czech Republic
O-033	Microbial profiles and correlations according to the types of samples from Peri-Implantitis Patients: A Next-Generation Sequencing	<u>Da-mi Kim</u> <sup>1</sup> , Jin-Young Park <sup>1</sup> , Ui-Won Jung <sup>1</sup> , Jae Kook Cha <sup>1</sup> <sup>1</sup> Periodontology, Yonsei University College of Dentistry, South Korea
O-034	Exploring Oral Health Knowledge and Practices among Early Childhood Caregivers. A Cross-Sectional Survey	<u>Misbah Shams</u> <sup>1</sup> , Shelina Bhamani <sup>1</sup> , Sara Sheikh <sup>1</sup> , Abdur Rehman <sup>1</sup> , Kiran Aslam <sup>1</sup> , Amir Raza <sup>1</sup> <sup>1</sup> Medical College, Aga Khan University Karachi Pakistan, Pakistan
O-035	Evaluation of the effectiveness of tongue muscle strengthening and gum chewing training in oral care intervention program based on community care at home for older adults wearing dentures: Case report	<u>Myeong-Hwa Park</u> <sup>1</sup> , Hae-Sil Oh <sup>1</sup> , Ji-Won Park <sup>1</sup> , Min-Sook Jeong <sup>2</sup> , Jong-Hwa Jang <sup>1,2,3</sup> <sup>1</sup> Public health science, Graduate school of Natural Science, Dankook University, South Korea <sup>2</sup> Dental Hygiene, The Korean Academy of Primary Health Care, South Korea <sup>3</sup> Dental Hygiene, College of Health Science, Dankook University, South Korea
O-036	The association of periodontitis with cardiovascular disease parameters - a synthesis of systematic reviews-	<u>Lotte Weijdijk</u> <sup>1</sup> <sup>1</sup> Periodontology, ACTA, Amsterdam UMC, Netherlands

Programme Code	Title	Authors
O-037	Development and validation of a prevention-focused home-based oral health intervention program based on integrated medical-care support for the elderly.	<b>Se-Rim Jo<sup>1,2</sup>, Ji-Yun Ki<sup>1</sup>, Jong-Hwa Jang<sup>1,2</sup></b> <sup>1</sup> Department of Public Health Science, Graduate school of Natural Science, Dankook University, South Korea <sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, South Korea
O-038	Myths regarding oral health and Non-Surgical Periodontal Therapy among pregnant women in Pakistan-Systematic review	<b>Alwina Ghazi<sup>1*</sup>, Ali Sadiq<sup>1</sup>, Uzra Nasir<sup>1</sup></b> <sup>1</sup> Dental Hygiene, Agha Khan University Hospital Karachi Pakistan, Pakistan
O-039	Integration of dental hygienist in family health centers as oral health promoters, in Israel.	<b>Hadas Goldberg<sup>1*</sup></b> <sup>1</sup> Dental Hygiene, IDHA, Israel
O-040	Evaluation of the effectiveness of oral health care intervention program for older adults at day care centers	<b>Jong-Hwa Jang<sup>1,9*</sup>, Mi-Gyung Seong<sup>2,9</sup>, Young-Sun Kim<sup>3,9</sup>, Sun-Hee Hwang<sup>4,9</sup>, Min-Young Kim<sup>5,9</sup>, Myoung-Ok Jeong<sup>6,9</sup>, Yu-Mi Kim<sup>7,9</sup>, A-Young Chun<sup>8,9</sup>, Myeong-Hwa Park<sup>1,9</sup></b> <sup>1</sup> Dental Hygiene, Dankook University, South Korea <sup>2</sup> Dental Hygiene, Masan University, South Korea <sup>3</sup> Dental Hygiene, Daegu Health College, South Korea <sup>4</sup> Dental Hygiene, Shingu College, South Korea <sup>5</sup> Dental Hygiene, Howon University, South Korea <sup>6</sup> Dental Hygiene, Baekseok University, South Korea <sup>7</sup> Dental Hygiene, Riborn Dental Clinic, South Korea <sup>8</sup> Dental Hygiene, Gachon University, South Korea <sup>9</sup> , Special Committee on Oral Health for the Elderly and the Disabled, South Korea
O-041	Interprofessional learning in a student-Run Dental Clinic: a challenge for dental hygiene and dentistry programs	<b>Maria Kersbergen<sup>1*</sup></b> <sup>1</sup> HAN University of Applied Sciences, School of Allied Health, Maria J. Kersbergen, RDH, MSc, PhD candidate at Radboud university medical center, Netherlands <sup>2</sup> Department of Dentistry, Drs. E. Hissink, Radboud university medical center, Netherlands <sup>3</sup> Department of Oral Function and Prosthetic Dentistry, Em. Prof. Nico H.J. Creugers, Radboud university medical center, Netherlands <sup>4</sup> HAN University of Applied Sciences, School of Health Studies, Prof. of Applied Sciences Miranda G.H. Laurant, HAN University of Applied Sciences, Netherlands <sup>5</sup> Radboudumc Health Academy, Em. Prof. C.R.M.G.(Lia) Fluit, Radboud university medical center, Netherlands <sup>6</sup> HAN University of Applied Sciences, School of Education, Prof. of Applied Sciences Wietske Kuijer-Siebelink, HAN University of Applied Sciences, Netherlands
O-042	Interprofessional collaborative practice: working together, working better	<b>Roisin McGrath<sup>1*</sup>, Kelley Graydon<sup>2</sup>, Anthea Cochrane<sup>2</sup></b> <sup>1</sup> Melbourne Dental School, The University of Melbourne, Australia <sup>2</sup> School of Health Sciences, The University of Melbourne, Australia
O-043	Reimagining Global Oral Health: Utilizing Caries Risk Assessment Tools for Oral Health Transformation	<b>Melody McGee<sup>1</sup>, Kristen Simmons<sup>1*</sup></b> <sup>1</sup> Dental Health Studies, Pacific University, USA
O-044	A Study on the Clinical Application of Comprehensive Dental Hygiene Care Process	<b>Geum-chae Youn<sup>1</sup>, Hye-eun Jo<sup>1*</sup></b> <sup>1</sup> dental hygienist, Gwangju Women's University, South Korea
O-045	Contamination on goggles surface proceeded by Air-abrasion as maintenance and a way of the solution	<b>NOBUKO Kashiwai<sup>1*</sup></b> <sup>1</sup> Head quater, HAG Creation Ltd., Japan
O-046	Effect of dental hygienist grit on dental hygiene job performance : mediating effect of job satisfaction and job commitment	<b>Jinju Yang<sup>1</sup>, Sangeun Moon<sup>1*</sup>, Boram Lee<sup>1</sup>, Huijeong Kim<sup>1</sup></b> <sup>1</sup> Dental hygiene, Kwangju Womens University, South Korea
O-047	The work experiences of a cohort of New Zealand oral health therapists	<b>Jane Choi<sup>1*</sup></b> <sup>1</sup> Faculty of Dentistry, Oral Sciences, University of Otago, New Zealand

Programme Code	Title	Authors
O-048	An Exploratory Investigation of Factors Affecting Oral Cancer Treatment on Oral Health-Related Quality of Life: A Prospective Cohort Study	<u>Yuhei Matsuda</u> <sup>1*</sup> , Tatsuo Okui <sup>1</sup> , Hiroto Tatsumi <sup>1</sup> , Satoe Okuma <sup>1</sup> , Takahiro Kanno <sup>1</sup> <sup>1</sup> Department of Oral and Maxillofacial Surgery, Shimane University Faculty of Medicine, Japan
O-049	Assessing biofluorescence technology for clinical occlusal caries diagnosis	<u>Hyung-Suk Lee</u> <sup>1</sup> , Jun-Hyuk Choi <sup>1</sup> , Chae-Hyun Lee <sup>1</sup> , Yeon-Ji Cho <sup>1</sup> , Eun-Song Lee <sup>1</sup> , Hoi-In Jung <sup>1</sup> , Baek-Il Kim <sup>1*</sup> <sup>1</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea
O-050	A study to assess the effectiveness of a novel coolant liquid to mitigate aerosols during ultrasonic instrumentation.	<u>Claire McCarthy</u> <sup>1*</sup> <sup>1</sup> Periodontology, Kings College London, United Kingdom
O-051	The dental hygienist as an oral medicine specialist.	<u>Nancy W. Burkhardt</u> <sup>1*</sup> <sup>1</sup> Periodontics, Texas A&M College of Dentistry, Dallas Texas, USA
O-052	Oral health belief and satisfaction after scaling experience with comprehensive dental hygiene care	<u>Mihye Kim</u> <sup>1</sup> , Sang-Eun Moon <sup>2,*</sup> <sup>1</sup> Dental Hygiene, Kwangju Women's University, South Korea <sup>2</sup> Dental Hygiene, Kwangju Women's University, South Korea
O-053	Differences in Resilience and Stress between American and Japanese Dental Hygiene Students	<u>Yuki Sawada</u> <sup>1</sup> , Danielle Rulli <sup>2</sup> , Kayoko Shinada <sup>1</sup> , Naoko Adachi <sup>1*</sup> <sup>1</sup> Department of Preventive Oral Health Care Sciences, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan <sup>2</sup> Department of Periodontics and Oral Medicine, Division of Dental Hygiene, School of Dentistry, University of Michigan, USA
O-054	Relationship between Self-Leadership, Self-Efficacy, and Customer Orientation of Dental Hospital and Clinic Consultants	<u>Daeun Kim</u> <sup>1*</sup> <sup>1</sup> Health Science, Dankook University, South Korea
O-056	The review of the history in individual oral hygiene with original articles and reconsideration of the improvement in education and role of dental hygienists	<u>Ho seon Kim</u> <sup>1*</sup> <sup>1</sup> Department of Dental Hygiene, daewon university college, South Korea
O-057	Prevention of oral health in elderly patients: A survey of practices and challenges experienced by dental hygienists in Norway	<u>Linda Stein</u> <sup>1*</sup> <sup>1</sup> Department of Clinical Dentistry, UiT The Arctic University of Norway, Norway
O-058	Outcomes of Non Surgical Periodontal Therapy on the Periodontal Status among Electronic Cigarette Smokers, Conventional Smokers and Non-smokers	<u>Shazia Taimoor</u> <sup>1</sup> , Misbah Shams <sup>2</sup> , Dr. Ali Sadiq <sup>1*</sup> , Dr. Farhan Raza Khan <sup>1</sup> <sup>1</sup> Surgery, Aga Khan University Hospital Pakistan, Pakistan <sup>2</sup> Obs/Gyn (Early Childhood Development), Aga Khan University, Pakistan
O-059	Optical Detection of Mucosal Biofilm in Pneumonia Geriatric Inpatients Utilizing Bacterial Biofluorescence and Microbiome Properties	<u>Sol Park</u> <sup>1</sup> , Eun Song Lee <sup>1</sup> , Hoi In Jung <sup>1</sup> , Kwang Joon Kim <sup>2</sup> , Chang Oh Kim <sup>2</sup> , Baek Il Kim <sup>1*</sup> <sup>1</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea <sup>2</sup> Division of Geriatrics, Department of Internal Medicine, Yonsei University College of Medicine, South Korea
O-060	Transgender patients, engagement strategies and Oral Health impacts	<u>Andrew Terry</u> <sup>1*</sup> <sup>1</sup> School of Dentistry, Senior Lecturer, Australia

Programme Code	Title	Authors
O-061	Experience and feelings of patients undergoing root canal instrument separation—A qualitative study	<u>Xiaohui Liu<sup>1</sup></u> , <u>Aiqin Lv<sup>1*</sup></u> <sup>1</sup> School and Hospital of Stomatology, Shandong University, China
O-062	A qualitative analysis study on the needs and perceptions of visiting oral health care services : by using Q methodology	<u>Sue-Hyang Lee<sup>1</sup></u> , <u>Sun-Jung Shin<sup>1,2,3*</sup></u> , <u>Soo-Myoung Bae<sup>1,2,3</sup></u> , <u>Bo-Mi Shin<sup>1,2,3</sup></u> <sup>1</sup> Department of dental hygiene, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>2</sup> Research Institute of Dental Hygiene Science, Gangneung-Wonju National University, South Korea <sup>3</sup> Research Institute of Oral Science, Gangneung-Wonju National University, South Korea
O-063	The immediate effectiveness of a 3D intraoral scanner as an adjunctive oral hygiene educational tool: A randomized controlled trial.	<u>Hui Jia Sophia Choo<sup>1,2</sup></u> , <u>Jiaming Joshua Xie<sup>1,2</sup></u> , <u>Xiaotong, Jacinta Lu<sup>1</sup></u> , <u>Lum Peng Lim<sup>2</sup></u> , <u>Wei Ming Clement Lai<sup>2</sup></u> , <u>Boon Keng, Alvin Yeo<sup>2,1*</sup></u> <sup>1</sup> Department of Periodontics, National University Centre of Oral Health, Singapore, Singapore <sup>2</sup> Faculty of Dentistry, National University of Singapore, Singapore
O-064Room 105	Developing a novel tongue biofilm index using bacterial biofluorescence	<u>Arem Kim<sup>1</sup></u> , <u>Sol Park<sup>2</sup></u> , <u>Eun-Song Lee<sup>2</sup></u> , <u>Hoi-In Jung<sup>2</sup></u> , <u>Baek-Il Kim<sup>2*</sup></u> <sup>1</sup> Department of Preventive Dentistry & Public Oral Health, Yonsei University College of Dentistry, South Korea <sup>2</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea
O-065	Evaluation of tooth sensitivity scale according to use of microcurrent toothbrush	<u>Hyun-Kyung Kang<sup>1*</sup></u> , <u>Yu-Rin Kim<sup>1</sup></u> , <u>Ji-Young Lee<sup>1</sup></u> , <u>Da-Jeong Kim<sup>1</sup></u> , <u>Seon-mi Park<sup>2</sup></u> , <u>Ga-Hye Seo<sup>2</sup></u> , <u>Kyung-Mi Park<sup>3</sup></u> , <u>Geum-Chae Youn<sup>4</sup></u> , <u>Geun-Yeong Kim<sup>5</sup></u> , <u>Mi-Hye Kim<sup>6</sup></u> <sup>1</sup> College of Health and Welfare, Dental Hygiene, Silla University, South Korea <sup>2</sup> Dental Hospital, Yonseiwooil Dental Hospital, South Korea <sup>3</sup> Dental Clinic, Last Dental Clinic, South Korea <sup>4</sup> Dental Clinic, 275 Dental Clinic, South Korea <sup>5</sup> Dental Hospital, ENMI Dental Hospital, South Korea <sup>6</sup> Dental Clinic, Bardakwon Dental Clinic, South Korea
O-066	Impact on dental hygiene students' adaptation to clinical practice	<u>EunJi You<sup>1</sup></u> , <u>HeeHong Min<sup>1*</sup></u> <sup>1</sup> dental hygiene, Daejeon Health University, South Korea
O-067	What is an Oral Health Practitioner? A scoping review of the Australian Oral Health Workforce	<u>William Carlson-jones<sup>1</sup></u> , <u>Nicole Stormon<sup>2*</sup></u> <sup>1</sup> Oral Health, PhD Candidate – University of Queensland, Lecturer – University of Sydney, ADOHTA President, Australia <sup>2</sup> School of Dentistry, Senior Lecturer, DMD Program Convenor – University of Queensland & Research Fellow–Queensland Health, Australia
O-068	A Study on the Model for Predicting the Number of Periodontitis Patients Exposed to Particulate Matter and Atmospheric Factors Using Deep Learning Method	<u>Septika Prismasari<sup>1</sup></u> , <u>Kyuseok Kim<sup>2</sup></u> , <u>Hye Young Mun<sup>1</sup></u> , <u>Jung Yun Kang<sup>1*</sup></u> <sup>1</sup> Department of Dental Hygiene, Yonsei University, South Korea <sup>2</sup> Department of Environmental Planning, Seoul National University, South Korea
O-069	Development of oral health care manual for elderly people	<u>Mi gyung Seong<sup>1*</sup></u> , <u>JongWha Jang<sup>2</sup></u> , <u>Young-Sun Kim<sup>3</sup></u> , <u>Sun-Hee Hwang<sup>4</sup></u> , <u>Min-Young Kim<sup>5</sup></u> , <u>Myoung Ok Jeong<sup>6</sup></u> , <u>Myeong-Hwa Park<sup>7</sup></u> , <u>Yu-Mi Kim<sup>8</sup></u> , <u>A-Young Chun<sup>9</sup></u> , <u>Yu-Rin Kim<sup>10</sup></u> <sup>1</sup> Dental Hygiene, Masan University, South Korea <sup>2</sup> Dental Hygiene, Dankook University, South Korea <sup>3</sup> Dental Hygiene, Daegu Health University, South Korea <sup>4</sup> Dental Hygiene, Shingu University, South Korea <sup>5</sup> Dental Hygiene, Howon University, South Korea <sup>6</sup> Dental Hygiene, Baekseok University, South Korea <sup>7</sup> Dental Hygiene, Dankook University, South Korea <sup>8</sup> Clinic director, Libom Dental Clinic, South Korea <sup>9</sup> Dental Hygiene, Gachon University, South Korea <sup>10</sup> Dental Hygiene, Silla University, South Korea
O-070	Expansive learning trough collaboration towards healthy ageing: An action research study	<u>Jessica Persson Kylén<sup>1,2*</sup></u> , <u>Annsöfi Brattbäck Atzori<sup>2,3</sup></u> , <u>Sven Persson Kylén<sup>3</sup></u> <sup>1</sup> Department of Health Sciences, University West, Sweden <sup>2</sup> Centre for Gerodontology, Public Dental Service, Region Västra Götaland, Sweden <sup>3</sup> R&D Department, Primary Health Care, Regionhälsan, Region Västra Götaland, Sweden

Programme Code	Title	Authors
O-071	Effect of non-surgical periodontal therapy with the application of a comprehensive dental hygiene care process for periodontal disease patients: using mixed methods research	<u>Gahye Seo<sup>1</sup></u> , SangEun Moon <sup>1*</sup> <sup>1</sup> Dental hygiene, Graduate School of Kwangju Women's University, South Korea
O-072	Qualitative study on the scaling experience through the application of comprehensive dental hygiene care: A grounded theory approach	<u>SeonMi Park<sup>1</sup></u> , SangEun Moon <sup>1*</sup> <sup>1</sup> Dental hygiene, Graduate School of Kwangju Women's University, South Korea
O-073	Exploring migrant mothers' utilization of oral health-related information: a qualitative interview study in the Swedish context.	<u>Elena Shmarina<sup>1,2*</sup></u> , Malin Stensson <sup>1</sup> , Brittmarie Jacobsson <sup>1</sup> <sup>1</sup> Odontology and Oral Health Science, Jönköping University, Jönköping, Sweden <sup>2</sup> Public Dental Service, Kalmar County Council, Oskarshamn, Sweden
O-074	Interrupted time series analysis of the effects of Korea's scaling reimbursement policy.	<u>Yu-Rin Kim<sup>1</sup></u> , Seon-Rye Kim <sup>2</sup> , Minkook Son <sup>3*</sup> <sup>1</sup> Department of Dental Hygiene, Silla University, South Korea <sup>2</sup> Department of Healthcare Management, Youngsan University, South Korea <sup>3</sup> Department of Physiology, Dong-A University, South Korea
O-075	Relationship between receiving professional dental care and the survival rate of long-term care patients: a cohort study of 1,459,163 long-term care beneficiaries in South Korea	<u>KYUNG-A Ko<sup>1</sup></u> , Bo-A Lee <sup>2</sup> , Young-Taek Kim <sup>2</sup> , Jung-Seok Lee <sup>1*</sup> <sup>1</sup> Department of periodontology, Research institute of periodontal regeneration, Yonsei University College of Dentistry, South Korea <sup>2</sup> Department of Periodontology, National Health Insurance Service Ilsan Hospital, South Korea
O-076	Association Between Adverse Childhood Experiences And Oral Health Outcomes In The English Longitudinal Study Of Ageing	<u>M Mguni<sup>1*</sup></u> <sup>1</sup> Dental Hygienist, Dental Hygienist/Therapist, United Kingdom
O-077	Network Text Analysis about Oral Health in Aging-Well	<u>Seol-Hee Kim<sup>1*</sup></u> <sup>1</sup> Dental Hygiene, Konyang University, South Korea
O-078	Trauma Informed Care for Dental Practitioners	<u>Tabitha Acret<sup>1*</sup></u> <sup>1</sup> Oral Health, University of Sydney, Australia



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## Detection of dental calculus with biofluorescence

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### Problem Statement

Dental calculus (DC) develops through the mineralization of bacterial biofilm on tooth surfaces, thereby causing periodontal diseases. Therefore, accurate detection and removal of DC are essential. However, visual detection of DC is challenging as it resembles color-similar sound enamel, white spots, and esthetic restoration. Biofluorescence (BF) enables microbial detection in the oral cavity as oral bacteria emit fluorescence at specific wavelengths when illuminated. Utilizing the BF of DC, a representative bacterial deposit, may provide an objective assessment of DC compared to conventional visual examinations (VE).

### Purpose

This study evaluated the diagnostic accuracy of DC detection using BF and compared the results with those of VE by quantifying the color difference between DC and sound teeth.

### Methods

A total of 300 tooth surfaces (mesial, central, and distal) from 10 participants were evaluated. After professional plaque removal, white- and fluorescence-light images (WLI and FLI, respectively) of the smooth surface were captured using a BF-based intraoral camera (Qraypen C, AIOBIO, Seoul, Korea). WLI and FLI were used to assess the presence and color of DC on VE and BF analysis, respectively. Two examiners assessed the actual presence and location of DC using a tactile method. The gold standard was established through consensus and documented on a chart. During image analysis, the analysis area was set by drawing an analysis patch on each image, referencing the location and area of DC on the chart. The color difference ( $\Delta E$ ) between sound surfaces and DC was calculated using the Lab color system from WLI and FLI, and the  $\Delta E$  values were compared for the presence of DC in WLI and FLI using independent t-tests and ANOVA model ( $\alpha = 0.05$ ).

### Results

A total of 285 surfaces were finally analyzed, excluding 15 identified as dental plaque through tactile examination. Among them, 55 were sound surfaces, and 230 exhibited DC. FLI evaluation showed a higher sensitivity (0.84) for DC detection than that of WLI (0.61), and a higher specificity (1.00) than WLI (0.91). In WLI and FLI, the  $\Delta E$  values for DC (4.49 vs. 11.46) were 1.4 and 3.1 times higher than those for sound surfaces (3.12 vs. 3.71; both  $p < 0.001$ ), indicating a more substantial color difference in DC with BF compared to VE.

### Conclusions

DC detection with BF was superior than that with WLI. Therefore, BF-based DC detection could aid beginners who face difficulty in visually distinguishing DC.

### Studies in Progress

This study is currently ongoing, and the results will be further refined as the future statistical analysis is completed.

### Learning Outcomes

Dental calculus detection with biofluorescence was superior than that with visual examination.

### Presenting Author Brief CV

Professor in the dept of. dental hygiene, Sahmyook Health University, and a Ph.D. candidate in Yonsei University College of Dentistry.

# High-quality instructional videos enhanced dental students' comprehension of periodontal instrumentation

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<sup>1</sup> Diagnostic Sciences and Surgical Dentistry, University of Colorado School of Dental Medicine, USA

## Problem Statement

Instructional videos are essential for enhancing dental students' comprehension of the principles of periodontal instrumentation before they start providing direct patient care. Although such videos have been available in our institution for several years, they were recorded using a cell phone camera that did not provide high video quality compared to modern tools, especially when viewed on large classroom screens. In addition, these videos demonstrated strokes on calculus-free typodont teeth, but not the removal of calculus from tooth surfaces.

## Purpose

The study's objective was to develop a series of high-quality educational videos demonstrating periodontal instrumentation and evaluate dental students' feedback on both older and new videos.

## Methods

The Institutional Review Board granted an exemption from requiring ethics approval. Periodontal instrumentation was demonstrated using a standard periodontal armamentarium and a periodontal typodont with clear gingiva and teeth covered with supra- and subgingival deposits mimicking dental calculus (ModuPRO Perio, Acadental, Overland Park, KS, USA). Canon R5 mirrorless camera was used to take high-resolution multi-shot images and record 12-bit 8k DCI RAW videos, which were edited and exported in Apple ProRes 4444 XQ using DaVinci Resolve Studio 18.6 (Blackmagic Design, Port Melbourne, Australia). All current third-year dental students (DS3) and first-year international standing program students (ISP1) were asked to watch first older and then new videos in a classroom setting and provide optional anonymous feedback using QualtricsXM software (surveys #1 and 2, respectively).

## Results

A total of 16 students (7 DS3 and 9 ISP1) completed survey #1, and 14 students (7 DS3 and 7 ISP1) completed survey #2. In survey #1, 75% of participants found the videos extremely

and/or very useful, and 100% of participants found them adequate for comprehending periodontal instrumentation. However, some participants asked to "record video in a higher quality" and "include removal of simulated dental calculus on periodontal typodonts with clear or pink gingiva." In survey #2, 92.8% of participants found the videos extremely and/or very useful. Specifically, participants highlighted much higher video quality including zoomed field of view, the ability to visualize calculus removal due to transparent gingiva, and sharpening instructions. Some students asked to record similar videos on live patients, especially those with crowded dentition.

## Conclusions

The new high-quality instructional videos enhanced students' comprehension of periodontal instrumentation. This educational material enriches the quality of students' didactic and clinical knowledge and further contributes to providing high-quality patient care. Future studies aim to record similar high-quality videos on live patients.

## Learning Outcomes

The attendee will learn about new high-quality videos for dental hygiene education which are freely available for use.

## Presenting Author Brief CV

### EDUCATION

Master of Science in Dental Hygiene, Idaho State University  
2021

### CLINICAL DENTAL HYGIENE EXPERIENCE

Various Dentists, 1999-2015

### ACADEMIC EXPERIENCE

Assistant Professor, Department of Surgical Dentistry

# The effectiveness of power versus manual toothbrushes on plaque removal and gingival health in children -a systematic review and meta-analysis-

**Dagmar Else Slot<sup>1</sup>\***

<sup>1</sup> Peridontology, ACTA, Netherlands

## Objective

What is the effectiveness of self-performed toothbrushing with a single-head PTB compared to a single-head MTB in terms of plaque removal and gingivitis reduction in children?

## Search Strategy / Selection Criteria

MEDLINE-PubMed and Cochrane CENTRAL were searched up to November 2023. The titles and abstracts of the studies obtained from the searches were screened independently by two reviewers using the Rayyan web application to select studies that potentially met the inclusion criteria. Only papers written in the English language were accepted. If eligible aspects were present in the titles and abstracts, the full-text versions of those potentially relevant papers were obtained. After detailed full-text reading, these papers were independently categorized (as definitely eligible, definitely not eligible, or questionable. Disagreements concerning eligibility were resolved by consensus, and if disagreement persisted, the issue was resolved through arbitration by a third reviewer (G.A.W.).

Inclusion criteria were as follows:

- Randomized controlled clinical trial (RCT)
- Mentally and physically healthy children up to the age of 18
- No orthodontic appliances
- Self-performed brushing
- Intervention: single-head rechargeable PTB (excluding double- and triple-head brushes)
- Control: single-head MTB (excluding double- and triple-head brushes)
- Outcomes of parameters relevant to the focused question:
  - o Primary outcome: plaque index scores
  - o Secondary outcome: gingivitis scores (if presented)

## Data Collection and Analysis

Data extraction was conducted and the risk of bias was evaluated. A descriptive analysis, a meta-analysis and subgroup analysis, when feasible, was carried out.

## Main Results

The search yielded 12 eligible publications, encompassing 30 relevant comparisons. Results showed a significant difference of means (DiffM) on plaque scores in favor of the PTB. For single-use brushing both the end and incremental difference scores (DiffM-end=-0.26(95%CI[-0.31;-0.21];p<0.00001)|DiffM-difference=-0.26(95%CI[-0.31;-0.21];p<0.00001)) and also for follow-up studies (DiffM-end=-0.22(95%CI[-0.36;-0.07]);p=0.004)|DiffM-difference;-0.34(95%CI[-0.45;-0.23];p<0.00001)) indicated a significant difference in effect in favor of the PTB. The meta-analysis on gingival index scores showed no significant difference. Subgroup analysis was only possible for the follow-up studies. For the OR mode of action, a significant difference of means for plaque scores was found (DiffM-end=-0.19(95%CI[-0.37;-0.01];p=0.04)|DiffM-difference=-0.22(95%CI[-0.43;-0.01];p=0.04), the latter contains solely low risk of bias studies.

## Conclusions

There is moderate/moderately certain evidence for a small but significant difference of means supporting the effectiveness of a PTB for plaque removal in children in comparison to an MTB. This evidence primarily pertains to PTBs with an OR mode of action. Regarding gingivitis, for which only two studies could be included, the evidence suggests that there is no discernible difference in effectiveness between the PTB and MTB in children.

## Free of Bias

Two reviewers (F.D. and C.P.Z.) independently scored the individual methodological qualities of the included studies using the checklist presented in online Appendix S1. If random allocation, defined inclusion and exclusion criteria, blinding to the examiner, balanced experimental groups, identical treatment between groups (except for the intervention), and reporting of loss to follow-up were present, the study was classified as having a low risk of bias.



Studies that properly addressed five of these six criteria were considered to potentially have a moderate risk of bias. If two or more of these six criteria were missing, the study was considered to have a high risk of bias, as proposed by Van der Weijden et al. (2009) and described in more detail by Keukenmeester et al. (2013) For this current review, participant blinding was not taken into account, given that it would have been apparent to participants whether they were utilizing a PTB or an MTB.

## Learning Outcomes

There is moderate certainty that a PTB is more effective than an MTB with respect to plaque removal and gingivitis reduction in adults. It is important for the dental care professional to know whether the same holds true in children when self-brushing.

In children, there is moderate certain evidence that a PTB provides a small advantage in plaque removal over an MTB. Most data were available for PTBs with an OR mode of action. Dental care professionals can recommend the use of a PTB for self-brushing in children, given its demonstrated efficacy in plaque removal and safety considerations

## Citation for Publication

Submitted to International Journal of Dental Hygiene “under review”

## Presenting Author Brief CV

Prof. Dr. Dagmar Else Slot, RDH is a dental hygienist by training and heart, who is very connected to the daily clinical practice where she still works. She has a strong track record in international published research, education is her passion and some management is her job. She is the editor in chief of the International Journal of Dental Hygiene. In her spare time, she is a dairy farmer's wife who likes to make blueberry jam!



## Oral health determinants- views from hypertensive persons with long-term experience of PAP-treated obstructive sleep apnea.

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### Problem Statement

Obstructive sleep apnea [OSA] is a common sleep-related breathing disorder interconnected with medication resistant hypertension, as well as metabolic, cardiovascular, and oral diseases. The prevalence increases with age. OSA is often treated with positive airway pressure [PAP]. Adherence to treatment is essential but can be affected by side-effects such as xerostomia. Oral health can be affected by several factors in our everyday life throughout a lifetime. As there is limited knowledge on how persons with hypertension and longtime PAP-treatment view factors that can affect their oral health, this can in turn affect how oral health professionals can help to prevent adverse oral health in this group. Moreover, to increase interprofessional collaboration between PAP- and oral care practitioners and optimize the person-centred care for these patients, understanding of oral health during long-time treatments is needed.

### Purpose

To explore what persons with longtime experience of PAP-treated OSA view as determinants for their oral health.

### Methods

This deductive qualitative interview study included 18 purposively selected hypertensive persons with long-term experience of PAP-treated OSA. Interviews were performed individually by telephone. The verbatim transcribed interviews were analysed with directed content analysis using a code book with five pre-determined categories from FDI's theoretical framework of oral health (biological and genetic factors, social environment, physical environment, health behaviours, and access to care).

### Results

PAP treatment was described as having an independent

impact on oral health, but also as a factor that interacted with other determinants, thus could affect the oral health in a positive and negative manner. The biological and genetic determinants included becoming older, heredity, and salivary factors. Social and environmental determinants included impact from close family members or the society, and place of living and fluoride in water. Health behaviours and access to care included descriptions of routines for oral hygiene, being motivated or willing to change, having professional support, and availability, economic factors, and trustful relationships. Together, all of these factors were viewed as important determinants for oral health by persons with long-term experience of PAP treatment.

### Conclusions

This study showed a variety of personal oral health-related experiences that may be important for oral healthcare professionals to consider in clinical practice. For this specific population of hypertensive persons with long-term experience of PAP-treatment, this study can be helpful when tailoring recommendations in oral health care settings or together with PAP-practitioners to reduce xerostomia and prevent adverse oral health outcomes.

### Studies in Progress

This manuscript has previously been published in BMC Oral Health

### Learning Outcomes

I would like the attendees to acknowledge the wider concept of how different factors could interact and affect the oral health during a lifetime. There are more to oral health than the presence of oral diseases. By including views from persons with experiences of a certain condition or treatment, we can increase our clinical competence. Increased knowledge

regarding the connection among oral and general health can enhance the possibility to cooperate with other professions. By exploring views from the persons that we meet we can tailor recommendations for specific persons and we can also identify their need for referrals to healthcare in a better way. If we work together with healthcare professionals we have the opportunity prevent adverse oral health outcomes and increase the person-centered care.

## Citation for Publication

Ahonen, H., Neher, M., Fransson, E.I. et al. Views on oral health determinants as described by persons with continuous positive airway pressure-treated obstructive sleep apnoea: a qualitative study. BMC Oral Health 23, 407 (2023). <https://doi.org/10.1186/s12903-023-03108-6>

## Presenting Author Brief CV

Personal information

Date of Birth: 1983

Current employment

2022- Assistant professor at the Dental Hygienist Program at School of Health and Welfare, Jönköping University, Sweden.

Work experience

2017–2022 PhD candidate, Research School of Health and Welfare, School of Health and Welfare, Jönköping University  
2012 – 2022 Lecturer at the Dental Hygienist Program at School of Health and Welfare, Jönköping University, Sweden.  
2006–2011 Dental hygienist (clinical) within the private dentistry sector.

Education (relevant selection)

2017-2022 Doctor of Philosophy in Health and Care Science, School of Health and Welfare, Jönköping University, Sweden.  
2011-2013 Master of Science, Oral Health Science, School of Health and Welfare, Jönköping University, Sweden.  
2006 Bachelor of Science, Oral Health Sciences.  
2003-2005 Diploma in Dental Hygiene.

Number of peer-reviewed international publications: 6 (+ 2 submitted)



## Bridge the Gap

**Yvonne Howell<sup>1\*</sup>, Sviatlana Anishchuk<sup>1</sup>**

<sup>1</sup> Dublin Dental University Hospital, Trinity College Dublin, Ireland

### Problem Statement

Poor oral health is a concern for older adults and is more prevalent among older people in care facilities than living in the community. Nursing staff have sole responsibility to perform and meet the oral health needs of the older people, but face the significant barriers such as being “uncomfortable” with the task, lack of dental education, the absence of regular training or either lack of support. There is emerging evidence that increasing awareness and knowledge among healthcare workers will improve the oral health care of those in long term care facilities. Therefore, effective prevention of oral diseases is important.

### Purpose / Goals / Objective

Goal: To promote oral health of the older population living in care facilities.

Objectives: To increase oral health knowledge and awareness among healthcare nursing students (HCNS); and to provide assistance and support to nursing disciplines, through mentoring.

### Key Features

This mentorship programme is supported by 2nd year dental hygiene students (DHS) through an online platform – zoom. First, the presentation on oral health care in older group is presented to the HCNS by DHS. Ratio of 1 DHS to 2 HCNS is followed. The HCNS attends their college experience block in residential homes. The DHS offer support to HCNS through their 2-3 weeks college experience as required. The HCNS are supplied with toothbrushes, oral health aids and an oral hygiene leaflet. Their knowledge and attitude towards oral health and its care are pre and post tested by a self-administered questionnaire.

### Impact

To date 17 DHS and 27 HCNS participated in the programme. Good baseline knowledge in relation to the signs of a healthy mouth and product use was reported (74% and 81%) by HCNS. On post evaluation, the perceived unpleasantness cleaning of the oral cavity was reduced by 14% and improvement in training providing oral care by 44% was noticed. 86% of the HCNS found the mentoring programme beneficial and 87% would recommend to others HCNS. The programme is ongoing and final numbers will be presented

at a later stage.

### Conclusions

This collaboration among healthcare nursing students and dental hygiene students allows for innovative practice that optimises oral health care through the application of shared expertise. HCNS oral health knowledge and perceptions towards oral care tasks may be improved, and it may impact positively on the oral health care of the residents living in the residential facilities.

### Learning Outcomes

1. Identify the use of alternative approaches and application of skills in different settings
2. Establish how innovative practice can optimise oral health care through the application of shared expertise
3. Understand the benefits of meaningful collaboration amongst the multidisciplinary teams

### Citation for Publication

N/A

### Presenting Author Brief CV

Yvonne Howell DipDH DipDT, M Ed, PGCAP, AFHEA has worked in the dental health care profession for over 20 Years. She graduated from King's College London with a dual qualification in Dental Hygiene and Dental Therapy.

She has a broad experience working in a variety of dental settings in Ireland and London. Additionally she tutored Dental Hygiene and Therapy students at King's College University Hospital and completed her teacher training at King's College London.

Yvonne is programme director and tutor for the Dental Hygiene programme at the University of Dublin, Trinity College and now holds a Master in Higher Education.

She is currently President for the Irish Dental Hygiene Association and the Dental Hygiene representative on the Auxiliary Dental Workers committee for the Irish Dental Council.

## Expert usability evaluation of a mobile application for systematic caries management in children and adolescents

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### Problem Statement

Dental caries is a major oral health problem affecting 60-90% of adolescents globally. Therefore, the system of evidence-based caries risk assessment and management is essential during this period.

There is a trend to utilize an oral health mobile application in the dental care field by increasing attention in the mobile healthcare system recently. The U.S. Food and Drug Administration requires validation that the content and functionality of mobile medical applications are appropriate. Furthermore, it is recommended that mobile medical applications should be evaluated for usability and quality.

### Purpose

The purpose of this study was to conduct an expert evaluation to verify the systematic aspects and usability of a mobile application ('CAMBRA-students') developed to evaluate the caries risk of children and adolescents and provide systematic caries management.

### Methods

The subjects for expert evaluation consisted of 5 professionals including 2 dental hygienists, 1 professor of dental hygiene, and 2 IT specialists. The experts evaluated technical problems of the mobile application using the heuristic evaluation and the Mobile App Rating Scale (MARS).

### Results

As a result of the heuristic evaluation, a total of 43 comments were received, of which 21 problems were extracted.

The usability evaluation for professionals produces an overall score of 3.65. In the subscales (engagement, functionality, aesthetics, information and application subjective quality) of the MARS, the 'application subjective quality' domain received the lowest score of 2.90 and the 'information' domain received the highest score of 4.18. Through expert evaluation, the 'CAMBRA-students' application was improved and modified the usability by correcting systemic and usability issues.

### Conclusions

The CAMBRA-students application is expected to be applied in the public oral health care site for students, and to contribute to improve adolescents' oral health status by utilizing the dental caries risk management system.

### Learning Outcomes

Through this study, they will be able to learn about how to evaluate the validity and usability of mobile applications related to oral health care in children and adolescents, and furthermore, how to utilize mobile apps that can systematically evaluate the risk of dental caries in children and adolescents.

### Presenting Author Brief CV

Data collection, Formal analysis, Writing - original draft, review and editing

# The efficacy of dental biofilm removal in critical areas depending on the contact surface amount

**Jeongmin Heo<sup>1\*</sup>**

<sup>1</sup>Dental hygiene, Kyungnam College of Information & Technology, South Korea

## Problem Statement

The effective removal and control of the dental biofilm is the fundamental factor in the prevention of periodontal disease. The biofilm control should be done by the patients everyday and the tools in the individual oral hygiene must be chosen properly.

## Purpose

The primary requirement for the effective control of dental biofilm is that the bristles of the toothbrush must contact the target surface. The number of the bristles, the diameter and cutting edge terminal surface area of each bristle can be impact factors. The collection of the basic data through this research can be the source of the further research to determine the criteria for the proper toothbrush and may be the basic data for the new toothbrush design.

## Methods

The 3 different toothbrushes which have the same size of head, handle and the hole size, number for the bristles are selected. Only the bristles(the diameter of the bristles and the number of the bristles) are different as follows. 0.15mm, 1,560 bristles have 28.08mm<sup>2</sup> contact surface, 0.10mm, 5,460 bristles have 42.86mm<sup>2</sup> contact surface and 0.08mm, 12,460 bristles have 62.60mm<sup>2</sup> contact surface.

The artificial plaque(Nissin Dental Products Inc. Japan) is applied to the buccal and proximal surface of the lower left first molar on the dental model. (Nissin Dental Products Inc. Japan) The brushing technique which is focused on the critical areas of sulcus and proximal surface trained and used. The trained skilled dental hygienist reprepare the instructed elliptical movement 5, 10,15,20, 25 times with each toothbrush. The remaining artificial plaque surface areas after each movement are taken and processed with ImageJ (Image processing and analysis,December 2023) for the comparative analysis

## Results

The three toothbrushes with the same sized head, handles and different amount of contact surface made different

effects on the removal of artificial plaque and the correlation was statistically significant. Also the frequency has direct correlation.

## Conclusions

The prevention and management of periodontal disease is related to the removal and control of the dental biofilm. The selection of the proper tool is essential and the bristles must contact the target surface. The amount of the bristles and the contact surface amount are important factors. But, the materials, length, resilience and elasticity can be a factor, so further research for each factor should be considered.

## Studies in Progress

It is not studies in progress.

## Learning Outcomes

The attendees can learn that when Using a toothbrush with a larger contact surface area proved beneficial as it covered more tooth surfaces, effectively aiding in the removal of dental plaque.

## Presenting Author Brief CV

I work as a legal affairs director at the Busan Dental Hygienists' Association.

I am an adjunct professor in the Dental Hygiene Department at the university, and I am responsible for preventive care at a dental clinic.

I work as a teacher at the SOOD Association, where I educate dental hygienists and individuals on the correct techniques for oral hygiene.

# Examining ergonomics through a novel interprofessional lens of corrective exercise to preserve career satisfaction and longevity for dental hygienists

**Brian Wilkinson<sup>1</sup>, Melody McGee<sup>2\*</sup>**

<sup>1</sup> School of Physical Therapy & Athletic Training, Pacific University, USA

<sup>2</sup> School of Dental Hygiene Studies, Pacific University, USA

## Problem Statement

Studies indicate that up to 96% of dental hygienists (DH) experience a musculoskeletal disorder (MSD), and these investigations have identified the magnitude and etiology of this dilemma. Faculty from the School of Dental Hygiene Studies and the Physical Therapy Program at Pacific University collaborated to design a corrective movement routine to alleviate MSDs among student DHs. This routine involves performing the Core Four after every clinic session and seeks to reverse the effects of repetitive tasks and suboptimal positioning by DHs through intentional stretching and exercise.

## Purpose / Goals / Objective

This investigation sought to determine if a novel movement paradigm may lessen MSDs in the neck and upper extremities for DH students. It also sought to determine if self-efficacy was enhanced. The study was implemented over a 20 month period with two student cohorts serving as the combined control group and another two student cohorts serving as the combined experimental group.

## Key Features

The focal point of this study was introducing the Core Four movement routine, which includes two stretches and two exercises. These movements function to promote efficiency, foster simplicity, address multiple body regions, facilitate habit formation and be corrective in nature. The Core Four was thoughtfully crafted to align seamlessly with the DH's independent busy patient schedule, and was designed to demand minimal resources while ensuring feasibility of repeated daily application. For each Core Four element, there was a standard movement as well as a progression. This session will provide a groundbreaking examination of issues related to applied ergonomics for the practicing DH, including equipment, habits and novel corrective exercise.

## Impact

Based on our appraisal, a standardized paradigm for corrective exercise specific to the DH population has never been introduced. Given that the scope of a DH makes an isolated pursuit seem impractical, the incorporation of a physical therapist provides contributions from a legitimate musculoskeletal expert. The ultimate benefit to the profession yields a more robust sense of career satisfaction, and may have a lasting positive impact on a strained workforce that

was affected considerably by the global pandemic and the unparalleled sense of burnout that ensued.

## Conclusions

Data revealed that the Core Four successfully alleviated the symptoms in the experimental group in the neck, shoulder, elbow, forearm, wrist and hand areas. Corrective exercise also served to enhance the self-efficacy levels for the experimental group in a statistically significant manner.

## Learning Outcomes

Recognize the prevalence and common locations of musculoskeletal disorders in allied dental professionals  
Discern how the Core Four daily movement program may alleviate MSDs and increase self-efficacy for allied dental professionals  
Identify the appropriate sequencing and timing of activity-specific, corrective movements for routine clinical practice  
Distinguish various evidence-based strategies and habits to alleviate unnecessary biomechanical stress on the body related to movement, instrumentation and positioning

## Citation for Publication

Wilkinson, B.J.; Erenfeld, H.; Coplen, A.E. (2022) Basic Prevention and Management of Common Musculoskeletal Disorders. Dimensions of Dental Hygiene. January 2022; 20(1): 24-27.

Wilkinson, B.J.; Bell, K.P.; Cowen, B.S.; Coplen, A.E. (2019) Simple Exercises To Reduce Musculoskeletal Disorders. Decisions in Dentistry. April 2019; 5(4): 32-37.

Wilkinson, B.J.; Bell, K.P.; Coplen, A.E. (2019) Ergonomics Reinvigorated: Strategies for Using the Core Four to Help Prevent Musculoskeletal Disorders. Dimensions of Dental Hygiene. January 2019; 17(1): 36-39.

## Presenting Author Brief CV

Peer Reviewed Presentations

Wilkinson, B.J., Jackson, S.C., & Speer, L. Investigating the Efficacy of the Core Four Movement Routine to Optimize Ergonomics for the Dental Hygienist: An Inter-Institutional Analysis, ADHA conference in Chicago, IL. July 2023.

Wilkinson, B.J. Everyday Ergonomics: A Practical Approach to Optimizing Mechanics Through the Performance of Routine Corrective Movements, ADHA conference in Louisville, KY, June 2022

## An autoethnography of a foreign researcher: a study of the quality of life of patients with oral cancer in Vietnam

**Sherry Priebe<sup>1\*</sup>**

<sup>1</sup>Sherry Priebe's Dental Hygiene, University of British Columbia, Canada

### Problem Statement

Oral cancer is not merciful. This qualitative study exposes the human experience and phenomenon of physical, cognitive, emotional, and historical social trauma on the quality of life with oral cancer in Vietnam. Dental hygienists are caring and passionate about being the centre of preventive oral health, yet our research rarely includes the human element of understanding the total human experience. An empathetic human analysis is necessary to complete research in totality and collaboration, thereby inclusive of not only quantitative but qualitative methods of research.

### Purpose / Goals / Objective

The objective is to provide an innovative research methodology of autoethnography as a process to enhance the researcher's experience and results. My goals are for core and collaborating research dental hygienists to generate insights of socially conscious outcomes.

### Key Features

The narratives of my experiences are the product of study in Vietnam being political, cultural, and relational with people affected by the physical and social disparity of having oral cancer from the abuse of cultural oral habits of betel nut, tobacco, and alcohol. Hospital patients were subjected to treatments of numerous extractions of teeth, heavy emissions of cobalt radiation with severe burning of tissues, massive invasive surgery, and regimes of chemotherapy. The qualitative method of autoethnography provides a re-imagined venue to creatively write about my positionality as being an 'outsider'.

### Impact

The psychological and social conscious element is piercingly evident in the process to achieve the resulting end product. I was urged by my fellow colleagues to share the rich knowledge base that I had acquired. My personal field notes and reflective notes provided insightful elements of connecting the personal to the cultural understanding

to complete this research. I have implemented these reactions and vulnerable self-knowledge based on the severe disfiguring of patients caused by oral cancer; candid and professional conversations through relationships with medical staff from Vietnam and Canada; and discussions with my family and friends.

### Conclusions

Through my personal narratives, I hope to assist core research dental hygienists in accessing understanding that they have not lived... such as those who have suffered physically, emotionally, and psycho-socially. I trust my experiences will provide a determination for change in how we as oral health professionals see ourselves and implement human empathy in research methods and make life better for future patients.

### Learning Outcomes

Describe collaboration and equality in research

Recognize high cultural oral risk behaviors and what those behaviours are

Obtain understanding of the quality of life with oral cancer

Describe the impact of physical, cognitive, emotional, and historical social trauma on research outcomes

Determine for change in implementing human empathy in research

### Citation for Publication

2019 -Priebe S, The 'System' of a Dental Hygienist. Oral Hygiene. November 2019; 24-27.

2019 -Priebe S, Volunteering In Vietnam. Oral Hygiene. February 2019;32-34.

2018 -Priebe S, Significant Trends in Global Oral Health and Oral Cancer: The Power of Cultural Oral Habits. Oral Hygiene. September 2018;22-28

2017-Barnsley A, Lin I, Kanji Z, Lin D, Priebe S, Laronde D. UBC dental hygiene degree program international service learning initiative. Educational Poster, British Columbia Dental Hygienists Association annual general meeting,

February.

2016- Nguyen Thi Khanh Ha, Sherry L. Priebe, Nguyen Thi Hong. Quality of Life of Oral Cancer Patients Before Treatment at Ho Chi Minh City Oncology Hospital in 2013. Vietnam Journal of Medicine and Pharmacy (Y Hoc TP. Ho Chi Minh Vol.20-Supplement of No 2) 2016;20;2,138-145.

2016 – Minhas S, Lee D, Kanji, Z, Priebe S. Good Morning Vietnam! A University of British Columbia Dental Hygiene Degree Program Outreach Initiative. Oh Canada! Spring Issue, 2016;31-33

2016- Lee D, Minhas S, Priebe S. The Road Less Travelled: Oral Cancer in Vietnam. Outlook, British Columbia Dental Hygienists' Association. Spring 2016. Vol.51, 6-8.

2016 -Dental Hygiene Students on Rotation to Vietnam. UBC Dentistry Impressions. Spring, p. 30-31

2015 – Newspaper report – The Kelowna Daily Courier, Oral Cancer Screening, Okanagan Valley, BC

2011 –Priebe, S. Global Trends and Superheroes. Dental Health, Pensford Press (UK), November 2011;1:1,14-15.

2010 –Priebe SL, Aleksejūnienė J, Zed C, Dharamsi S, Thinh DHQ, Hong NT, Cuc TTK, Thao NTP. Oral Squamous Cell Carcinoma and Cultural Oral Risk Habits in Vietnam. Int J Dent Hygiene, 2010;8:3,159–168 DOI: 10.1111/j.1601-5037.2010.00461.x

2008 –Priebe S, Aleksejūnienė J, Dharamsi S, Zed C. Oral cancer and cultural factors in Asia. Can J Dental Hygiene. 2008;42:6,289-293.

2008 Priebe S, Aleksejūnienė J, Zed C, Dang Huy Quoc Thinh, Nguyen Thi Hong, Tran Thi Kim Cuc, Nguyen Thi Phuong Thao, Nguyen Chan Hung. Oral Squamous Cell Carcinoma and the Risk Habits in Patients at the Oncology Hospital in Ho Chi Minh City, Vietnam. Vietnam Journal of Medicine and Pharmacy. (Y Hoc TP. Ho Chi Minh -Vol. 12 –Supplement of No 4) 2008;12:4,62-74.

## Presenting Author Brief CV

Sherry graduated with a Diploma of Dental Hygiene from the University of Alberta, a Bachelor of Dental Science and Master's in Science degrees from the University of British Columbia (UBC) in Vancouver. She is published in the Vietnam Journal of Medicine and Pharmacy, the Canadian Journal of Dental Hygiene, the International Journal of Dental Hygiene, Oral Hygiene, and the Dental Health Journal in the UK. Sherry was awarded for her cultural oral cancer study in Vietnam with the prestigious "World Dental Hygiene Award in Research" sponsored by the SUNSTAR Foundation for Oral Health Promotion in collaboration with the International Federation of Dental Hygienists and the

International Journal of Dental Hygiene. She is a clinical dental hygienist, researcher, international keynote speaker, Okanagan College educator and community oral health advocate. Sherry mentored and led the UBC Vietnam Dental Hygiene Service Learning Program for five years for global collaboration.

## Advice and Information about toothbrushing as available on websites of professional dental care associations

**Therese Elkerbout<sup>1\*</sup>, Tim Thomassen<sup>1</sup>, Fridus van der Weijden<sup>1</sup>, Dagmar Else Slot<sup>1</sup>**

<sup>1</sup> periodontology, ACTA, Netherlands

### Problem Statement

Professional dental care associations (PDCAs) are national organizations of dentists and dental hygienists.

The FDI (World Dental Federation) is considered an umbrella organization as it unites the dentists association (DAs) and is the worldwide representative body for all dentists. It develops health policy, continuing education programs, serves as a unified voice for dentistry, and supports member associations in oral health promotion activities via the use of websites and social media. The International Federation of Dental Hygienists (IFDH) has similar aims regarding dental hygienists and unites dental hygienist associations (DHAs). It is of interest what these DA and DHA organizations communicate to the general public about oral care. This information should adhere to professional standards.

### Purpose

So this study aimed to assess the online advice and information about toothbrushing provided by PDCAs in English-speaking countries

### Methods

A cross-sectional internet search for information published until July 2021 was performed. To locate the individual websites of these PCDAs, the search was primarily performed via the websites of the FDI for the DAs and the IFDH for the DHAs. In case a website was available, it was assessed whether toothbrushing advice was provided. Recommendations regarding a brushing technique, advice and instruction about the type of toothbrush, type of bristles, duration of brushing, time of changing the toothbrush, the use of toothpaste and interdental cleaning devices were gathered and summarized.

### Results

In total, 56 English-speaking countries were considered, of which 52 had a DA and 15 had a DHA, the majority of which had a working website. In total, 16 DAs and 7 DHAs, provided advice and information on toothbrushing and

recommended twice daily manual toothbrushing with a fluoride toothpaste. Generally, a toothbrushing duration of 2 min (n=20) and the (modified) Bass toothbrushing technique (n=9) were advised. Nine PDCAs recommended the use of a powered toothbrush as well, and 21 recommended the daily use of floss. Nine PDCAs also recommended the use of an interdental brush

### Conclusions

In total, 35% of the PDCAs, that is, 16 DAs and 7 DHAs, provided advice and information on toothbrushing and recommended twice daily manual toothbrushing with a fluoride toothpaste. Although no consensus was found and significant heterogeneity was observed in the instructions related to toothbrushing and toothbrushing technique, all PDCAs recommended twice daily brushing with a manual toothbrush and fluoride toothpaste. With respect to other recommendations on basic oral self-care, there appears to be a need for alignment.

### Studies in Progress

submitted

### Learning Outcomes

Learning outcomes are what you want the attendees to learn or achieve from your oral and poster.

1. Getting familiar with the FDI (World Dental Federation) and International Federation of Dental Hygienists (IFDH) and their function as umbrella organizations
2. Gain knowledge about websites in the commonwealth countries and the availability of toothbrushing advice, recommendations regarding a brushing technique, advice and instruction about the type of toothbrush, type of bristles, duration of brushing, time of changing the toothbrush, the use of toothpaste and interdental cleaning devices
3. Inform the Dental Care Professionals about the need for alignment and improvement in professional information for the general public with respect to the type of toothbrush, toothbrushing instruction, technique and other



toothbrushing-related aspects how to use these findings and if it can be directly integrated in clinical daily practice

## Citation for Publication

Elkerbout TA, Slot DE, Rijnen ME, van der Weijden GAF. Change in oral hygiene behaviour after non-surgical periodontal therapy - A retrospective analyses. *Int J Dent Hyg.* 2023 Feb;21(1):259-271. doi: 10.1111/idh.12593. Epub 2022 Apr 11. PMID: 35286771; PMCID: PMC10083970.

Elkerbout TA, Slot DE, Rosema NAM, Van der Weijden GA. How effective is a powered toothbrush as compared to a manual toothbrush? A systematic review and meta-analysis of single brushing exercises. *Int J Dent Hyg.* 2020 Feb;18(1):17-26. doi: 10.1111/idh.12401. Epub 2019 Jul 23. PMID: 31050195; PMCID: PMC7004084.

Elkerbout TA, Slot DE, Van Loveren C, Van der Weijden GA. Will a chlorhexidine-fluoride mouthwash reduce plaque and gingivitis? *Int J Dent Hyg.* 2019 Feb;17(1):3-15. doi: 10.1111/idh.12329. Epub 2018 Mar 7. PMID: 29512317.

Elkerbout TA, Slot DE, Bakker EW, Van der Weijden GA. Chlorhexidine mouthwash and sodium lauryl sulphate dentifrice: do they mix effectively or interfere? *Int J Dent Hyg.* 2016 Feb;14(1):42-52. doi: 10.1111/idh.12125. Epub 2015 Apr 16. PMID: 25880828.

## Presenting Author Brief CV

Thérèse Elkerbout (22-07-1973, Alphen a/d Rijn) graduated (Amsterdam, 1992) as dental hygienist and worked in Switzerland and Italy. Then (1999-2008) worked at the Oral-Surgery-Department-Leiderdorp. She joined the partnership in oral-hygiene-practice Nieuwkoop (2008). And completed the 2-year-Bachelor-upgrading-program (Hogeschool-Utrecht, 2009). She followed the master-Evidence-Based-Practice at the University-of-Amsterdam and completed her thesis in collaboration with ACTA and graduated as a clinical-epidemiologist in 2014. In 2015, Thérèse was elected dental-hygienist-of-the-year. Since 2006 she has been doing dental-volunteer-work (Uganda, Kenya). She has been member of the board for 7 years and now she is the president of the Help-UGanda-(HUG) Foundation. She completed her PhD in December 2022. Currently she combines her clinical-work in practice with teaching students at the ACTA-periodontology-department and coaching students with their thesis.



## Patient autonomy and preference for dental decision-making with periodontitis patients

**Ji-Young Jung<sup>1</sup>, Kyung-A Ko<sup>1</sup>, Ran Lee<sup>1</sup>, Junhewk Kim<sup>1</sup>, Jung-Seok Lee<sup>1\*</sup>**

<sup>1</sup> Department of Periodontology, Research Institute for Periodontal Regeneration, Yonsei University College of Dentistry, South Korea

### Problem Statement

Dental professionals evaluate teeth considering aspects such as bone loss, diminished attachment, increased mobility, and furcation involvement. This assessment occasionally deems certain teeth 'hopeless,' prompting suggestions for extraction. Nevertheless, interventions at times lead to the preservation of these seemingly dire cases. Intriguingly, survival rates for such teeth exhibit a wide spectrum, spanning from 17% to 91%. Extractions transcend mere diagnosis; they involve nuanced judgment. Parameters like mobility and bone loss are regarded as pivotal risk indicators, allowing treatment strategies to accommodate patient-centric values. Significantly, a considerable research gap exists regarding patient autonomy tendencies in extraction decisions within the Korean dental context, underscoring the crucial need for comprehensive studies in this area.

### Purpose

This research aimed to thoroughly investigate patient autonomy and preferences within dental decision-making concerning tooth extraction due to periodontitis. The study was conducted among 96 participants at a dental university hospital, seeking to separately evaluate autonomy and preferences within this clinical research setting.

### Methods

Ninety-six patients were categorized into three distinct groups: individuals without prior involvement in periodontitis-related extraction decision-making (Group 1), those undergoing extraction decisions followed by periodontal treatment (Group 2), and patients who experienced decision-making for extraction due to periodontitis and subsequently underwent tooth extraction (Group 3).

The study utilized the Autonomy Preference Index (API) employing a five-point Likert scale, allowing participants to express their viewpoints on dental circumstances from 'strongly disagree' to 'strongly agree'. Simultaneously, the Control Preferences Scale (CPS), adapted for clinical research, evaluated patient preferences across decision-making roles. Additionally, the research encompassed an evaluation of patients' information-seeking preferences, Adult Oral Health

Standard Set (AOHSS), demographic characteristics, and oral hygiene-related factors.

### Results

Analysis uncovered patient preferences favoring tooth conservation, improved mastication, and relief from toothache, alongside a preference for minimal dental visits. In the CPS, 61.1% emphasized tooth preservation, while 17% stressed enhancing chewing ability. The preference for receiving definitive treatment directly (9.5%) surpassed the desire for comfortably consuming cold water (6.3%).

Consistently, patients exhibited a tendency towards shared decision-making (3: me and dentist) and decisions led primarily by the dentist. The Autonomy Preference Index (API) highlighted a prevalence of passive autonomy across various decision-making scenarios, surpassing active autonomy.

### Conclusions

Throughout this clinical research, a consistent pattern emerged, emphasizing patients' preferences for shared decision-making and a preserving the tooth in dental decision-making processes. These findings underscore the pivotal role of patient engagement and its significance in shaping patient-centered dental care practices.

### Learning Outcomes

Active involvement of patients in decision-making can enhance their cooperation with treatment and foster trust with dental professionals, potentially leading to more satisfactory clinical outcomes. Consequently, collaborative decision-making, characterized by shared information between patients and dental professionals, might reduce patients' decision regret and favor conservative treatments. This shift from extraction to periodontal treatment for many teeth could potentially decrease the societal economic burden related to prosthetics post-extractions

### Presenting Author Brief CV

2022-11~Executive Secretary of ISDH2024 Korea LOC

2021-03~ Ph.D student in Yonsei University College of Dentistry

2015-02 BD in Dongnam Health University

# Chlorhexidine mouthwash with or without alcohol in relation to effect on parameters of plaque and gingivitis. -Systematic review and meta-analysis-

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<sup>1</sup> Department of Periodontology, Academic Centre for Dentistry Amsterdam (ACTA), University of Amsterdam, Netherlands

<sup>2</sup> Department of Dental hygiene, Hogeschool Arnhem Nijmegen, University of Applied Sciences, Nijmegen, The Netherlands, Netherlands

## Objective

What is the effect of a chlorhexidine mouthwash without alcohol(CHXalc-) compared to a chlorhexidine mouthwash with alcohol(CHXalc+) on plaque and parameters of gingivitis? In addition to evaluate side effects and user appreciation.

## Search Strategy / Selection Criteria

MEDLINE-PubMed and Cochrane-CENTRAL databases were searched up to June 2023 to identify eligible studies. Studies evaluating the effect of CHXalc- compared to CHXalc+ were included. All studies were screened by title and abstract by two reviewers independently using the Rayyan app. After unblinding, the conflicts were identified and resolved by discussion. Full-text versions were retrieved and screened. The studies that met all selection criteria were further processed for data analysis. The methodological quality was assessed by using the Cochrane tools for risk of bias for interventional studies (ROBINS-I/RoB 2.0).

## Data Collection and Analysis

The data from selected studies were extracted by two independent reviewers using predesigned data-extraction forms. The mean and standard deviation(SD) of baseline, end and incremental(difference) scores, were extracted for the parameters of interest; plaque, bleeding, gingivitis, side effects and user appreciation. In advance, it was decided to categorize the studies into non-brushing or brushing design. A descriptive data presentation was used for all included studies. If sufficient quantitative data were available, meta-analyses were made following the PRISMA and COCHRANE handbook guidelines. The evidence was graded using the GRADE approach.

## Main Results

Seventeen papers were found to be eligible; fourteen RCT's and three CCT's. Seven studies are non-brushing designs,

seven brushing designs, two experimental gingivitis models, and one brushing and non-brushing design. A parallel design was used by twelve, and five used a cross-over design. The majority of the meta-analysis assessing plaque indices, found no significant differences in brushing and non-brushing groups. Within the experimental gingivitis model, a statistical significant difference was found favoring CHXalc(DiffM=0.04;95%,CI[0.02;0.07],p=0.001). The bleeding index showed no significant difference between groups. Irrespective the model, brushing or no brushing, for gingival indices, no significant differences were detected. Discoloration showed also no differences whether CHX contained alcohol or not. Users in majority do not have an appreciation preference in taste.

## Conclusions

There is overall moderate evidence that there is no difference between CHXalc- or CHXalc+ regarding plaque control and parameters of gingivitis. In addition, for side effects there is moderate evidence and for user appreciation there is small evidence there is no difference between the alcohol containing and alcohol free CHX-MW. In non-brushing situations and as adjunct to toothbrushing there is moderate evidence that both, CHXalc- and CHXalc+, can be recommended.

## Free of Bias

This study is in accordance with the Cochrane-handbook, PRISMA-guidelines and GRADE-approach and registered at PROSPERO(CRD42023434000). The authors declare no conflict of interest. No grant from any funding agencies was accepted, except for support from the listed institutions.

## Learning Outcomes

The attendees...

- Gain knowledge on the effect of rinsing with a chlorhexidine mouthwash without alcohol(CHXalc-) compared to a

chlorhexidine mouthwash with alcohol(CHXalc+) on plaque and parameters of gingivitis.

- Gain knowledge on the effect of rinsing with a chlorhexidine mouthwash without alcohol(CHXalc-) compared to a chlorhexidine mouthwash with alcohol(CHXalc+) on side effects and user appreciation.
- Can apply knowledge about chlorhexidine use in future recommendations in the clinical practice.

## Citation for Publication

Van Swaaij, B. W. M., van der Weijden, G. A. F., Bakker, E. W. P., Graziani, F., & Slot, D. E. (2020). Does chlorhexidine mouthwash, with an anti-discoloration system, reduce tooth surface discoloration without losing its efficacy? A systematic review and meta-analysis. *International journal of dental hygiene*, 18(1), 27–43.  
<https://doi.org/10.1111/idh.12402>

van Swaaij, B. W. M., Slot, D. E., Van der Weijden, G. A., Timmerman, M. F., & Ruben, J. (2023). Fluoride, pH Value, and Titratable Acidity of Commercially Available Mouthwashes. *International dental journal*, S0020-6539(23)00623-8. Advance online publication.  
<https://doi.org/10.1016/j.identj.2023.09.002>

## Presenting Author Brief CV

Bregje van Swaaij is a dental hygienist and worked in a dental practice since receiving her bachelors' degree in Dental Hygiene in 2015. Since 2016 she has worked as a lecturer at HAN University of applied sciences in Nijmegen (Netherlands). In 2018, van Swaaij received her Master of Science degree from the University of Amsterdam, Department of Epidemiology and Biostatistics in Evidence Based Practice. In 2021 she started a PhD program at University of Amsterdam (UvA) / Academic school of Dentistry (ACTA) Amsterdam after peer reviewed publications. Her project title is; Mouthrinses, your money down the drain?

## Effectiveness of a simulation program using humanoid patient robot in dental hygiene clinical training

**Naoko Adachi<sup>1\*</sup>, Hitomi Suzuki<sup>2</sup>, Masayo Sunaga<sup>3</sup>, Atsuhiro Kinoshita<sup>3</sup>, Kumiko Sugimoto<sup>1</sup>, Naomi Yoshida<sup>2</sup>, Kayoko Shinada<sup>1</sup>**

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<sup>2</sup> Department of Oral Health Care Education, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

<sup>3</sup> Department of Educational Media Development, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

### Problem Statement

The COVID-19 pandemic caused a challenging situation of clinical training in dental hygiene education in Japan because face-to-face training with actual patients is essential for students to acquire practical clinical skills. We incorporated simulation education as part of the clinical training to complement the shortage in actual clinic training

### Purpose

This study aims to evaluate the effectiveness of a simulation program using a humanoid patient robot for clinical training in dental hygiene education.

### Methods

In the 2021 curriculum, 20 third-year dental hygiene students were given a simulation program using SIMROID® (Morita, Tokyo) as part of clinical training. SIMROID® is equipped with a program that vocally answers with simultaneous facial and body movements in response to people's questions. The central theme of the program was the medical interview. The students conducted a medical interview using an intake form including information on systemic conditions with SIMROID® after being presented with the oral examination results. The students then self-evaluated their performance by viewing the recorded video and received feedback from their teacher. A self-administered questionnaire survey was implemented before and after the program to measure its effectiveness. The students rated their confidence levels in knowledge and skills regarding clinical practice on a scale of 1 (unconfident) to 8 (confident). The changes in confidence levels before and after the program were analyzed using

the Wilcoxon signed-rank test.

### Results

After the program, the students demonstrated significant increases in confidence levels in all questions ( $p < 0.05$ ), such as "I can pay attention to patient's needs, physical, mental, and social suffering," "I can understand patients' general condition," "I can identify problems by medical interview," "I can organize the necessary information and explain it clearly to other professionals," "I can engage in interprofessional practice as a dental hygienist student," and "I can actively engage in each clinical training." These results indicated that the simulation program using a humanoid patient robot and feedback from the teacher may have helped the students enhance their confidence in the communication skills required for clinical practice.

### Conclusions

The simulation program using a humanoid patient robot was considered helpful in clinical training, especially when face-to-face training is restricted due to problems such as spreading infection.

### Learning Outcomes

Gaining insight into educational program utilizing humanoid robot in dental hygienist education.

### Presenting Author Brief CV

Dental hygienist, Assistant professor, Tokyo Medical and Dental University

Education:

- Ph.D, The Tokyo University, 2018



- MPH, The Tokyo University, 2014
- MA, Tohoku University of Community Service and Science, 2012

#### Occupation:

- Assistant professor, Tokyo Medical and Dental University, Tokyo, Japan, 2018-current
- Intern, World Health Organization, Geneva, Switzerland, 2017
- Dental hygienist, Hiyoshi Oral Health Center, Yamagata, Japan, 2009-2012

#### Research Themes:

- Relationship between oral health and systemic health
- Relationship between oral health and work productivity
- Development of a robot-based dental hygienist education program

#### Summary of roles in this study:

- I managed and contributed to the study design, implementing the education program, gathering data, analysis, and drafting the manuscript.

## Dental hygienists at the centre of a global oral health workforce survey.

**Leonie Short<sup>1\*</sup>, Lynn Bethel-Short<sup>2</sup>, Rachel Martin<sup>3</sup>, Puneet Gupta<sup>4</sup>, Cleopatra Matanhire<sup>5</sup>, Seema Kumar<sup>6</sup>, Kenneth Eaton<sup>7</sup>, Gloria Kim<sup>8</sup>, Hyewon Lee<sup>9</sup>**

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<sup>7</sup> Chair, Platform for Better Oral Health in Europe, United Kingdom

<sup>8</sup> Secretariat, WFPHA Oral Health Working Group, South Korea

<sup>9</sup> Department of Dentistry, Seoul National University, South Korea

### Problem Statement

Global oral health has built significant momentum over the last few years, spearheaded by the World Health Organization (WHO) and other international oral health entities. However, those historical global oral health reports highlighted insufficient attention to oral health workforce capacity building to meet the populations' oral health needs in various settings and countries. WHO specifically stated that oral health workforce training focuses on educating highly specialized dentists rather than mid-level and community oral health workers or optimizing the roles of the broader health team. Beyond the shortage and maldistribution of current dental providers, mostly dentists, we need to nurture future oral health workforce with public health focuses on delivering essential oral health care and eliminating oral health disparities.

### Purpose

The Oral Health Working Group (OHWG) of the World Federation of Public Health Associations (WFPHA) in conjunction with Seoul National University and the International Federation of Dental Hygienists launched a global dental workforce survey to learn about various types of dental workforce and their functions worldwide. This project visually represents dental workforce models and their contribution to the public health aspect of global oral health. The survey has developed based on previous literature and reports on alternative dental workforce development and implementation by a task force within WFPHA.

### Methods

The survey will be distributed through national dentists, dental hygienists, dental therapists, and other workforce associations through partnership with international dentists and dental hygienist associations. The second part of the analysis will include a crosswalk between the survey findings and WHO Country Oral Health Profiles, which include dentists and dental assistants' numbers in the country.

### Results

In each country represented, survey data results will include a list of all the oral health workforce types officially recognized and who have "direct patient contact" through clinical care or education; scope of practice; primary employment sector; issues and challenges in each oral health workforce type; primary focus for oral health care; workforce challenges for each country; strategies to address workforce challenges; the effect of the COVID-19 pandemic; national government initiatives; and national oral healthcare workforce plans. The findings will be published in the form of peer-reviewed articles as well as infographics.

### Conclusions

Dental hygienists play a significant role in the global oral health workforce. Their capabilities can be enhanced through oral health workforce models, optimized scope of practice, and innovative approaches to preventive oral health care. To be completed in early 2024.



## Studies in Progress

The collected data will be analyzed for descriptive findings and qualitative analysis of significant challenges and potential solutions. WFPHA's OHWG members and other international dentist and dental hygienist association members will serve as an expert group to interpret the findings meaningfully for recommendations in future oral health workforce development.

## Learning Outcomes

The position of dental hygienists across the globe through oral health workforce models, innovative approaches, and challenges globally.

## Presenting Author Brief CV

Leonie has enjoyed a mixed career as a clinician, academic and researcher at six universities in the fields of sociology, nursing, public health, and dentistry. She is currently involved in two aged care research projects that utilise digital health applications and artificial intelligence to improve oral health. Her own company provides training and education in oral health care for health professionals, personal carers, and support workers in the aged, home and disability sectors. She is also an experienced board member and director across the not-for-profit, charitable and government sectors.

## Enhancement of oral hygiene behavior and oral health outcomes following the theory-based educational intervention

Rieski Prihastuti<sup>1</sup>, Daisuke Hinode<sup>2\*</sup>, Makoto Fukui<sup>2</sup>, Omar M. M. Rodis<sup>3</sup>, Yoshizo Matsuka<sup>1</sup>

<sup>1</sup> Stomatognathic Function and Occlusal Reconstruction, Graduate School of Biomedical Science, Tokushima University, Japan

<sup>2</sup> Hygiene and Oral Health Science, Graduate School of Biomedical Science, Tokushima University, Japan

<sup>3</sup> International Oral Health Science Education, Graduate School of Biomedical Science, Tokushima University, Japan

### Problem Statement

Untreated dental caries and periodontal disease continue to pose significant challenges to global oral health. While dental health education promotes oral health, its impact on oral health-related behavior and clinically significant outcomes is limited. Consequently, constructing oral health interventions should rely on existing evidence of efficacy and adhere to established best practices.

### Purpose

The study aimed to assess the impact of a theory-based educational intervention on both oral hygiene behavior and oral health outcomes.

### Methods

A parallel, single-blind, randomized controlled trial with a 1:1 allocation ratio was carried out among university students. Following oral examination, the control group received conventional oral health education. Conversely, the intervention group underwent an educational intervention based on the Theory of Planned Behavior for 21 consecutive days. Educational materials encompassing 21 diverse topics were disseminated through web-based applications. The evaluation of oral hygiene behavior involved utilizing the oral hygiene behavior index (OHBI), which primarily concentrated on aspects such as toothbrushing frequency, timing, pressure, duration, and methods, also fluoride toothpaste, interdental care, and tongue cleaner usage. Oral cleanliness, salivary hemoglobin levels, and caries activity were evaluated at the beginning and three months post-randomization. Oral cleanliness was measured using two methods: the oral hygiene index-simplified (OHI-S) and an automated bacterial counter. Salivary hemoglobin levels were measured using a monoclonal antibody reaction, while caries activity was measured using a resazurin disc test.

### Results

The study involved 71 participants, 38 were assigned in the control group and 33 in the intervention group.

Notably, at the 3-month follow-up, the intervention group demonstrated a statistically significant improvement in OHBI ( $p < 0.05$ ). While the total bacterial count and OHI-S score were lower in the intervention group compared to the control group, the difference in the total bacterial count did not reach statistical significance ( $p = 0.054$ ). However, similar to OHI-S, there were statistically significant improvements in caries activity ( $p < 0.05$ ) and salivary hemoglobin levels ( $p < 0.05$ ) in the intervention group.

### Conclusions

The theory-based educational intervention demonstrated a significant enhancement in oral hygiene behavior and various oral health indicators, including OHI-S, salivary hemoglobin levels, and caries activity.

### Learning Outcomes

Understand the impact of a theory-based educational intervention on oral hygiene behavior and oral health outcomes.

### Citation for Publication

This article was under reviewed for publication.

### Presenting Author Brief CV

I am Rieski Prihastuti, pursuing my doctoral degree at Tokushima University, Japan. I am interested in the field of epidemiology, hence my research interests are not far from oral health in the community. This includes oral disease risk factors, research on vulnerable populations, non-communicable diseases, and oral health behaviors. At the same time, I am a junior lecturer at the pioneering Dental Hygiene Program in Indonesia, where I graduated a decade ago.

In this research, I designed the research as well as collected and analyzed the data.

# Supporting student wellbeing in the oral health curriculum

**Melanie Aley<sup>1\*</sup>**

<sup>1</sup> Sydney Dental School, The University of Sydney, Australia

## Problem Statement

University students are suffering from poor mental health, with reports of psychological distress (Larcombe et al., 2015), financial hardship (Bexley et al., 2013) and struggling to make connections (Biak et al., 2015). When students embark on a dental degree, they subject themselves to the additional, specific stressors of the profession, such as challenging patients, demanding work schedules, and perfectionist ideals (Hopcraft et al., 2023). Anecdotally, oral health students find themselves overwhelmed by the volume of learning and full-time schedule, as well as the need to rapidly develop clinical skills in readiness for clinical placements.

Faculty have an obligation to support the student wellbeing and teach them the skills to maintain the well-being of themselves and colleagues. In Australia, the regulatory authority has determined this is a mandatory competency for newly graduated dental professionals, and as such oral health programs must evidence this for accreditation.

## Purpose / Goals / Objective

The aim of this educational innovation was to embed an evidence-based wellbeing curriculum into the first semester of our Bachelor of Oral Health program, to support students' mental health during their early transition into the program.

## Key Features

It is well established that health professions curriculum is overloaded (Slavin, 2019), so the intention was to design a modest, evidence-based wellbeing curriculum, embedded in existing tutorials. During a series of five one-hour tutorials, across 13 weeks, first-year oral health students engaged in collaborative learning, sharing of personal stories and reflections; nurturing these positive relationships helps develop a sense of belonging (Hattie, 2009). Personal development and wellbeing was facilitated through values affirmation exercises (Johnson, 2022), professional identity activities (Chen et al., 2021), and self-care planning (Black Dog Institute, 2023).

## Impact

An evaluation survey was administered to students for feedback on this unit, encompassing feedback on the tutorials. Using a five-point Likert scale (1=strongly disagree, 5=strongly agree), students indicated they were very satisfied

with this unit, with improvement in mean rating from 3.96, 80% mean agreement in 2022, to 4.24, 88% mean agreement in 2023. Student's qualitative feedback revealed the tutorials helped them learn about themselves and others, developing self-awareness and resilience.

## Conclusions

Following the success of this educational innovation, there are plans to extend the wellbeing curriculum to the subsequent years of program, as students encounter new challenges such as communicating with patients and ethical dilemmas. Involvement from more faculty and near-peer mentors will aim to establish a culture of wellbeing throughout the program, and ensure wellbeing is 'everybody's business'.

## Learning Outcomes

By the end of this presentation, attendees will learn:  
Why it is important to support the wellbeing of oral health students  
How evidence-based wellbeing strategies can be embedded in the curriculum  
The impact of wellbeing curriculum on the student experience

## Citation for Publication

Not applicable.

## Presenting Author Brief CV

Associate Professor Melanie Aley is the Program Director for the Bachelor of Oral Health at the University of Sydney, Australia. She is a registered dental hygienist with a PhD and Masters in Education, and is a Senior Fellow of the Higher Education Academy. Dr. Aley is committed to evidence-based teaching, lecturing in periodontics, professional practice, and personal and professional development. Her work supporting oral health students and their educational experience has been recognised with School and Faculty teaching awards in 2023. She is actively engaged in dental educational research, with papers published on leadership and career development, professionalism, cultural competency, and student experiences on placement, and supervision of post-graduate and higher degree research students. She is a Life Member of the Dental Hygienists Association of Australia.

## How mentoring students shapes early career faculty development

Melanie Aley<sup>1\*</sup>, Tabitha Acret<sup>1</sup>, Ashleigh Ayo<sup>1</sup>, Jacqueline Biggar<sup>1</sup>, William Carlson-Jones<sup>1</sup>, Kyle Cheng<sup>1</sup>, Melinda Lawther<sup>1</sup>, Patrick Westhoff<sup>1</sup>

<sup>1</sup> Sydney Dental School, The University of Sydney, Australia

### Problem Statement

Supporting the development of early career dental faculty is integral to addressing the challenges they face transitioning from clinical practice, improving the quality of dental education, and ultimately contributing to the ongoing advancement of the dental profession. Mentoring oral health students as a faculty mentor potentially yields numerous benefits for the mentor's professional development, including improving leadership and communication skills and exposing faculty to fresh perspectives and opportunities for self-reflection and continuous learning.

### Purpose / Goals / Objective

Very little is known about the role mentoring plays in the development of early career dental faculty. The aim of this program was to explore the impact of mentoring oral health students on the professional development of seven early career dental faculty members.

### Key Features

A mentoring program was established to provide additional support to identified oral health students and help them achieve their goals and succeed in their studies. The program offered an opportunity for both the mentor and mentee to develop their skills and abilities, share their experiences and lessons learned, and gain perspective on recent developments in the field. The mentoring program also enabled faculty to gain coaching, guidance, and advice on how to handle student-related issues.

### Impact

The seven early career faculty members were aged between 29-45 years, each had between 1-15 months faculty experience and had transitioned from roles in clinical practice. Over the course of the mentoring program, each faculty member reflected on their experience using Biggs reflective cycle, and on completion met to discuss experiences and common themes and issues that arose. By exploring the reflective data, we identified common themes that emerged throughout the program. In the beginning, the faculty were unfamiliar with

providing academic mentoring for students, and learned to develop important personal qualities such as openness and patience. Throughout the program, faculty identified a sense of "imposter syndrome" in their role as new faculty. By the end of the program, there were conflicting feelings; guilt associated with time pressures and lack of perceived usefulness, and pride and satisfaction from the rewarding experience.

### Conclusions

Mentoring students can support faculty development, feasibly translating into improved teaching abilities and enhanced interpersonal competencies. On completion of this program, early career faculty identified further opportunities for faculty development, focused mostly on student wellbeing and study strategies.

### Learning Outcomes

By the end of this session, attendees will have learned about:  
The challenges faced by early-career faculty  
How reflection helps faculty learn about their own teaching experiences  
The value of mentoring for early-career faculty development

### Citation for Publication

Not applicable

### Presenting Author Brief CV

Melinda Lawther is a Lecturer for the Bachelor of Oral Health at the University of Sydney, Australia. She is a registered oral health therapist with a Masters in Education. Melinda currently coordinates the units of study Oral Health Clinical Practice 1 & 2 in the Bachelor of Oral Health program, and teaches cariology and case-based learning.

## Teaching Oral Health Literacy

**Lene Madsen<sup>1</sup>, Bo Danielsen<sup>1\*</sup>**

<sup>1</sup> School of Oral Health Care, University of Copenhagen, Denmark

### Problem Statement

Why was the innovation necessary?

Many people need support to improve their own self-care to gain and maintain good oral health. The health system uses a great deal of economic resources to develop evidence-based knowledge in order benefit the treatment of the patients, as well as to maintain the health within the groups that are not already sick. It is however crucial that knowledge is used in the relevant ways, and in the relevant situations. Oral Health Literacy is a concept that has been used in several years within the medical world, to assess patient's abilities and possibilities to understand and use knowledge on how to gain and maintain good health. During the latest years Health Literacy has been used within the dental field, with a special focus on "Oral" or "Dental" literacy. The concept is most often used as an addition to the anamnestic interview, and as such as a supplement and a guidance to the necessary communication skills that are especially needed in the motivation in relation to and the promotion of prevention of oral diseases, - periodontitis and caries.

### Purpose / Goals / Objective

In Denmark we have been engaged in the prevention of oral diseases since the seventies, where free dentistry has been optional to children and youth. Despite this offer, there is still an unacceptable inequality in oral health in Denmark, which points to a need for improvement of oral Health promotion.

### Key Features

How does involvement and empowering transform into oral health literacy? And how do we implement it in our teaching of students?

### Impact

The impact of the program is clearly reported.

At the School of Oral Health Care at the University of Copenhagen, we have through several years taught the students the principles of oral health literacy, to improve the effect of their promotional health goals towards clients. Although it gives the students a relevant knowledge about the various stages of Oral health literacy, we have however

not yet succeeded in implementing the concept to the fullest in their practice. We think that an even more individual, more patient oriented and more patient involving health promotion, based on the knowledge about the patients' oral health literacy can be of great importance to achieve our goals.

### Conclusions

We experience that we need to enhance our work with students' curiosity and communication skills in order to develop their ability to enhance oral health literacy amongst their clients.

### Learning Outcomes

Understand aspect of oral health literacy and how teaching approach can enhance students' competences.

### Citation for Publication

Danielsen B, Baelum V, Manji F, Fejerskov O. Chewing stics, toothpaste, and plaque removal. Acta Odontol Scand 1989;47:121-125.

### Presenting Author Brief CV

Senior Dental Hygienists Educator with a background as a psychologist.

## Historic moment for vulnerable Canadians: dental hygienists, key players in increasing access to oral care

Sylvie Martel<sup>1</sup>, Ondina Love<sup>1\*</sup>

<sup>1</sup>Dental Hygiene, Canadian Dental Hygienists Association, Canada

### Problem Statement

Inequities in accessing oral care is primarily a funding issue—whether it is in the public system or private pay. Oral health professionals in Canada have been actively lobbying for years to improve access to oral health care for vulnerable populations. Meeting the oral health needs of millions of people affected by untreated oral disease is the challenge of the coming years, and prevention is the key to success.

### Purpose / Goals / Objective

The Canadian government is writing a new page in the access to oral health care book with the launch of the new Canadian Dental Care Plan for vulnerable populations of all ages in the low- and middle-income group. This is a big step in the right direction to help reduce the oral health inequities that Canadians face. This plan offers essential oral health services including diagnosis, restorative and preventive therapies delivered by dentists, specialists, dental hygienists, and denturists.

### Key Features

We will examine the dimensions posed by this new program and discuss the impact of these new policies at the national level on access to oral health care and prevention, oral health promotion, workforce, innovation in oral health care delivery models for dental hygienists, dental hygiene education, research, and data collection and surveillance. We must continue toward universal oral health equity.

### Impact

This reform requires an attitudinal shift in how we view the current state of oral diseases and embrace change, challenges, and new ways of practising. In addition to the coverage under this plan, dental hygiene self-regulation and rights to practice independent of a dentist ensure that vulnerable populations have direct access to a dental hygienist for the services they desperately need after too many years of neglect.

### Conclusions

Policy makers of different levels, oral health professionals, other healthcare collaborators, researchers, communities, and patients all have a role to play in better oral health outcomes for all. But most importantly, dental hygienists, as key prevention specialists and primary health care providers, will play a crucial role in increasing direct access to oral care for eligible patients en route towards better oral and overall health outcomes.

### Learning Outcomes

1. Understand the extent of the movement towards oral health accessible to all.
2. Understand the issues involved in advocating for dental hygienists' recognition and inclusion as partners in a national dental care plan.
3. Understand the many layers and complexity of a national dental care plan, from planning, consultation, implementation, and evaluation.
4. Embrace the contributions of other important stakeholders in this reform process.

### Citation for Publication

not applicable

### Presenting Author Brief CV

Ondina Love, CEO of the Canadian Dental Hygienists Association, with over 30,000 dental hygienists and brings 38 years experience to Canada's 6th largest health profession.

## Antibacterial and remineralization effects of orthodontic adhesive containing zinc-phosphate-based glass

**Myung-Jin Lee<sup>1\*</sup>**

<sup>1</sup> Dental hygiene, Baekseok University, South Korea

### Problem Statement

Recently, interest and demand for orthodontic treatment have increased due to improved esthetic and oral health awareness. However, forming enamel white spot lesions is a serious and common complication in orthodontic therapy and can cause functional and esthetic concerns. This can lead to substantial enamel loss, potentially causing irreversible damage that necessitates restorative procedures. It is essential to address and mitigate these decalcifications to minimize the negative impact on tooth structure and preserve long-term oral health.

### Purpose

This study aimed at demonstrating the antibacterial and remineralization effects of the enamel around the brackets to aid reduction in white spot lesions with use of zinc-phosphate-based glass containing orthodontic adhesives.

### Methods

Zinc-phosphate-based glass powder was synthesized, and particle morphology, size, and density were evaluated. Orthodontic adhesives with increasing loading percentage of zinc-phosphate-based glass powder were prepared: ZnPG3 (3 wt.%), ZnPG6 (6 wt.%), and ZnPG9 (9 wt.%). Brackets were bonded on the etched enamel surface and stored in distilled water for 1 h. Following, Shear bond strength along with adhesive remnant index were analyzed. The release of calcium (Ca), phosphorus (P), and zinc (Zn) from adhesive specimens in DW was evaluated after 7, 15 and 30 days of immersion. The remineralization effect was confirmed by microhardness and surface morphology analysis with scanning electron microscopy. The antibacterial effect on *Streptococcus mutans* was confirmed. The data were analyzed by ANOVA and Tuckey's tests ( $p < 0.05$ ).

### Results

The shear bond strength value was observed between 20 and 22 MPa on enamel surface. The concentration of Ca, P and Zn released in distilled water increased with loading

percentage of zinc-phosphate-based glass. The microhardness increased in the experimental groups after immersion in artificial saliva for 7 days. Apatite-like crystal formation was observed after 30 days in the ZnPG 9 group. With increasing proportions of zinc-phosphate glass, the antibacterial activity against *Streptococcus mutans* increased.

### Conclusions

The orthodontic adhesive containing zinc-phosphate-based glass with an optimal shear bond strength performance has antibacterial and enamel remineralization effects, and therefore can aid in prevention of white spot lesions.

### Learning Outcomes

The orthodontic adhesive containing zinc-phosphate-based glass is clinically advantageous as it can promote remineralization and resist the formation of white spot lesions that may occur during orthodontic therapy.

### Citation for Publication

A novel orthodontic adhesive containing zinc-doped phosphate-based glass for preventing white spot lesions. *Journal of Dentistry*.

### Presenting Author Brief CV

Baekseok University  
2020-03-01 to present  
Associate Professor (Department of Dental Hygiene)

Yonsei University  
2018-03-01 to 2020-02-28  
Postdoctor Researcher (Department and Research Institute of Dental Biomaterials and Bioengineering)

Yonsei University  
2014-03-01 to 2018-02-28  
Teaching assistant and Researcher (Department and Research Institute of Dental Biomaterials and Bioengineering)

# Development of force-control guide visual/haptic education tool for calculus exploration education

**Soo-Auk Park<sup>1\*</sup>**

<sup>1</sup> Dental hygiene, Namseoul University, South Korea

## Problem Statement

In order to detect calculus, an appropriate force (< 20 grams) should be applied, However, there is still no tool for students to learn applying appropriate force.

## Purpose / Goals / Objective

In this paper, we developed a visual/haptic education tool that guides the appropriate force required to detect calculus. Moreover, In order to analyze the performance of the proposed tool, we conducted experiments (learning time, failure rate) according to the type of the information (visual and/or haptic information).

## Key Features

The proposed education tool consists of a dental explorer, a light emitting diode (LED), vibration motor, two pressure sensors, and a control board. If the measured force by the pressure sensor is outside of the appropriate force range (< 20 grams), visual and/or haptic information is provided to the user by using the LED and/or the vibration motor.

We conducted a user study to analyze the performance (learning time, failure rate) of the proposed tool. The number of participants is 15 and It is divided into 3 groups by type of information (V: visual information, H: haptic information, VH: visual and haptic information), each group has 5 people.

## Impact

The experimental results showed that as the number of attempts increased to 5, the learning time (success 10 times straight) and failure rate decreased in all groups. Learning time of the V group is decreased from 145 s to 25 s. and failure rate is also decreased from 85 % to 39 %. Group H's learning time and failure rate are decreased from 86 s to 21 s and from 72 % to 30 %, respectively. The VH group's learning time is reduced from 60 s to 19 s, and the failure rate is also reduced from 69 % to 23 %. Based on the result, It shows that providing both visual and haptic information is much more effective than providing only one-type information.

## Conclusions

We developed a visual/haptic education tool that guides the

appropriate force required to detect calculus. Additionally, we conducted a user study to analyze the performance of the proposed tool. The experimental results showed that providing both visual and haptic information is more effective for learning than providing only one-type of information. We expect that the proposed tool will be useful in applying force control of the learner for calculus exploration education. Moreover, we expect that the proposed tool will reduce the burden of the instructors by decreasing learning time of the student.

## Learning Outcomes

We really wanted to have people know necessity of the proposed novel visual/haptic education tools for calculus exploration education. Moreover, based on the result, we could know that providing both visual and haptic information is much more effective than providing just one-type information in learning (learning time, failure rate).

## Citation for Publication

No.

## Presenting Author Brief CV

-Ph.D. in Dental Hygiene, Namseoul University

-Adjunct Professor in the Department of Dental Hygiene, Namseoul University

## The User Perception of Fluoride Mouthwashes: The World Beyond Effectiveness.

**Lars Toonen<sup>1,2\*</sup>, Bregje van Swaaij<sup>1,2</sup>, Mark Timmerman<sup>3</sup>, Fridus Van der Weijden<sup>2</sup>, Dagmar Slot<sup>2</sup>**

<sup>1</sup>Department of Dental Hygiene, Hogeschool Arnhem Nijmegen (HAN), University of Applied Sciences, Nijmegen, Netherlands

<sup>2</sup>Department of Periodontology Academic Centre for Dentistry Amsterdam (ACTA), University of Amsterdam, and Vrije Universiteit Amsterdam, Netherlands

<sup>3</sup>Department of Dentistry, Section Implantology and Periodontology Radboud University, Medical Center (Radboud UMC), Netherlands

### Problem Statement

In order to enhance patient compliance and to offer personalized recommendations regarding fluoride-mouthwash, it is important to gain a deeper understanding of patients' perceptions regarding use of an fluoride-mouthwash.

### Purpose

To assess the user perceptions of different commercially available fluoride mouthwashes

### Methods

A single-blind, randomized clinical trial was conducted. A convenience sample was used among first-year dental hygiene students, a bachelor's program at the HAN University of Applied Sciences in the Netherlands. Participants were randomly assigned to a sequence of six different fluoride-mouthwashes, one of which contained alcohol. Each visit, participants rinsed with one specific mouthwash (15ml) for 30 seconds. After rinsing, participants completed a questionnaire with a visual analog scale. Questions focused on overall taste, mild/pungent feeling, taste duration, foaming effect, burning sensation, sensitivity, numbness, dryness, rinsing time, smell, and color of the mouthwashes. Descriptive analyses and statistical tests regarding differences among and between the mouthwashes were performed.

### Results

Overall, 53 participants completed the study protocol, including nine who did however not rinse with the alcohol-containing mouthwash due to religious reasons. Among the mouthwashes, significant differences were found for foaming effect, sensitivity, rinsing time, smell, and color ( $p < 0.05$ ). Pairwise comparison for smell did not reveal a difference, and foaming was within the acceptance range (low to medium foaming). Colored mouthwashes were more appreciated than transparent solutions ( $p = 0.00$ ). The mouthwash containing essential oils and alcohol produced significantly more sensitivity ( $p = 0.00$ ) and, in general, was experienced as having a significantly longer rinsing time ( $p < 0.05$ ) compared to the non-alcohol-containing mouthwashes.

### Conclusions

There is heterogeneity in user perceptions and preferences for fluoride-mouthwashes, with a significant difference in

foaming effect, sensitivity, rinsing time, smell, and color. Colored mouthwashes are preferred. The mouthwash containing essential oils and alcohol was less appreciated in relation to sensitivity and rinsing time.

### Studies in Progress

Submitted

### Learning Outcomes

Dental healthcare professionals commonly provide advice based on studies that report on the effectiveness of ingredients or products. What we hope attendees will learn from this study is that dental healthcare professionals should incorporate patients' perceptions into their advice, because awareness of the differences in perception could increase daily oral homecare compliance. Dental healthcare professionals can contribute to this process by providing mouthwash samples so that their patient can select their preferred product based on their own experience.

### Citation for Publication

-

### Presenting Author Brief CV

EDUCATION: **Health Sciences for Healthcare Professionals**, Degree: Master of Science. Dental Hygienist, Degree: Bachelor of Science

DENTAL HYGIENE LICENSURE: Date 31-08-2020, Membership Organization: The Dutch Dental Hygienists Association

LEADERSHIP POSITION: Coordinating (and inspiring) role in oral hygiene group Colosseum Dental Benelux

HONORS, AWARDS: Date 2020 Award: Dental hygiene student of the year 2020 (HAN). Date 2020 Award: 2nd Price of the NVM Oral-B study prize 2020. Date 2021 Grant: IFDH 2021 Research Grant. Date 2023 Grant: National Center for Dental Hygiene Research (USA; DHNET). Date 2023 Award: The 2023 Sunstar EDHF European Award of Distinction for New RDH.

WORK EXPERIENCE: Position: Dental hygienist, Position: Lecture - HAN University of Applied Science, Position: PhD-candidate - VU University of Amsterdam

## Dental Detectives: screening children for sleep apnea during routine dental appointments

**Lancette Vanguilder<sup>1\*</sup>**

<sup>1</sup> Owner, Hygienist for Health, USA

### Problem Statement

Pediatric Obstructive Sleep Apnea (OSA) is a prevalent and potentially life-threatening condition that can impact a child's mental and physical health. It is often unrecognized early in life and can affect craniofacial growth, alter functions such as chewing, swallowing, speech and breathing. There are many red flags for disordered breathing that can be identified in the head and neck region, including the oral cavity. The dental team has a unique opportunity to be on the front lines to raise awareness about and screen for sleep-related disordered breathing during routine dental examinations.

### Purpose / Goals / Objective

By the end of this course, participants will have gained the knowledge and skills necessary to identify some of the top red flags and common contributing factors for disordered breathing in children.

This course will cover the latest research on risk factors associated with pediatric OSA, identify common signs and symptoms, assessment tools, and treatment strategies to enhance the participant's ability to recognize and address disordered breathing.

### Key Features

Key features of this course include intra oral photographs, CBCT images and assessment tools. Interactive segments include polling, self-assessments and review of a case study of a 9-year-old with severe sleep apnea that was discovered by a dental hygienist.

### Impact

Dental hygienists can play a vital role as part of a multi-disciplinary team in the early detection of pediatric obstructive sleep apnea. Assessing pediatric patients' habits, growth/development, sleep, and breathing could provide early intervention and assist in the prevention of chronic diseases.

### Conclusions

Dental hygienists could play a crucial role in the early detection of sleep-related breathing disorders in children leading to timely intervention, potentially improving the oral and overall health of children. Continuous training and education would be necessary to keep dental hygienists updated on the latest developments in sleep medicine and pediatric healthcare.

Collaboration between dental professionals and healthcare providers specializing in sleep medicine or pediatrics would be essential. Establishing a clear referral system between dental professionals and healthcare providers would be crucial.

### Learning Outcomes

Upon completion of this course, participants will be able to:

1. Understand the prevalence of pediatric sleep and breathing disorders
2. Recall the signs and symptoms and risk factors of Pediatric OSA
3. Implement pediatric airway assessments
4. Develop treatment and referral strategies

### Presenting Author Brief CV

Lancette VanGuilder, BS, RDH, PHEDH, CEAS is a complete health dental hygienist committed to improving practitioner and patient health while bridging the medical-dental divide. She is an internationally recognized continuing education speaker, a clinician, clinical airway director, podcast host, business owner, non-profit founder and public health advocate Lancette has received numerous awards for her contributions to dentistry. She is passionate about increasing access to care, disease prevention and medical-dental collaboration. Lancette is the current Vice-President of the American Dental Hygienists' Association.

## Development of AI deep learning algorithms for the assessments of clinical dentistry plaque conditions

Jinsun Jeong<sup>1\*</sup>, LING WANG<sup>1</sup>, Da Hyeon Yoon<sup>2</sup>, Kyeong-Seop Kim<sup>3</sup>, Jeong Hwan Kim<sup>4</sup>

<sup>1</sup> School of Nursing and Rehabilitation, Shandong University, China

<sup>2</sup> Dental hygienist, Seoul deep sleep dental clinic, South Korea

<sup>3</sup> Department of Biomedical Engineering, College of Science and Technology, Konkuk University, South Korea

<sup>4</sup> Research and Development (R&D), Medicalpark.Inc., South Korea

### Problem Statement

Medical imaging analysis is an area with the most active integration of artificial intelligence (AI) technology under the goal of developing computer-aided diagnostic systems that assist in the detection, classification, and segmentation of lesions.

### Purpose

The aim of this study is to introduce AI based on deep-learning to develop technology that enables the automated assessment of dental plaque from dental images.

### Methods

We evaluated the plaque by the Quigley-Hein plaque index after the application of a plaque agent to 70 participants. Images were taken before and after dyeing. Labeling of teeth images using LabelMe software and entering tooth numbers and corresponding plaque index upon labeling for their application in deep learning analysis. A statistical comparative analysis of the data analyzed and obtained from the collaborative deep learning and that obtained by dentists was conducted to evaluate the effectiveness of a novel diagnostic model utilizing AI.

### Results

A total of 1400 teeth conducted by 70 people, according to our preparatory experiment, were able to achieve more than 70% accuracy in a plaque index AI model.

### Conclusions

The use of a computer software based on deep learning that utilizes AI to develop technology enables the automated assessment of dental plaque from dental images. It might further add to advancements in digital dentistry and teledentistry.

### Learning Outcomes

Learning about advancements in digital dentistry and teledentistry.

### Presenting Author Brief CV

Main research fields are Telemedicine & Teledentistry in oral health, various Image processing & Three-dimensional image application in Oral & Maxillofacial Diagnostic Science.

## Comparison of four types of oral microbial samples for periodontal evaluation

**Ran Lee<sup>1</sup>, Yuan Park<sup>1</sup>, Ji Young Jung<sup>1</sup>, Kyung A Ko<sup>1</sup>, Jin Young Park<sup>1</sup>, Jung Seok Lee<sup>1\*</sup>**

<sup>1</sup>Periodontology, Yonsei University College of Dentistry, South Korea

### Problem Statement

The oral cavity constitutes a multifaceted microbial environment encompassing both hard tissues (e.g., teeth) and soft tissues (e.g., tongue, buccal mucosa, keratinized gingiva, palate, and tonsils), affording diverse niches for microbial attachment and maturation. Consequently, the microbial composition within specific sites exhibits significant variability. Hence, in the design of research pertaining to the oral microbiome, it is imperative to investigate these distinctions and comprehend the distinctive characteristics inherent in various bacterial samples obtained from different oral sites.

### Purpose

To investigate the microbial composition of four different types of oral samples (saliva, oral rinse, subgingival plaque, and gingival crevicular fluid) along with clinical periodontal parameters.

### Methods

The oral microbiome samples were collected from saliva, oral rinse, subgingival plaque, and gingival crevicular fluid within a cohort of 111 subjects. Periodontal clinical parameters, including probing depth (PD), bleeding on probing (BoP), and clinical attachment level (CAL), were assessed.

Following DNA extraction from the oral microbiome samples, polymerase chain reaction amplification targeted the V3-V4 hypervariable region of the 16S rRNA gene. Subsequently, metagenomic sequencing and bioinformatics analysis were conducted. Alpha diversity analysis, indicating the abundance and evenness of microorganisms present in the samples, utilized phylogenetic diversity. Beta diversity analysis, performed using Bray-Curtis, compared the similarity of microbial communities between samples.

### Results

At the phylum level, Firmicutes emerged as the predominant taxa in Saliva and Oral rinse, contrasting

with Bacteroidetes' prevalence in Subgingival Plaque and GCF. Notably, the distribution of other phyla exhibited similarities between Saliva and Oral Rinse, as well as between Subgingival Plaque and GCF.

The alpha-diversity indices calculated using phylogenetic diversity were highest for GCF, while the lowest sample was Saliva. Principal coordinate analysis (PCoA) using the Bray-Curtis beta diversity matrix showed significant differences in microbial composition in samples collected by all 4 methods ( $p=0.001$ ).

The Red Complex and Orange Complex, recognized as causative agents of periodontal disease, exhibited a significant difference in abundance within the GCF.

### Conclusions

Each oral sample displays a significantly distinct microbial composition pattern based on the acquisition method. Gingival crevicular fluid (GCF) may be considered as the primary optional candidate for bacterial sampling in periodontal evaluations.

### Learning Outcomes

Comparison of oral microbiome composition and distribution of periodontal-associated pathogens by sampling method.

### Presenting Author Brief CV

M.D., Ph.D. student Department of periodontics Yonsei University Dental Hospital, Seoul, Korea

Bachelor's degree Sahmyook health university

Associate degree Sahmyook health university

## Risk of post-operative bleeding after dentoalveolar surgery in patients taking anticoagulants: a cohort study using the common data model

Joo Yeon Lee<sup>1</sup>, Seung Hyun Park<sup>1</sup>, Ui Won Jung<sup>1</sup>, Jae Kook Cha<sup>1\*</sup>

<sup>1</sup> Periodontology, Yonsei university of seoul, South Korea

### Problem Statement

Studies of implant surgeries tend to lead to similar conclusions about the post-operative bleeding rates being very low and fully controllable by local haemostatic measures regardless of the accompanying bone augmentation procedures, although these studies have only included small numbers of patients. There has been little research into the correlation between maintenance of anticoagulants and compliance with bleeding control across all dentoalveolar surgeries, including implant surgeries. Hence, to supplement the existing evidence, we hypothesized that among a large patient cohort taking anticoagulants in a single medical centre, the risk of bleeding complications would be significantly affected by several patient- and treatment-related factors, including the maintenance of anticoagulants. The aim of the current study was to identify risk factors associated with bleeding complications and to determine whether these factors lead to differences in bleeding complication rates.

### Purpose

To determine risk factors associated with post-operative bleeding after dentoalveolar surgery in patients taking anticoagulants.

### Methods

Patients taking the following anticoagulants were included in this retrospective study: (1) platelet aggregation inhibitors, (2) vitamin K inhibitors and (3) direct oral anticoagulants. They were planned to undergo periodontal flap operation, tooth extraction or implant surgery. Patients were divided into two subgroups according to the maintenance of anticoagulants following medical consultation: (1) maintenance group and (2) discontinuation group. The analysed patient-related factors included systemic diseases, maintenance of anticoagulants and types of anticoagulant. Intra- and post-operative treatment-related factors, haemostatic methods and post-operative bleeding were collected for statistical analyses.

### Results

There were 35 post-operative bleeding complications (6.5%) in the 537 included patients: 21 (8.6%) in the maintenance

group and 14 (4.8%) in the discontinuation group. The type of anticoagulant ( $p=0.037$ ), tooth extraction combined with bone grafting ( $p=0.016$ ) and type of implant surgery ( $p=0.032$ ) were significantly related to the post-operative bleeding rate. In the maintenance group, atrial fibrillation (odds ratio [OR]=6.051) and vitamin K inhibitors (OR=3.679) were associated with a significantly higher bleeding risk. Post-operative bleeding events were sufficiently controlled with local haemostatic measures, with no fatal outcomes.

### Conclusions

Patients with maintenance of anticoagulants showed comparable post-operative bleeding rate to patients with discontinuation of anticoagulants ( $p=0.081$ ). The decision to continue anticoagulants should be made carefully based on the types of anticoagulant and the characteristics of dentoalveolar surgeries performed: extraction with bone grafting, multiple implantations and involvement of maxillary arch.

### Learning Outcomes

1. When undergoing dental treatment, even with continuous use of anticoagulants or antiplatelet agents, the frequency of bleeding is low, and bleeding can be sufficiently controlled through local hemostatic measures.
2. In dental procedures where bleeding is anticipated, the continuous use of anticoagulants or antiplatelet agents may be recommended under the condition that a minimally invasive approach is considered, and the healthcare provider can manage bleeding complications.
3. Among patients taking anticoagulants or antiplatelet agents who undergo dental surgery, monitoring the frequency of bleeding can help gather evidence-based data, which can be utilized as clinical data in the future in the field of dentistry.

### Presenting Author Brief CV

dental hygienist

# Dental implant maintenance among Dutch dental hygienists

**Anouk Loeffen<sup>1,2\*</sup>**

<sup>1</sup> Dental Hygiene, HAN University of Applied Sciences, Netherlands

<sup>2</sup> Periodontology, Academic Centre for Dentistry Amsterdam, Netherlands

## Problem Statement

Dental implant maintenance is crucial to obtain and maintain a healthy peri-implant situation. Although it is part of a dental hygienists (DH) scope of practice, the knowledge and common practices among DHs in the Netherlands are unclear. This knowledge could help to better understand the role of DHs in implant care. In addition, the role of the different curricula of the 2-, 3- and 4-year-educated Dutch DHs is unknown.

## Purpose

This study aims to identify the knowledge and common practices regarding dental implant maintenance among DHs working in the Netherlands. Moreover, this study aims to compare the knowledge and common practices between DHs with a 2- or 3-year diploma and DHs with a 4-year bachelor's degree.

## Methods

A web-based survey was distributed by the Dutch Association of Dental Hygienists, by spreading survey QR codes and snowballing. The role of the different DH curricula (2- or 3-year diploma and a 4-year bachelor's degree) is evaluated.

## Results

In total, 165 (diploma:73, bachelor:92) DHs responded. Peri-implant diseases were well-known(98%), indices and clinical symptoms were used to assess peri-implant tissues. A periodontal probe(97%) was used and bone loss was evaluated on radiographs(89%). Treatment was performed supra- and subgingivally(69%), mostly by titanium(45%) or plastic hand instruments(42%). Ultrasonic(52%) and air-abrasive(52%) devices were often used. The recall interval for maintenance was based on a risk-adjusted protocol(70%). DHs with a bachelor's degree received significantly more training compared to DHs with a diploma during primary education ( $p<0.001$ ). Diploma DHs mainly obtained their knowledge from continuing

education( $p=0.04$ ). In general, there was no difference in knowledge or common practices.

## Conclusions

The primary education of DHs with a 2- or 3-year diploma and a 4-year bachelor's varies. Due to the continuing education of diploma DHs, knowledge and common practices generally do not differ. Most DHs in the Netherlands perform implant maintenance. A periodontal probe and radiographs are used for examination. Instrumentation is performed supra- and subgingivally, usually with titanium or plastic hand instruments. The recall interval is based on a patient's risk assessment.

## Learning Outcomes

The attendees gain knowledge about the way DHs from the Netherlands perform peri-implant maintenance. Furthermore, the goal is to let people think about the way they provide peri-implant maintenance and reflect whether this is evidence-based practice or not.

## Presenting Author Brief CV

Anouk graduated in 2020 as a registered dental hygienist at the HAN University of Applied Sciences in the Netherlands, after which she started working in a periodontology and implantology specialist practice. In 2022, she started working as a lecturer in oral hygiene at the HAN in Nijmegen. She completed the master Clinical Health Sciences at Utrecht University in 2023. She was recently enrolled as a PhD student at the Periodontology section of the Academic Centre for Dentistry in Amsterdam.

# The effect of cetylpyridinium chloride compared to chlorhexidine mouthwash on scores of plaque and gingivitis

**Emmy Rowan Windhorst<sup>1</sup>, Maud Joosstens<sup>1</sup>, Eveline van der Sluijs<sup>1</sup>, Dagmar Else Slot<sup>1\*</sup>**

<sup>1</sup> Periodontology, Academic Center Dentistry Amsterdam, Netherlands

## Objective

To evaluate the effectiveness of cetylpyridinium chloride (CPC) and chlorhexidine (CHX) mouthwashes (MW) on plaque and gingivitis scores for patients with gingivitis.

## Search Strategy / Selection Criteria

A comprehensive search of the MEDLINE-PubMed and Cochrane-CENTRAL databases was conducted to identify clinical controlled trials and randomized controlled trials to compare the effect of CPC and CHX MW on plaque and gingivitis scores. The staining index was also evaluated as a secondary parameter of interest. In addition, the risk of bias was assessed.

## Data Collection and Analysis

The extracted data was summarized using a descriptive approach, and whenever possible, a meta-analysis was conducted. The results for brushing and non-brushing studies were presented separately. Grading was applied using the GRADE approach to rate the certainty of evidence.

## Main Results

The search strategy resulted in the identification of 424 unique papers, from which 14 full-text papers providing 18 comparisons were selected. Different concentrations of CPC-MW (0.1%, 0.075%, and 0.05%) and CHX-MW (0.2% and 0.12%) were used. The risk of bias was estimated to be low, moderate, or high for each study. A meta-analysis was performed for the studies using a non-brushing model that evaluated CPC-MW versus CHX-MW in terms of plaque index scores, and a significant result in favor of CHX-MW was observed, with a pooled mean difference of 0.55 (95% CI: 0.19; 0.91),  $p=0.003$ . Further subgroup analysis was performed for 0.05% CPC-MW vs. all CHX-MW; all CPC-MW vs. 0.12% CHX-MW; all CPC-MW vs. 0.2% CHX-MW; 0.05% CPC-MW vs. 0.12% CHX-MW; and 0.05% CPC-MW vs. 0.2% CHX-MW. The only comparison that did not indicate a significant difference was for all concentrations of CPC-MW compared to 0.12% CHX-MW. For brushing

studies, a meta-analysis was performed for plaque and gingivitis index scores. No significant differences were found between CPC-MW and CHX-MW, for the overall and subgroup analyses. The descriptive analysis supports these findings. CHX-MW tends to stain more than CPC-MW.

## Conclusions

There is moderate certainty for a small statistically significant favorable effect of CHX-MW over CPC-MW for plaque control in non-brushing situations but no difference between them for plaque and gingivitis prevention in brushing situations. In brushing situations, CPC-MW can serve as a suitable substitute for CHX-MW.

## Free of Bias

The Cochrane Risk Of Bias tool is applied to estimate the risk of bias of the included studies in the meta analysis.

## Learning Outcomes

The use of CHX mouthwash (CHX-MW) is well established in dental practice, has a robust scientific basis, and is considered the therapy of choice for those based on a chemical agent. However, the use of CHX-MW by itself is restricted due to side effects that reduce patient compliance, such as burning sensation, taste alteration, and extrinsic staining. Thus, there is a need for alternative MWs. Essential-oil mouthwash (EO-MW) is considered as the first-choice alternative to CHX-MW, based on current evidence. A major drawback in the use of EO-MW is its high alcohol content (22-27%), with the alcohol used as a preservative and as a solvent in the preparation. This systematic review evaluates the effectiveness of cetylpyridinium chloride mouthwash (CPC-MW) compared to CHX-MW. Based on this systematic review, CPC-MW can serve as a suitable substitute for CHX-MW in brushing situations.

## Citation for Publication

-



## Presenting Author Brief CV

I am Emmy, born on the 17th of march 1997 and living in the city centre of Amsterdam.

Graduated as dental hygienist in february 2019, Amsterdam. Master Degree in Clinical Epidemiology obtained in september 2023, University of Amsterdam. Started as a PhD student at the periodontology department of the Academic Centre for Dentistry Amsterdam, october 2023. In addition to the PhD program, I am still working two days a week in dental practice as a dental hygienist.

In February 2023, I went with Dutch Dental Care to Kenya for a volunteer project. Here I provided dental care and prevention lessons in schools.



## Sweet Revolution: Xylitol and Pear in Anticariogenic Gummy Candies for Sustainable Oral Health

**Luis Soares Luís<sup>2,3,4</sup>, Marisa Gaspar<sup>2,3</sup>, Ana Cristina Rodrigues<sup>2,3,4</sup>, Henrique Luis<sup>1,2,4</sup>\***

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<sup>4</sup> Faculdade de Medicina Dentária, RHODEs, Universidade de Lisboa, Portugal

### Problem Statement

Dental caries, a prevalent clinical manifestation resulting from multiple factors, including bacterial sugar fermentation, demands the creation of innovative food products with anticariogenic potential and nutritional value. The need to reduce caries risk and increase nutrition value brings the urgency for innovative solutions to address oral health concerns and promote sustainable practices.

### Purpose

This study aims to investigate the potential incorporation of xylitol, a non-fermentable sugar alcohol known for its anticariogenic properties, and nutritional residues from Portugal's 'Rocha do Oeste' pears into gummies. The overarching purpose is to develop a gummy product that not only provides a palatable experience but also contributes to oral health and sustainability.

### Methods

Pears with physical damage or ripe issues were subjected to freeze-drying and milling processes, resulting in a powdered form suitable for gummy preparation. A 32 factorial design was employed, generating nine different formulations with varying concentrations of agar and xylitol. Gummies were meticulously characterized by color and total soluble solids (°Brix). A sensory analysis was conducted to gauge consumer preferences, considering appearance, aroma, taste and texture aspects.

### Results

Gummies containing xylitol exhibited a distinctive browning effect (lower L\* values), indicating potential physicochemical interactions. Notably, attempts to combine the lowest agar concentration (0.5% w/v water) with the highest xylitol concentration (30% w/w) impeded the gelling process, suggesting interference with agar's

gelling effect. Gummies without xylitol displayed a lighter color and around 10% total soluble solids, while those with intermediate and highest xylitol concentrations showed increases to approximately 30% and nearly 45%, respectively. Sensory analysis revealed that gummies with 15% w/w xylitol were preferred by consumers, scoring a global appreciation of 7 (like moderately) on a nine-point hedonic scale.

### Conclusions

Improvements in texture were identified as necessary enhancements. The developed gummies exhibited potential as a viable alternative to traditional sweets, particularly with the incorporation of 'Rocha do Oeste' pear residues and xylitol. Future investigations will focus on evaluating the anticariogenic potential of the most promising formulations against *S. mutans* and *Lactobacillus* sp., presenting an innovative approach to address dental health concerns while contributing to sustainability through the repurposing of pear residues. This study lays the groundwork for the development of oral health-conscious confectionery/food products that align with the broader goal of promoting sustainable and healthier alternatives in the confectionery/food industry.

### Studies in Progress

Currently, our focus extends beyond the sensory and chemical aspects of the developed gummy candies, as we explore into microbiological analysis to characterize the product. This analysis aims to uncover crucial insights into the shelf life of the gummies, assessing microbial stability over time.

Moreover, the microbiological investigation will specifically scrutinize the impact of xylitol on oral bacteria (*S. mutans* and *Lactobacillus* sp). This microbial aspect adds an extra layer to the evaluation of developed gummies, aligning with

our commitment to developing not only a delicious and sustainable treat but also one that contributes positively to oral health.

A preliminary presentation on this subject was done in poster format at the Portuguese Dental Hygienists Association meeting in 2023, with no abstract publication.

## Learning Outcomes

1. Understanding Innovative Solutions in Anticariogenic Food Product Development: Attendees will acquire an understanding of the innovative approaches in developing anticariogenic food products, with a focus on the utilization of xylitol and 'Rocha do Oeste' pear residues in gummy formulations.
2. Insight into Advanced Research Techniques in Food Science and Oral Health: Participants will gain insights into the advanced research methods employed in the intersection of food science and oral health.
3. Recognition of the Role of Food Science in Addressing Global Health and Sustainability Issues: Attendees will learn about the innovative use of food waste (pear residues) in product development, highlighting how environmental sustainability can be integrated into efforts to improve oral health through healthier food alternatives.

## Presenting Author Brief CV

Dr. Luis Soares Luis is Doctor in Public Health, specialized in Health Promotion, has a master's degree in Food Science and Technology and a bachelor's degree in Production Engineering.

Is a teacher at the University and Polytechnic Institute for more than 25 years in Portugal and during a school year in Africa.

Responsible for two research projects, one of which resulted in a doctoral thesis. Collaborator in three funded research projects. Supervised a doctoral thesis in Oral Health Sciences and three master's theses, two of them in Oral Hygiene.

Integrated researcher of ciTechCare - Center for Innovation in Technologies and Health Care (FCT research unit UID 05704 - ciTechCare). Author of several publications in international scientific journals with peer review and presentations at national and international congresses.

His main research interest is in Health literacy and Health promotion/Oral health promotion and Novel Food development and consumption.

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## Developing a prototype for a dental product trading service using the Design Thinking model

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<sup>1</sup> Department of Dental Hygiene, Yonsei University Graduate School, South Korea

<sup>2</sup> Department of Dental Hygiene, MIRAE Campus, Yonsei University, South Korea

### Problem Statement

Secondhand deals offer the opportunity to purchase pre-owned products at affordable prices, and the market size is expanding as the number of consumers engaging in transactions continues to rise despite the COVID-19 crisis. It has benefits for the environment and helps alleviate economic burdens. However, dental instruments purchased by dental hygiene students at high prices for clinical practice and national examinations are often left unused or neglected after graduation. There may be a need for a specialized dental marketplace platform that can be widely used.

### Purpose

Based on the Design Thinking model, dental hygiene students at Yonsei University aimed to identify problems and create a trading service platform for dental professionals or students using the “Empathize-Define-Ideate-Prototype-Test” process.

### Methods

The Design Thinking model has five steps. First, students empathize with problems related to their own experiences. Second, they defined a problem related to the needs of students and majors. Third, they shared and refined their ideas through brainstorming. Fourth, they developed a prototype based on the ideas. Finally, they promoted the prototype on social media to assess consumer response in 2023.

### Results

First, they recognized the inconvenience of having to visit multiple platforms to compare prices when trading used dental supplies. Second, they identified keywords such as “platform” and “used goods”, as well as core values including convenience, high reliability, accessibility, and rational consumption, along with key sentences. Third, they generated ideas such as app name (root market), user

authentication process, product types, and collaboration. Fourth, they developed a prototype that includes user information authentication, registration regulations for non-dental products, and AI models for product pricing. Finally, after researching consumer interest, they granted a patent.

### Conclusions

The use of the Design Thinking model in dental hygiene education can help students develop the ability to creatively and innovatively solve problems centered around human needs. Dental hygiene educators may encourage students to engage in teamwork and interact with their teammates to collectively solve problems.

### Learning Outcomes

The Design Thinking process can create opportunities for change in dental hygiene education through experimentation and failure.

### Presenting Author Brief CV

Dept. of Dental Hygiene, Yonsei University Graduate School, Integrative Program

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Social Dental Hygiene Subcommittee, Korean Society of Dental Hygiene Science, Committee Member

## Relationship between antimicrobial resistance and dental products with chlorhexidine

**Veronika Chuchmová<sup>1\*</sup>**

<sup>1</sup>Department of Public Health, Masaryk University, Czech Republic

### Problem Statement

Scientific studies support an existing relationship between reduced sensitivity to chlorhexidine and certain antimicrobial resistance genes in oral bacteria. However, it is not known whether the use of dental products with chlorhexidine can lead to the development of antimicrobial resistance.

### Purpose

The aim of this study is to evaluate whether long-term use of oral chlorhexidine digluconate products leads to the development of antimicrobial resistance genes in oral bacteria.

### Methods

Saliva samples were collected from 11 healthy respondents in three phases. The first (control) sample was taken before the start of the experiment, the second sample was taken after 14 weeks of using chlorhexidine toothpaste (0.06%), and the third sample was taken after 14 weeks of using regular toothpaste. Under controlled conditions, 33 saliva samples were collected.

### Results

Salivary microbiota analysis was performed by sequencing targeting the V3-V4 hypervariable region of the 16S rRNA gene. An Illumina HiSeq 2500 sequencing platform was used and data were evaluated using MicrobiomeAnalyst. ASV data were evaluated using PICRUST2 to predict the prevalence of antimicrobial genes.

### Conclusions

A comparison of the resistance genes found during all three phases of the research will be made. Based on these findings, it will be confirmed or refuted whether the use of dental products with chlorhexidine increases the risk of antimicrobial resistance.

### Studies in Progress

At the moment, the results concerning the changes at the bacterial level are completed. Taxonomic analysis at the phylum and genus level showed significant differences in the relative abundance of bacteria over time. On the phylum level changes were present in Campylobacterota, Proteobacteria, and Actinobacteriota ( $P < 0.01$ ). A significant increase occurred in the genera Haemophilus, Campylobacter, and Aggregatibacter ( $P < 0.05$ ) in the third phase, when chlorhexidine was no longer used.

The project is in the final phase of evaluation, awaiting the results from PICRUST2, as well as a check-in ResFinderFG v2.0. These results will provide information about antimicrobial resistance.

### Learning Outcomes

Increase awareness of antimicrobial resistance among dental professionals and explain the relationship between antimicrobial resistance and chlorhexidine, which is widely used in dental medicine. If there is interest, I can expand the presentation on this topic.

### Citation for Publication

Long-term effect of chlorhexidine on the oral microbiome CHUCHMOVÁ, Veronika, Kristýna BRODÍKOVÁ, Iva KOTÁSKOVÁ a Martin KRSEK. Long-term effect of chlorhexidine on the oral microbiome. In Forsyth's Annual Scientific Symposium: The Oral Microbiome: Past, Present & Future. 2023.

Saliva Collection: the Influence of Food Consumption and Toothbrushing on the Oral Microbiota CHUCHMOVÁ, Veronika. Saliva Collection: the Influence of Food Consumption and Toothbrushing on the Oral Microbiota. In CED/NOF IADR Oral Health Research Congress Abstract Book. 2023.

Czech and Slovak Dental Students' Oral Health-Related Knowledge, Attitudes, and Behaviours (KAB): Multi-Country Cross-Sectional Study



RIAD, Abanoub, Veronika CHUCHMOVÁ, Ján STANĚK, Barbora HOCKOVÁ, Sameh ATTIA, Martin KRSEK a Miloslav KLUGAR. Czech and Slovak Dental Students' Oral Health-Related Knowledge, Attitudes, and Behaviours (KAB): Multi-Country Cross-Sectional Study. International Journal of Environmental Research and Public Health. Basel: MDPI, 2022, roč. 19, č. 5, s. 1-31. ISSN 1660-4601. doi:10.3390/ijerph19052717.

## Presenting Author Brief CV

Instructor at the Department of Public Health, Faculty of Medicine, Masaryk University, Czech Republic (since 2021)  
Dental hygienist in the dental clinic (since 2015)

RESEARCH INTERESTS: Oral Microbiota | Antimicrobial resistance

PhD student, Hygiene, Preventive Medicine and Epidemiology program, Masaryk University, Czech Republic  
Master's degree, Microbiology and Molecular Biotechnology, Masaryk University, Czech Republic  
Bachelor's degree, Dental Hygiene, Masaryk University, Czech Republic

# Microbial profiles and correlations according to the types of samples from Peri-Implantitis Patients: A Next-Generation Sequencing

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<sup>1</sup> Periodontology, Yonsei University College of Dentistry, South Korea

## Problem Statement

The study tackles a critical challenge in determining the most reliable sample for microbial analysis in peri-implantitis patients. Differences in microbial profiles across various samples (subgingival plaque, peri-implant crevicular fluid, saliva, and inflamed soft tissue) highlight the absence of consensus on the optimal sample type, compromising the accuracy of microbial analysis. This emphasizes the necessity for standardized protocols to assist clinicians in choosing the most representative sample for successful peri-implantitis management.

## Purpose

The purpose of this study is to verify the microbiological correlation among four different types of samples (subgingival plaque, peri-implant crevicular fluid, saliva and inflamed soft tissue around implant) collected in severe peri-implantitis patients by 16S rRNA gene sequencing.

## Methods

Methodology (design, sampling and intervention) is outlined and appropriate for the study.

The following inclusion criteria were applied: Patients presented with  $\geq 1$  implant diagnosed with peri-implantitis (radiographically confirmed peri-implant bone loss  $> 3$  mm and probing depth  $> 6$  mm, bleeding and/or suppuration on probing. After initial screening, professional supra/subgingival teeth/implant cleaning was performed.

After a two-week period, samples were collected from 18 participants according to standard operating procedures. The four types of samples obtained included subgingival plaque, peri-implant crevicular fluid, non-stimulated saliva, and inflamed soft tissue during resective surgery. We conducted analysis using Next-Generation Sequencing (NGS) with the 16S rRNA gene sequencing method.

## Results

Compared to the NGS results of the soft tissue attached to the contaminated implant surface, the most similar was peri-implant crevicular fluid, followed by subgingival plaque, and saliva had a completely different bacterial composition. Peri-implant crevicular fluid exhibited the highest similarity

to soft tissue in terms of alpha diversity, as evidenced by the distribution and median values of the Shannon index ( $p=0.043$ ). This tendency is more pronounced in deep peri-implant pockets ( $>7$ mm).

Comparison of the microbial composition patterns of phylum level among subgingival plaque, peri-implant crevicular fluid, and soft tissue exhibited a similar pattern, whereas saliva showed a lower proportion of Bacteroidetes and an increase in Actinobacteria, Proteobacteria, Firmicutes. Furthermore, when performing linear regression analysis, peri-implant crevicular fluid exhibited a strong positive correlation with soft tissue for *Campylobacter gracilis*, *Campylobacter rectus*, and *Filifactor alocis* ( $R>0.7$ ), while saliva showed a weaker correlation.

## Conclusions

There were significant differences in microbial profile between saliva and the other samples (subgingival plaque, peri-implant crevicular fluid, and soft tissue) in patients with peri-implantitis. Clinically, it is recommended to use at least peri-implant crevicular fluid or subgingival plaque for the microbial analysis of peri-implantitis.

## Learning Outcomes

By comparing various samples in the peri-implantitis patients' gingival oral environment, we can understand the differences in microbial profiles among each sample. This aids in identifying microbial groups uniquely found in specific samples, contributing to the understanding of the disease's distinctive ecological characteristics.

## Presenting Author Brief CV

### Education

Mar. 2014 - Feb. 2018 (bachelor's degree, sunmoon university)

### Training & Employment

Mar. 2018 - Apr. 2020 (Dental Hygienist, DREAM MORE dental Hospital)

Nov. 2020 - Feb. 2021 (Dental Hygienist, LANDMARK dental Hospital)

May. 2021 - (CRC, Department of Periodontics, Yonsei University Dental Hospital)

## Exploring Oral Health Knowledge and Practices among Early Childhood Caregivers. A Cross-Sectional Survey

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<sup>1</sup> Medical College, Aga Khan University Karachi Pakistan, Pakistan

### Problem Statement

Early childhood is a crucial phase of the development of a child's well-being which lays the foundation for their future growth. Lack of good oral practice may cause dental issues during this crucial phase of development and have a long-lasting impact on over well-being of a child.

### Purpose

This study aims to explore oral health knowledge and practices of caregivers of young children, to measure the differences in understanding of oral health care between genders, and to compare specific oral health practices adopted by early childhood caregivers across different professions.

### Methods

A cross-sectional survey was conducted in a tertiary care hospital in Karachi, Pakistan, among a sample of 94 diverse audiences including parents, caregivers, early childhood educators, and healthcare professionals involved in early childhood development. The questionnaire included various types of questions, such as multiple-choice questions and closed-ended questions. Participants were asked about their oral hygiene practices, common dental diseases among children, and knowledge of oral hygiene practices to prevent dental disease. All statistical analyses were performed using SPSS 22.0 (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA). Statistical significance was accepted as  $p \leq 0.05$ .

### Results

The majority of participants were falling within the age range of 31-40 years 59 (62.8%). The largest group of participants consisted of HCPs 47 (50%), followed by parents 34 (36%) and early childhood educators 13 (14%). 44 (47%) participants opt for a child's first dental visit by age one or when the first tooth appears. A significant majority, 79 (84.0%) of participants knew the importance of brushing twice a day and 42 (44.7%) correctly identified

two minutes as the appropriate time. A comparison of oral health knowledge and practices based on age groups or gender indicated no statistically significant differences. However, a comparison based on profession and different roles showed statistically significant differences. 100% of Parents, 84% of early childhood educators, and 72.3% of HCPs indicated the frequency of brushing should be twice a day. ( $p = 0.018$ ). Similarly, 42.6% of HCPs agreed dental visit once a year or every six months is a good approach as compared to parents and ECD educators who indicated

### Conclusions

This study highlights the significance of early childhood oral health knowledge among caregivers of children. The findings emphasize the need for education and targeted interventions to promote better oral health outcomes during the crucial developmental phase of a child.

### Studies in Progress

NA

### Learning Outcomes

Gain insights into the critical role of early childhood oral health care in overall well-being.  
Understand the prevalence of dental diseases during the developmental phase.  
Recognize the existing knowledge and practice gaps among parents, caregivers, and healthcare professionals.  
Learn about gender-based differences in understanding oral health care.  
Acknowledge the need for targeted interventions and educational programs to improve early childhood oral health outcomes.

### Citation for Publication

NA

### Presenting Author Brief CV

Misbah Shams is a dynamic professional currently serving



as a Senior Research Assistant at Aga Khan University. She holds a degree in Dental Hygiene from the same university and is concurrently pursuing a Master of Health Policy and Management. Boasting a solid three-year background as a Dental Hygienist, Misbah is unwaveringly committed to patient oral education, passionately advocating for optimal oral hygiene practices. Her dedication extends to community outreach, where she has demonstrated a proven track record of providing exceptional care and promoting health awareness through screenings. In addition to her role in preventive and therapeutic care, Misbah is also an Early Childhood Development (ECD) educator, embodying a genuine passion for oral health and research pursuits. She is the first author of this study her major contribution to this research includes literature review, designing and developing research protocol, writing manuscripts, data collection, and writing discussion.

## Evaluation of the effectiveness of tongue muscle strengthening and gum chewing training in oral care intervention program based on community care at home for older adults wearing dentures: Case report

Myeong-Hwa Park<sup>1</sup>, Hae-Sil Oh<sup>1</sup>, Ji-Won Park<sup>1</sup>, Min-Sook Jeong<sup>2</sup>, Jong-Hwa Jang<sup>1,2,3\*</sup>

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### Problem Statement

As average life expectancy increases worldwide, Korea is currently progressing at the fastest rate. A decrease in the strength of the tongue, which is one of the main functions of the oral cavity, can lead to a decline in the masticatory function. It may cause dysphagia and even lead to aspiration pneumonia. Ultimately, this leads to a decline in the oral health-related quality of life of older adults.

### Purpose

It aims to improve the quality of life related to oral health in older adults wearing dentures through tongue muscle strengthening and gum chewing training in oral care intervention program based on community care for older adults at home.

### Methods

This study a case report conducted on the evaluation of the effects of tongue muscle strengthening and gum chewing training of oral care intervention program based on community care for older adults in Cheonan-si in South Korea from March 1 to December 31 in 2023. Two participants wearing dentures who complained of discomfort regarding mastication and swallowing were selected. A team visited participant's home a total of 12 times, once a week, and conducted tongue pressure training using Pecopanda. After measuring 3 times using JMS, a tongue pressure meter, the tongue pressure level is confirmed as the maximum value. After performing chewing training using xylitol green gum, the gum was shaped into a ball and spit out onto a tissue, and the shape of the gum was observed.

### Results

Case 1 is a woman who regularly sees the dentist to have new

dentures after extraction. Despite some discomfort in using new dentures, she had high cooperation and practice, and showed a great effect in improving oral muscle function. Tongue pressure increased from 20.3 kPa to 22.1 kPa, and she were able to build the gum into a perfectly spherical shape in the final visit.

Case 2 is a participant reduced activities of daily living(ADL) due to difficulty moving due to various systemic diseases. As a result of the gum chewing training, it was possible to shape the gum into a more complete spherical shape than at the start of the intervention, and the tongue pressure level was similar from 32.8 kPa to 32.6 kPa, which means decrease in tongue strength could be prevented through oral care intervention program at home.

### Conclusions

oral care intervention program based on community care at home was effective in maintaining and improving oral health in older adults wearing dentures.

### Learning Outcomes

It is helpful to researchers who conduct projects regarding oral care intervention program at home or interested in oral health of older adults.

### Presenting Author Brief CV

An author is performing oral care intervention program based on community care for older adults at home since 2022 and researching regarding oral health of older adults as a student of doctoral degree course.

# The association of periodontitis with cardiovascular disease parameters - a synthesis of systematic reviews-

**Lotte Weijdijk<sup>1\*</sup>**

<sup>1</sup>Periodontology, ACTA, Amsterdam UMC, Netherlands

## Objective

What associations can be identified between cardiovascular diseases in individuals with periodontal disease as opposed to those without Period, based on information gathered from existing systematic reviews.

## Search Strategy / Selection Criteria

As part of the search strategy, electronic databases, including MEDLINE-PubMed, and special collections of Cochrane-CENTRAL were systematically queried up to September 21, 2023. The structured search aimed to identify relevant systematic reviews and meta-analyses that address the association of periodontal disease on cardiovascular diseases. The comprehensive search was designed by two reviewers to include all SRs that answer the focused question. Additionally, references cited in the included studies were screened for supplementary SRs and the PROSPERO database was checked for ongoing reviews. No further unpublished work or grey literature was sought.

## Data Collection and Analysis

Papers that primarily evaluate cardiovascular parameters of cardiovascular disease and cardiovascular events in Period patients compared to non-Period individuals were included. Data and conclusions as presented in the selected papers were extracted and the potential risk of bias was estimated. A descriptive analysis of the meta-analysis of the selected studies was conducted. A citation analysis was performed, the Bradford Hill criteria were assessed, and the acquired evidence was graded.

## Main Results

Independent screening of 446 reviews resulted in 19 eligible SRs. These were categorized into 13 reviews evaluating CVD and eight evaluating CVE. In total 27 meta-analysis were obtained, the majority (73%) of reported risk ratios and odds ratios are estimated to show a negligible magnitude of the association of Period and CVD. For CVE 46% of the values of the association are considered to be

of small magnitude as emerging from 23 meta-analysis. For factors such as gender, age, Period severity, smoking status, and geographic region the statistical significance and magnitude of the association varied. Given the results, a definitive confirmation of causality according to the Bradford Hill criteria was not attainable. With moderate certainty, a predominantly negligible to small magnitude of the association of Period and CVD/CVE was identified.

## Conclusions

Based on data collected from existing systematic reviews, the association between Period and CVD/CVE was generally observed to be of negligible to small magnitude. Additionally, the data do not confirm potential causality.

## Free of Bias

The risk of bias was estimated independently by two reviewers rating the reporting and methodological quality of the included SRs and meta-analyses using a combination of items described by the PRISMA and AMSTAR checklist.

## Learning Outcomes

Given the high prevalence of periodontal disease (Period) and cardiovascular diseases (CVD/CVE) and their shared risk factors, there is a growing interest in understanding the association between these conditions.

Regarding the relationship between Period and CVD/CVE, there is moderate certainty indicating a negligible to small association. Therefore the link between Period and CVD/CVE remains inconclusive, and causality in their relationship has not yet been definitively identified.

In absence of an potential association, it remains important to maintaining good oral health for overall well-being, as Period can also negatively affect quality of life.

## Citation for Publication

Weijdijk, L. P. M., Ziukaite, L., Van der Weijden, G. A. F., Bakker, E. W. P., & Slot, D. E. (2022). The risk of tooth loss in patients with diabetes: A systematic review and meta-



analysis. International journal of dental hygiene, 20(1), 145-166.

Weijndijk, L. P. M., Van der Weijden, G. A., & Slot, D. E. (2023). DMF scores in patients with diabetes mellitus: A systematic review and meta-analysis of observational studies. Journal of dentistry, 136, 104628.

Žiūkaitė, L., Weijndijk, L. P. M., Tang, J., Slot, D. E., & van der Weijden, G. A. F. (2023). Edentulism among diabetic patients compared to non-diabetic controls: A systematic review and meta-analysis. International journal of dental hygiene, 10.1111/idh.12762. Advance online publication.

Weijndijk, L.P.M., Slot, D.E., el Kadi, M., van der Weijden, G.A (2023). Comparing endodontic treatment prevalence in diabetes mellitus and non-diabetic patients: a retrospective case-control investigation. Journal of Endodontics. Submitted, accepted pending revisions.

## Presenting Author Brief CV

Lotte Weijndijk graduated as a dental hygienist in 2016. Based on her interest in scientifics, she started the master Evidence Based Practice at the faculty of Medicine of the University of Amsterdam, from which she graduated as a clinical epidemiologist in 2020.

In line with her affinity to scientific research she started in 2021 a PhD programme at the Academic Centre for Dentistry Amsterdam (ACTA) at the Department of Periodontology and the Department of Oral and Maxillofacial Surgery.

Between 2016 and 2022 she gained work experience in various areas. She started working at the Academic Medical Centre. During these years, she developed profound interest in periodontology and dental hospital care specialised in the link between oral health and systemic diseases.

At this moment she divided her time between participating as a volunteer in research and working as a dental hygienist.

# Development and validation of a prevention-focused home-based oral health intervention program based on integrated medical-care support for the elderly.

**Se-Rim Jo<sup>1,2</sup>, Ji-Yun Ki<sup>1</sup>, Jong-Hwa Jang<sup>1,2\*</sup>**

<sup>1</sup>Department of Public Health Science, Graduate school of Natural Science, Dankook University, South Korea

<sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, South Korea

## Problem Statement

The primary health issue among the elderly due to population aging is senescence, with oral senescence being particularly noteworthy. This can lead to discomfort in speech, oral dryness, and a decline in salivary function, resulting in decreased bodily functions and impacting overall health. The importance of oral health management for the elderly is increasingly emphasized.

## Purpose

This study aims to develop and validate a tailored preventive home-based oral health care program based on integrated medical and care support for the elderly in Cheonan City.

## Methods

This study spanned over 8 weeks and aimed to evaluate the effectiveness of an oral health care intervention program on elderly people who received a visiting oral health care service in Cheonan City. The study enrolled 31 participants, and data were collected both before and after the intervention program. The study measured various parameters, such as oral health-related quality of life (measured using GOHAI), swallowing-related quality of life (measured using SMAP), halitosis, oral mucosal moisture, salivary  $\alpha$ -amylase, tongue pressure, plaque index, and changes in the oral microbiome.

## Results

The following are the results of an intervention that was conducted

1. There was a significant improvement in the overall quality of life (GOHAI) after the intervention (M=31.91) compared to before (M=21.66) ( $p<0.001$ ).
2. The analysis of swallowing-related quality of life (SMAP) showed a significant improvement in the score after the intervention (M=28.25) compared to before (M=17.59) ( $p=0.008$ ).
3. The occurrence of halitosis was significantly reduced

after the intervention (M=9.40) compared to before (M=40.81) ( $p<0.001$ ).

4. The amount of oral mucosal moisture increased significantly after the intervention (M=29.29) compared to before (M=25.53) ( $p<0.001$ ).

5. There was a significant decrease in salivary  $\alpha$ -amylase after the intervention (M=13.4) compared to before (M=78.75) ( $p<0.001$ ).

6. There was a significant increase in tongue pressure after the intervention (M=24.63) compared to before (M=19.00) ( $p<0.001$ ).

7. The tongue coating index decreased significantly after the intervention (M=3.16) compared to before (M=5.59) ( $p<0.001$ ).

8. The quantitative analysis of the oral microbiome showed a significant reduction in *T. forsythia* periodontal bacteria after the intervention ( $p<0.042$ ).

## Conclusions

The results showed significant improvements in all measures after the intervention, indicating that the program had a positive impact on oral health and quality of life among the elderly. This suggests that such programs could be beneficial for promoting oral health in community settings.

## Studies in Progress

Completed Study

## Learning Outcomes

The role of the dental hygienist in home-based oral health care for older adults in an integrated medical-care support system.

## Presenting Author Brief CV

Dankook University, Doctor of Public Health (Dental Hygiene)



# Myths regarding oral health and Non-Surgical Periodontal Therapy among pregnant women in Pakistan-Systematic review

**Alwina Ghazi<sup>\*</sup>, Ali Sadiq<sup>1</sup>, Uzra Nasir<sup>1</sup>**

<sup>1</sup> Dental Hygiene, Agha Khan University Hospital Karachi Pakistan, Pakistan

## Objective

The purpose of this review is to find out the literature which discuss or show relationship between prevalence of myths regarding oral health and non-surgical periodontal therapy in pregnant women.

## Search Strategy / Selection Criteria

To avoid any duplication, do an initial search of PubMed or Medline. The databases were searched from January 2000 to December 2023. The search clusters are: oral health, myths, and pregnant women. The search strategy included peer-reviewed (comprehensive).

Sources were selected based on title and abstract examination. There were three reviewers to examine the available literature, and disagreements were settled accordingly.

The initial title screening was performed by the first reviewer. Then the abstract screening was conducted separately by the second reviewer. Where there was disagreement, the reviewers reviewed and settled.

## Data Collection and Analysis

The search results in a PRISMA-ScR study flow diagram. The steps of the data extraction process were maintained and managed using Microsoft Excel 2016.

First of all, the authors summarized the selected study variables in table format. Then the author explored the findings about the prevalence of myths regarding oral health and non-surgical periodontal therapy among pregnant women.

## Main Results

3090 records were checked, and 276 full-text publications were examined. 29 studies were included in the original search. 10 Studies Systematic Review and Meta-Analysis; 7 Studies Randomized Controlled Trials, 5 Studies Cross-Sectional, 2 Studies Descriptive, 3 Qualitative Research Design, 1 Cohort, 1 Experimental.

## Conclusions

Pregnant patients and healthcare providers may face barriers due to misconceptions and attitudes towards oral health and dental care during pregnancy. Pregnant women frequently show limited knowledge emphasizes the critical role that informational and supportive initiatives play. Despite being damaged by systemic and dental disorders, the stability of oral microbiota during pregnancy emphasizes the need for focused therapies. There are effective methods for reducing dental caries in expectant mothers, and in light of the influence of social media, it is critical to address unfavorable attitudes towards oral health. The interdependence of periodontitis, obesity, and dental health during pregnancy is demonstrated by correlations between these variables. Behavioral, educational, and family-centered strategies can greatly enhance the results of dental health. Maternal oral assessments are among the tools that can identify people who are at-risk for prompt referrals. Pregnancy outcomes are positively impacted by integrated dental healthcare, and it is essential to comprehend how oral health problems affect daily life.

## Free of Bias

Three reviewers participated in this review study to avoid any risk of bias.

## Learning Outcomes

The learning outcomes are:

- Understanding of Cultural culture: Be cognizant of how cultural elements impact oral health practices and beliefs in the Pakistani culture during pregnancy.
- Gain a thorough grasp of the risks and implications associated with periodontal disease, pregnancy, and oral health.
- Evaluation of Non-Surgical Periodontal Therapy: Examine the safety and efficacy of non-surgical periodontal therapy with a focus on the outcomes for both the mother and the fetus during pregnancy.
- Finding Knowledge Gaps: Examine the literature and research that are currently available regarding the misconceptions



about oral health and non-surgical periodontal therapy for Pakistani pregnant women.

- Understanding of dental Health Myths: Learn about the most widespread false beliefs that Pakistani pregnant women have about dental health and non-surgical periodontal therapy.

## Citation for Publication

Not Applicable

## Presenting Author Brief CV

I am an independent and self-motivated researcher, educator, and

clinical dental hygienist with around 4 years of working experience in

clinical and community research, dental clinics, and dental hygiene

teaching.

My educational background comprises a forthcoming Master's degree in Health Policy and

Management from Aga Khan University (commencing February 2024), along with a Bachelor's degree in Business

Administration from Hamdard University Karachi, where I graduated with a CGPA of 3.63 in 2022. Additionally, I hold

an Associate degree in Dental Hygiene from Aga Khan University and graduated in 2019 with a CGPA of 3.10.

Throughout my academic journey, I honed my research skills by completing various projects.



## Integration of dental hygienist in family health centers as oral health promoters, in Israel.

**Hadas Goldberg<sup>1\*</sup>**

<sup>1</sup> Dental Hygiene, IDHA, Israel

### Problem Statement

Early childhood caries (ECC) is a severe version of the disease occurring during the earliest years of life when the primary teeth are extremely vulnerable. Worldwide, ECC is one of the most prevalent diseases among children and it affects approximately 15% of Israeli children.

### Purpose / Goals / Objective

Get parents to be involved in the oral health of their young children (6m-6y) , by providing them: tools, knowledge, ability and Fluoride application as part of a meeting with the dental hygienist at a family health center.

### Key Features

Family health center is Service of the Ministry of Health-babies from birth to 6 years old come with there parents to the Family Health Center. The center is managed by nurses and provides growth monitoring, vaccinations and cognitive development services. Integration dental hygienist in the Family Health Center in addition to provide knowledge of oral health from birth and to prevent ECC.

### Impact

This project pilot carried out in the family health centers proved itself both in the responses of the parents and in the ability to provide tools and information to promote oral health from birth. Thus opening the center's doors to dental hygienists as promoters of oral health.

### Conclusions

The dental service was received with the support and sympathy of all parties concerned: public health nurses, the families receiving the service, and the dental staff providing the service.

Prevention of ECC can be achieved through comprehensive programs that promote oral health including a thorough oral examination; caries risk assessment; preventive services; anticipatory guidance on diet, growth and development, and injury prevention; and review of oral health practices, including information on the various modes of fluoride use.

Parental guidance education even before the baby's teeth

have erupted allows the prevention of caries and the healthy and normal development of the children with applying of fluoride application to babies/children at risk of caries development. ECC can begin with the first tooth, and has the potential to affect children's development, health, and quality of life by causing pain, psychological trauma, and physical health complications. In addition, treatment of ECC can cause indirect harm from procedures that require general anesthesia.

This is a program that makes it possible to raise a generation with a high and quality awareness of oral health.

### Learning Outcomes

Integration of dental hygienists in the family health center as a service that promotes the oral health of Israeli children enables health promotion and prevention. The dental hygienist provides information, tools and a personalized response to the children's parents.

Today, a holistic, integrative interdisciplinary approach is prevalent in the world, combining a multitude of professions in one place that provides an integrated response to the child.

This approach occurs in the world of science, medicine, education and more. Recently, a movement has been developing to see the completeness, inclusiveness, unity, affinity and interfaces between the various professions.

### Presenting Author Brief CV

A dental hygienist since 1996 as part of pre-military studies, served as a dental hygienist in the Periodontal department in the army .With master's degree (MA)with a thesis. practice as dental hygienist at a private dental clinic in Tel Aviv. Manages community projects to promote oral health in places where there is no response from the state to provide an oral health education for prevention in order to prove the importance of promoting oral health by dental hygienist until the state recognizes this need for the benefit of the public and the state economy. Serves as the president of Israeli dental hygienist association (IDHA). Some of the goals are to promote the dental hygienist profession at the state level, promote cooperation with paramedical professions and the public oral health in Israel.

## Evaluation of the effectiveness of oral health care intervention program for older adults at day care centers

**Jong-Hwa Jang<sup>1,9\*</sup>, Mi-Gyung Seong<sup>2,9</sup>, Young-Sun Kim<sup>3,9</sup>, Sun-Hee Hwang<sup>4,9</sup>, Min-Young Kim<sup>5,9</sup>, Myoung-Ok Jeong<sup>6,9</sup>, Yu-Mi Kim<sup>7,9</sup>, A-Young Chun<sup>8,9</sup>, Myeong-Hwa Park<sup>1,9</sup>**

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<sup>3</sup> Dental Hygiene, Daegu Health College, South Korea

<sup>4</sup> Dental Hygiene, Shingu College, South Korea

<sup>5</sup> Dental Hygiene, Howon University, South Korea

<sup>6</sup> Dental Hygiene, Baekseok University, South Korea

<sup>7</sup> Dental Hygiene, Ribom Dental Clinic, South Korea

<sup>8</sup> Dental Hygiene, Gachon University, South Korea

<sup>9</sup>., Special Committee on Oral Health for the Elderly and the Disabled, South Korea

### Problem Statement

In an aging society, oral health care intervention programs for older adults are necessary.

### Purpose / Goals / Objective

In order to help establish the scope and role of professional dental hygienists for the elderly, this study evaluated the effectiveness of professional oral health care intervention activities for older adults attending day care centers.

### Key Features

The oral care intervention was performed by a dental hygienist for 50 minutes once a week for 6 weeks. The intervention included individual oral hygiene management (professional toothbrushing, interdental care, mucous membrane care, denture cleaning), mouth muscle massage, and oral exercises to improve oral muscle function.

### Impact

Denture wearers were 51.9%, while 56.8% of respondents brushed their teeth '3 or more times' and 29.7% '2 times' during the day yesterday. Oral aid products in use other than toothbrushes included interdental brushes and dental floss at 20.0% each, toothbrush solution at 30.0%, and others (oral irrigator, tongue cleaner, advanced toothbrush, denture care products) at 36.4%. After applying the oral care intervention program, the simple oral hygiene index (S-OHI) and Winkel Tongue Coating (WTC) index decreased ( $p < 0.001$ ), and oral health-related quality of life (GOHAI) increased ( $p = 0.008$ ). There was no significant difference

in subjective dry mouth before and after intervention ( $p = 0.062$ ).

### Conclusions

Dental hygienists' oral health intervention activities were found to be very effective in improving the health and oral health of older adults. Therefore, active policy support and legal and institutional support must be provided so that the elderly oral care project can be generalized nationwide.

### Learning Outcomes

An oral health intervention program that integrated analysis of the elderly's needs, oral observation, professional oral hygiene management, oral muscle function strengthening training, and oral health education was useful. In order to promote oral health care intervention for older adults, it is necessary to train professional dental hygienists.

### Citation for Publication

None

### Presenting Author Brief CV

The presenter serves as vice chair of the Special Committee on Oral Health for the Elderly and the Disabled of the Korean Dental Hygienists Association, and contributed to the design, data analysis, and interpretation of results of a community care-based oral health care intervention study.

## Interprofessional learning in a student-Run Dental Clinic: a challenge for dental hygiene and dentistry programs

**Maria Kersbergen<sup>1\*</sup>**

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<sup>2</sup> Department of Dentistry, Drs. E. Hissink, Radboud university medical center, Netherlands

<sup>3</sup> Department of Oral Function and Prosthetic Dentistry, Em. Prof. Nico H.J. Creugers, Radboud university medical center, Netherlands

<sup>4</sup> HAN University of Applied Sciences, School of Health Studies, Prof. of Applied Sciences Miranda G.H. Laurant, HAN University of Applied Sciences, Netherlands

<sup>5</sup> Radboudumc Health Academy, Em. Prof. C.R.M.G.(Lia) Fluit, Radboud university medical center, Netherlands

<sup>6</sup> HAN University of Applied Sciences, School of Education, Prof. of Applied Sciences Wietske Kuijer-Siebelink, HAN University of Applied Sciences, Netherlands

### Problem Statement

Developments in oral healthcare require the adaptation of training programmes to equip students with skills essential for professional practice in both profession-specific competences and interprofessional collaborative competences. To understand and further develop collaborative learning and working within a Student-Run Dental Clinic (SRDC), research is needed on dental hygiene and dental students' behaviour and interactions and what mechanisms are involved. In this research, Cultural Historical Activity Theory (CHAT) is used as a conceptual model. Within CHAT, learning and practice are inherently linked, making it an eminently suitable theory for studying workplace learning in the interprofessional setting of the SRDC. To our knowledge, an interprofessional learning environment in oral healthcare has not been studied before through the theoretical lens of CHAT.

### Purpose

The purpose of this study is to gain insight into students' behaviour and interactions from two activity systems (the dental hygiene and dentistry programs) and what mechanisms contribute interprofessional learning in the SRDC.

### Methods

The study employs a focused ethnography using field observations and in-depth interviews, well-suited for investigating specific behavioural phenomena in complex interaction environments. Conducted in the SRDC, five out of 18 clinics were purposively sampled. Students

within these clinics were approached for observation, particularly when collaborating with the other discipline in patient care. Participants include third- and fourth-year bachelor dental hygiene students and first- to third-year master dentistry students who were actively engaged in the SRDC.

CHAT will be employed to understand activity systems in dental hygiene and dentistry programs. Focused on promoting effective interprofessional collaboration in patient care, the planned analysis explores how students use signs and instruments, such as communication tools and patient records. Also social mediators, including rules, program requirements, legal regulations, task distribution, and the student-supervisor community are examined, providing insights into the mechanisms shaping interprofessional collaboration.

### Results

In total 35,91 hours of observations were analysed (19 dental hygiene students, 24 dentistry students) and 28 interviews (13 dental hygiene students, 15 dentistry students) were conducted. We applied an iterative data analysis during the observations and interviews to ensure the richness of the data and to reach data saturation. Currently, data is analysed and will be finished in March 2024.

### Conclusions

Preliminary findings provide insights into student behaviours and interactions in the interprofessional learning environment, emphasizing the value of CHAT as an analytical framework. The presentation aims to connect

theory and practice, offering implications for enhancing interprofessional learning and collaboration in oral healthcare.

## Studies in Progress

The analysis method comprises a set of analysis techniques, tactics, and strategies. The analysis results in both a description and a (preliminary) explanation, grounded in the data. The aim of the analysis is to obtain a “thick description” or a thorough description of the data on the basis of which the research question can be answered and will be available by the Symposium. We are currently actively working on the completion of the analysis process. Data analysis has been started as an iterative process during the period of observations and interviews. After observations, fieldnotes were shared with members of the research team. The discussions and reflections with members of the research team provided content to make the in-depth interviews more meaningful. To unravel the quantity of data, we started by segmenting the data through coding. The interview transcripts and fieldnotes, were coded in Atlas.ti (version 23.3.4). First a template with thematic codes derived from the research question and topic list observations and the interview guide was used. The first (number) interviews were coded and discussed by two researchers. During coding, text fragments that were relevant were added via open coding. Codes were compared to see if they were similar and were then merged into (new) themes or categories. During the coding process we regularly discuss our findings with the research team. The analysis method involves various ways of interpreting the data in the context of the research question and the conceptual model (CHAT).

## Learning Outcomes

- to gain insight into students’ behaviour and interactions from two activity systems (the dental hygiene and dentistry programs) and what mechanisms contribute in the interprofessional learning environment of the SRDC.
- to gain insight in the value of using the Cultural Historical Activity Theory (CHAT) in the interprofessional learning environment
- to gain insight in education research about interprofessional education

## Citation for Publication

Not applicable

## Presenting Author Brief CV

Maria J. Kersbergen graduated as a dental hygienist (in 1985) from the University of Applied Sciences in Utrecht, The Netherlands and holds an MSc in Teaching and Learning in Higher Education from The VU University Amsterdam, The Netherlands. During her career, she has lived and worked in different places and practices. She is senior Lecturer in the Dental Hygiene program, School of Allied Health, HAN University of Applied Sciences, Nijmegen, The Netherlands. She is a PhD candidate at Radboud university medical center, Radboud Institute for Health Sciences, Department of Dentistry, and at HAN University of Applied Sciences, School of Health Studies Research group Organisation of Healthcare and Social Services, both in Nijmegen, The Netherlands.

## Interprofessional collaborative practice: working together, working better

**Roisin Mcgrath<sup>1\*</sup>, Kelley Graydon<sup>2</sup>, Anthea Cochrane<sup>2</sup>**

<sup>1</sup> Melbourne Dental School, The University of Melbourne, Australia

<sup>2</sup> School of Health Sciences, The University of Melbourne, Australia

### Problem Statement

There is a need for interprofessional collaborative practice (ICP) to enhance the delivery of person-centred care and to improve patient and health professional experience. Oral health training programs should adopt a philosophy of ICP preparing graduates for working with multiple healthcare providers from different professional backgrounds.

### Purpose / Goals / Objective

The purpose of this project was to pilot a rural outreach screening model involving audiology, oral health therapy and optometry students from the University of Melbourne, Australia. It aimed to bring essential screening services to rural schoolchildren and to create an opportunity for students from different health disciplines to work collaboratively together.

### Key Features

Two primary schools in rural Victoria (Australia) were recruited by a Department of Education Aboriginal Education Support Officer, and consent obtained for schoolchildren to participate in 'eyes, ears and mouth' checks. Four students and one supervisor from each discipline (audiology, optometry, and oral health) provided outreach screenings over a 2 ½ day period. Individual screening reports were sent home to parents/carers indicating if follow-up care was required. Health students completed a feedback survey about their experience during the pilot project. Supervisors provided an activity/screening report for each discipline and written feedback about the pilot project.

### Impact

Over 120 rural schoolchildren received audiology, dental and optometry screenings. About 40% required follow-up and were referred to local health care providers. Feedback from health students (83%) indicated this rural placement was valuable to their clinical and communication skills development. The strengths of the pilot included opportunities to work with and learn about other health disciplines and interacting with the schoolchildren;

challenges mostly related to the travel time to the rural location.

### Conclusions

In addition to enhancing health students' learning experience, this ICP pilot increased access to essential health screenings for rural schoolchildren by bringing services to them in their school. This pilot outreach program has informed the development of further ICP activities for University of Melbourne health students in rural and metropolitan Victorian communities.

### Learning Outcomes

1. Learn about the role of interprofessional collaborative practice in enhancing person-centred care provision
2. Learn how interprofessional collaborative practice can be incorporated into oral health student education
3. Learn how oral health students can be involved in providing outreach screenings in rural areas

### Presenting Author Brief CV

Dr Roisin McGrath DipDH DipDT GC-INTLHL GCertUniTeach MPH PhD

Roisin has worked for over 30 years in the field of oral health and is a qualified dental assistant, dental hygienist and dental therapist. She has worked extensively in private and public dental settings, and is experienced in learning and teaching, research, oral health promotion, dental public health, program management, workforce development and training, supporting organizational change, and implementing new models of care.

Roisin is the Director Bachelor of Oral Health Program at the University of Melbourne and Population Oral Health Consultant at Dental Health Services Victoria. She is also a licenced Mental Health First Aid instructor and delivers MHFA training to people in the oral health sector.

# Reimagining Global Oral Health: Utilizing Caries Risk Assessment Tools for Oral Health Transformation

**Melody McGee<sup>1</sup>, Kristen Simmons<sup>1\*</sup>**

<sup>1</sup> Dental Health Studies, Pacific University, USA

## Problem Statement

Dental decay, a non-communicable oral disease remains a prevalent health concern, impacting 3.5 billion people worldwide. Over the past decade, there has been a noteworthy shift towards optimizing oral health risk prevention interventions rather than traditional surgical interventions. With a continued emphasis on individualized risk-based preventative treatment with consistent use of caries risk assessment tools (CRA), ensuring treatment is tailored to individual needs. Beyond delivering appropriate care it also serves as a crucial public health policy strategy to measure oral health improvements over time. Pacific University School of Dental Hygiene Studies in collaboration with CareQuest Institute for Oral Health calls attention to the utilization and prevention measures associated with caries risk assessment (CRA) tools across the United States of children 0 to 18 years of age.

## Purpose / Goals / Objective

This project purpose was an environmental scan across the United States, investigating a research database of dental claims in 2022 provided by a third party to measure the use of a caries risk assessment (CRA), low, moderate and high and if a companion oral hygiene prevention code was recorded at a dental examination visit. The goal of the scan was to investigate the use of caries risk assessments to optimize the use of health risk assessments for the timely and equitable distributions of oral health interventions and quality improvement efforts across the United States.

## Key Features

9,351,848 patient exam claims from 2022 revealed almost 90% of patients received a preventative treatment. Still, less than 30% of patients had a corresponding caries risk assessment code documented to provide an individualized plan for the prevention treatment rendered.

## Impact

Non-communicable diseases are a major global health

concern. Risk factors can be detected with risk assessment tools to tailor the interventions to the patients in a timely and equitable way. A caries risk assessment is a vital step in the transformation of moving towards mitigation of a preventable non-communicable disease worldwide.

## Conclusions

Health risk assessments help identify health risks and issues at an early stage and provide patient-appropriate education and preventive services. Dentistry has a CRA tool, which can identify behaviors and lifestyles that contribute to a higher risk. The widespread use of the CRA still lacks implementation across the United States. Health risk assessments are essential tools to understand the health of the population and develop targeted interventions and policies.

## Learning Outcomes

Identify the incidence of global dental decay with minimal recorded improvement over the past 20 years  
Acknowledge the need for measurable individualized oral health risk prevention protocols  
Illustrate Caries Risk Assessment (CRA) tools and appropriate utilization for caries management  
Discuss the opportunity for system-wide transformation in the use of risk assessment tracking and prevention treatments globally

## Presenting Author Brief CV

Education

• Master's in Business Association. Colorado Tech University, Colorado Springs CO

# A Study on the Clinical Application of Comprehensive Dental Hygiene Care Process

**Geum-chae Youn<sup>1</sup>, Hye-eun Jo<sup>1\*</sup>**

<sup>1</sup> dental hygienist, Gwangju Women's University, South Korea

## Problem Statement

The Comprehensive Dental Hygiene Care (CDHC) process is a framework through which dental hygienists provide prevention, treatment, and care for oral diseases in patients. However, the current clinical environment in dental healthcare institutions in Korea tends to prioritize treatment, resulting in a limited application of CDHC in clinical practice. Therefore, there is a need for specific research on the current status and strategies for implementing CDHC in dental healthcare institutions in Korea.

## Purpose

This study was conducted to derive practice-oriented components and related devices for the CDHC of dental hygienists and to provide basic data for the spread of CDHC application in dental medical institutions.

## Methods

third Delphi survey was conducted with experts to derive the components of the Comprehensive Dental Hygiene Care (CDHC) process and related materials. The general characteristics of dental hygienists and the application status of CDHC were analyzed in terms of frequency and percentage. The perceived need and willingness to apply CDHC components and related materials according to the general characteristics were analyzed using independent-sample t-tests.

## Results

Delphi survey results revealed the components of the Comprehensive Dental Hygiene Care (CDHC) process. For the examination and diagnosis phase, 11 items related to medical history, 3 items related to dental history, 5 items for oral hygiene practices, 7 items for dental conditions, 3 items for occlusal conditions, 6 items for periodontal conditions, and 3 items for other examinations were identified. In the planning and execution phase, 3 items were identified for individuals with healthy gums, and 4 items were identified for those with gingivitis and mild periodontitis. In the evaluation phase, 7 items were identified for individuals with mild periodontitis, 5 items for patient education, and a total of 27 items for CDHC-related materials. The perceived need and willingness to apply CDHC

components and related materials according to the general characteristics of dental hygienists varied based on their profiles. Higher levels were observed among dental hygienists working in dental clinics, those with a university degree or higher, those responsible for counseling and managerial tasks, those holding a team leader position or higher, and those with more than 6 years of current work experience ( $p < 0.05$ ).

## Conclusions

Through the Delphi survey, it was confirmed that dental hygienists express a high level of need and willingness to apply the practice-oriented components and related materials derived for each stage of the Comprehensive Dental Hygiene Care (CDHC) process.

## Learning Outcomes

The significance of this study lies in providing foundational data for the utilization of Comprehensive Dental Hygiene Care (CDHC) by dental hygienists by deriving practice-oriented components and related materials for each stage of the CDHC process, which had not been addressed previously. Furthermore, analyzing the perceived need and willingness of dental hygienists practicing in dental clinics and offices for the CDHC process components and related materials based on the results obtained from the Delphi study allowed for the exploration of CDHC application strategies. However, there are limitations to the generalizability of the research findings as the study focused on dental hygienists in specific regions. Future research efforts should consider conducting additional studies to assess the clinical application effects of the CDHC process using the derived items from this study.

## Presenting Author Brief CV

Dental hygienist Geum-chae Youn who shares knowledge and learning.

\*Work Experience

275 Dental Oral Care Center Director.

Adjunct Professor in hallym polytechnic university.

Advanced care Director.

\*Education

Graduated from Gwangju Women's University with a Master's degree in dental hygiene

# Contamination on goggles surface proceeded by Air-abrasion as maintenance and a way of the solution

**NOBUKO Kashiwai<sup>1</sup>\***

<sup>1</sup> Head quater, HAG Creation Ltd., Japan

## Problem Statement

Under the influence of COVID-19 pandemic, dental co-workers should be required to prepare ideal situation of infection control system at each facility.

## Purpose / Goals / Objective

We must consider about cost management and concern for the environment as the same as infection prevention. So, I tried to define the risk of splash occurred by Air-abrasion as therapy on maintenance and find out the solution that reduce volume of medical waste instead of disposable wiping device.

## Key Features

I selected maintenance patients, 2males and 8females, and performed Air-abrasion for biofilm management using Varios Combi Pro produced by NSK, Japan. During the therapy, putting goggles should be required to the operator as personal protective equipment, so I used Safety eye-wear Model-507 produced by Univet s.r.l., Italy. I measured A3(adenosine monophosphate, adenosine diphosphate and adenosine triphosphate) using Lumitester Smart and LuciPac A3 Surface produced by Kikkoman Biochemifa Company to digitalize splash contamination occurred from oral cavity to the left side of goggles surface, and the right side was wiped up with wet Micro-fiber cloth, Toraysee CE produced by TORAY for cleaning, and measured A3 as the same as the left side. I compared Plaque Control Record of 10patients and the number of A3 on the left side of goggles, each piece of Toratsee CE were washed with neutral detergent for re-use, and they were measured remained protein by extraction method OPA(O-Phthalaldehyde).

## Impact

Data of PCR and the left side on goggles have a positive correlation, so severe PCR presents high score of contamination with A3. After wiping with Toraysee CE, reduction rate on the right side of goggles was 88.77%, the statistically significant at the 5percent level were admired.

The average on the left and right side was  $1669.5 \pm 1474.6 \mu\text{g}$  and  $57.5 \pm 69.0 \mu\text{g}$ , it means negative correlation of the statistically significant at less than the 5percent level with Mann-Whitney U test.

## Conclusions

Correlation between PCR and contamination was defined. Air-abrasion is an essential treatment item, but operators should put on suitable personal protective equipment to protect from droplet precaution. On the other hands, we set up our mind to reduce medical waste from SDGs point of view, the way of cleaning for several times with Toraysee CE is very effective.

## Learning Outcomes

I strongly hope that all of attendees recognize the risk with splash from oral cavity and an importance of infection control under some kinds of social consideration.

## Presenting Author Brief CV

1960 Birth in Tokyo  
1979 Graduation of Dental Hygienist School of Tokyo Dentists Association  
2011 Graduation of Master course of Tohoku University Graduate School of Dentistry, Master degree of Oral Science Entrance into Doctor course of Tohoku University, Graduate School of Dentistry  
2015 Clinical study in Milan, Italy for 4months

## Memberships in Professional Societies

Active Member of European Association for Osseointegration, Japanese Society of Oral Implantology, Japanese Association for Operative Medicine, Japanese Society for Medical Instrumentation, Japanese Association for Oral Infectious Diseases, Japan Dental Hygienists' Association



## Effect of dental hygienist grit on dental hygiene job performance : mediating effect of job satisfaction and job commitment

Jinju Yang<sup>1</sup>, Sangeun Moon<sup>1\*</sup>, Boram Lee<sup>1</sup>, Huijeong Kim<sup>1</sup>

<sup>1</sup> Dental hygiene, Kwangju Womens University, South Korea

### Problem Statement

This study aims to identify the effects of dental hygienists' grit, job satisfaction, and job commitment on dental hygiene job performance, and to identify the mediating effects of job satisfaction and job commitment on the relationship between grit and dental hygiene job performance, thereby providing basic data necessary to improve dental hygienists' dental hygiene job performance.

### Purpose

The purpose of this study was to determine the effects of dental hygienists' grit, job satisfaction, and job commitment on dental hygiene job performance and the mediating effects of job satisfaction and job commitment on the relationship between grit.

### Methods

From May 25 to June 13, 2022, the researcher collected and analyzed data from 213 dental hygienists working at dental hospitals and clinics. For the data analysis, SPSS Statistics 21.0 was applied to conduct a t-test, one way ANOVA, Pearson's correlation analysis, and hierarchical regression analysis.

### Results

Grit was in charge of preventive work (scaling) ( $3.38 \pm 0.56$ ,  $p < 0.05$ ), and the lower the stress ( $3.39 \pm 0.57$ ,  $p < 0.05$ ), the higher the grit. Dental hygiene job performance was higher when they worked in Gwangju, Jeolla-do ( $3.88 \pm 0.50$ ,  $p < 0.01$ ), and dental clinics ( $3.85 \pm 0.53$ ,  $p < 0.01$ ). Job satisfaction ( $3.45 \pm 0.49$ ,  $p < 0.05$ ) and job commitment ( $3.28 \pm 0.56$ ,  $p < 0.05$ ) were high, as they had at least a bachelor's degree. Less job stress was associated with higher job satisfaction ( $3.71 \pm 0.42$ ,  $p < 0.001$ ) and job commitment ( $3.52 \pm 0.65$ ,  $p < 0.001$ ). As a result of analyzing the correlation between dental hygienists' grit, dental hygiene job performance, job satisfaction, and job commitment, all were positive correlations. The higher the grit, the higher the dental hygiene job performance, job satisfaction, and job commitment, and the higher the dental hygiene job performance, the higher the job satisfaction, job commitment was also found to be high.

In addition, there was a correlation that the higher the job satisfaction, the higher the job commitment. Job satisfaction and commitment had partial mediating effects on the relationship between dental hygienists' grit and job performance.

### Conclusions

It is necessary to develop a program that helps improve grit in dental hygienists to strengthen their psychological resources, job satisfaction, and job commitment. Therefore, in follow-up studies, it is necessary to expand the study population and conduct repeated studies targeting clinical dental hygienists in each region and applying various variables. In addition, it is suggested that the concept and definition of dental hygiene performance needs to be clearly defined at the association and academic level.

### Studies in Progress

Not applicable

### Learning Outcomes

To determine the effect of dental hygienists' grit on dental hygiene job performance by mediating job satisfaction and job commitment.

### Citation for Publication

J Korean Soc Dent Hyg 2022;22(5):365-74

Effect of dental hygienist grit on dental hygiene job performance : mediating effect of job satisfaction and job commitment

### Presenting Author Brief CV

- Bachelor of Science in Dental Hygiene, Kwangju Women's University
- Master of Science in Dental Hygiene, Kwangju Women's University
- Doctor of Dental Medicine, Chonnam National University(in registration)
- Adjunct Professor, Department of Dental Hygiene, Kwangju Women's University
- Clinical Dental Hygienist

# The work experiences of a cohort of New Zealand oral health therapists

**Jane Choi<sup>1\*</sup>**

<sup>1</sup> Faculty of Dentistry, Oral Sciences, University of Otago, New Zealand

## Problem Statement

In New Zealand, the previously separate dental hygiene and dental therapy qualifications have been combined into 'Oral Health' degrees at the Auckland University of Technology (since 2006) and the University of Otago (since 2007). Graduates now register with the New Zealand Dental Council in the Oral Health Therapy (OHT) scope of practice. Oral health therapists are a growing workforce with a wider scope of practice compared to dental therapists and dental hygienists alone. The previous literature shows little about the work experiences, career pathways, and career satisfaction of the New Zealand oral health therapy workforce.

## Purpose

To explore the work experiences of the first cohort of 'Oral Health' graduates from the University of Otago, New Zealand who are registered as oral health therapists.

## Methods

This qualitative research involved one-to-one semi-structured interviews with members of the 2009 cohort of University of Otago 'Oral Health' graduates. Data were transcribed and analysed by hand, using an inductive thematic approach. Data were categorised into five main themes, and these themes were further explored to produce common topics which became the sub-themes.

## Results

Five main themes from the analysis included: career pathways, employment environments, career satisfaction, work and lifestyle balance, and overall goals. Participants expressed a high level of satisfaction with their current jobs and with the Bachelor of Oral Health programme. Their employment environment has improved over time and participants have been able to achieve a good balance between work and lifestyle according to their personal preferences and circumstances. However, some lack of understanding of the oral health therapist's role and

utilisation within private dental practice still exists.

## Conclusions

This study gives insights into the career pathways and practising conditions of New Zealand's Oral Health Therapy workforce which have implications for further education development and workforce policy. Further research with a larger number of participants focusing on all 'Oral Health' graduate cohorts from both the University of Otago and Auckland University of Technology is recommended.

## Studies in Progress

N/A

## Learning Outcomes

Attendees will be able to understand the roles of Oral Health Therapists in New Zealand, the work experiences of a cohort of New Zealand oral health therapists and the strengths and weaknesses of the oral health therapy workforce in New Zealand.

## Citation for Publication

Choi, Y. J. (2021). The work experiences of a cohort of New Zealand oral health therapists (Dissertation, Master of Oral Health). Retrieved from <http://hdl.handle.net/10523/12338>

## Presenting Author Brief CV

Jane Choi graduated with a Bachelor of Oral Health (2011) and a Master of Oral Health (2021) at the University of Otago and has been practising in New Zealand as a registered Oral Health Therapist for 12 years in the private and public sectors. She is currently working as a Professional Practice Fellow in the Bachelor of Oral Health programme in the Faculty of Dentistry, University of Otago. Her main responsibilities are teaching oral health students in clinic and non-clinic environments. Jane has particular interests in clinical research around the oral health therapy workforce and clinical dentistry.

# An Exploratory Investigation of Factors Affecting Oral Cancer Treatment on Oral Health-Related Quality of Life: A Prospective Cohort Study

**Yuhei Matsuda<sup>1\*</sup>, Tatsuo Okui<sup>1</sup>, Hiroto Tatsumi<sup>1</sup>, Satoe Okuma<sup>1</sup>, Takahiro Kanno<sup>1</sup>**

<sup>1</sup> Department of Oral and Maxillofacial Surgery, Shimane University Faculty of Medicine, Japan

## Problem Statement

Postoperative oral dysfunction in oral cancer patients is known to occur after treatment.

## Purpose

This study was conducted to elucidate the relationship between postoperative oral dysfunction and oral health-related quality of life (OHRQoL) after oral cancer treatment using single-center prospective cohort data.

## Methods

Subjects were oral cancer patients who treated at the Shimane University Hospital, Department of Oral and Maxillofacial Surgery/Oral Care Center from September 2019 to December 2023 and gave consent to participate in this study. All patients underwent comprehensive oral function measurement and questionnaire survey using Geriatric Oral Health Assessment Index (GOHAI) before and after the primary treatment for oral cancer. Data on background factors were also obtained from medical records. Statistical analysis was performed by multiple linear regression analysis with each GOHAI subscale as the objective variable followed by structural equation modeling. This study was conducted with permission from the Medical Research Ethics Committee, Shimane University Faculty of Medicine (number 4041).

## Results

A total of 95 oral cancer patients (68 men [71.6%] and 27 women [28.4%], mean age 70.82 [standard deviation: 12.9]) were enrolled. The most common primary tumor site was tongue in 42 cases (44.2%), and the cancer stage was advanced cancer in 62 cases (65.3%). Swallowing function correlated to the GOHAI total score ( $\beta$ : -0.01,  $P < 0.01$ ), physical function ( $\beta$ : -0.04,  $P = 0.01$ ) and psychosocial function ( $\beta$ : -0.02,  $P < 0.01$ ). Tongue pressure correlated to the pain and discomfort of GOHAI ( $\beta$ : 0.14,  $P = 0.04$ ).

## Conclusions

Since swallowing function and tongue pressure were correlated to the OHRQoL of patients after oral cancer treatment, it was especially important to maintain the oral function during the transport phase of swallowing.

## Learning Outcomes

Management of oral function in patients with oral cancer

## Presenting Author Brief CV

### Educational Background

2012 Tokyo Medical and Dental University, Department of Oral Health Care Science (RDH)  
2014 Tokyo Medical and Dental University, Master's program (MSc)  
2018 Tokyo Medical and Dental University, Doctoral program (PhD)  
2022 Hiroshima University, Master of Public Health program (MPH)

### Work Experience

2014 NTT Medical Center, Department of Oral and Maxillofacial Surgery  
2015 Kyushu Dental University (Assistant Professor)  
2018 Shimane University Hospital (Assistant Professor)  
2020 Visiting Researcher, Peradeniya University Center for Research in Oral Cancer  
2022 Tokyo Medical and Dental University (Lecturer)  
2023 Shimane University Hospital (Lecturer)

### Specialty

My clinical interests include oral supportive care for cancer patients and swallowing rehabilitation for oral cancer patients. My research interests include clinical epidemiology studies of postoperative oral dysfunction in oral cancer patients and epidemiological studies of oral cancer, quality of life (QoL) and social determinants.

## Assessing biofluorescence technology for clinical occlusal caries diagnosis

Hyung-Suk Lee<sup>1</sup>, Jun-Hyuk Choi<sup>1</sup>, Chae-Hyun Lee<sup>1</sup>, Yeon-Ji Cho<sup>1</sup>, Eun-Song Lee<sup>1</sup>, Hoi-In Jung<sup>1</sup>, Baek-Il Kim<sup>1\*</sup>

<sup>1</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea

### Problem Statement

Biofluorescence (BF) is the phenomenon in which certain conditions absorb short wavelength light and emit fluorescence at a different wavelength, providing valuable insights for diagnostic purposes. The BF-based caries detection method enables quantification of early-stage dental caries, highlighting demineralized tooth area as a loss of BF and expressing red BF in regions where bacteria have accumulated due to metabolic byproducts. Although the currently available BF-based intraoral camera has been developed with automatic focusing, making it a useful tool for capturing individual teeth in clinical settings, research assessing its clinical utility for occlusal caries is lacking.

### Purpose

This study aimed to validate the diagnostic ability of a BF-based intraoral camera for detecting early-stage noncavitated occlusal caries.

### Methods

A total of 436 teeth were assessed from 61 of 65 participants aged 20–60 years. After professional tooth cleaning, a trained examiner examined the occlusal surfaces visually using the international caries detection and assessment system (ICDAS) criteria. Subsequently, BF images of the occlusal surfaces were captured using a BF-based intraoral camera, Qraypen C (AIOBIO, Seoul, Korea), under identical conditions. The relative BF loss ( $|\Delta F|$ ) and the difference in red BF ( $\Delta R$ ) between sound enamel and occlusal caries areas were calculated. For both parameters, sensitivity, specificity, and the area under the receiver operating characteristic curve (AUROC) were calculated at the enamel and dentin caries levels for three different thresholds of ICDAS codes: 0 vs. 1–4 (D1), 0–2 vs. 3–4 (D2), and 0–3 vs. 4 (D3).

### Results

The ICDAS results were as follows: 140 sound (code 0), 246

early enamel caries (codes 1–2), 29 moderate enamel caries (code 3), and 21 dentin caries (code 4).  $|\Delta F|$  and  $\Delta R$  values exhibited significant increases as caries severity increased, with correlation coefficients of 0.81 and 0.60, respectively ( $p < 0.001$ ). Particularly, both parameters exhibited excellent AUROC ranged (0.91–0.97) for detecting occlusal caries at all caries levels. The research findings revealed that the BF parameters analyzed solely through images exhibited similarity to ICDAS results. Consequently, the process of dental hygienists acquiring and analyzing BF images of occlusal surfaces can assist in the dentist's caries diagnostic procedure.

### Conclusions

This study has shown that a BF-based intraoral camera effectively detects occlusal caries with superior diagnostic capabilities in real clinical settings. Diagnosing occlusal caries with BF-based images suggests the potential for future remote diagnostics (tele dentistry) in the field of dentistry.

### Studies in Progress

This study has been completed in its entirety prior to submission.

### Learning Outcomes

The biofluorescence (BF) data obtained from a BF-based intraoral camera demonstrates outstanding validity in distinguishing occlusal caries in real clinical settings.

### Presenting Author Brief CV

Researcher in the department of Preventive Dentistry & Public Oral Health, and a Ph.D. candidate in Yonsei University College of Dentistry.

## A study to assess the effectiveness of a novel coolant liquid to mitigate aerosols during ultrasonic instrumentation.

**Claire Mccarthy<sup>1\*</sup>**

<sup>1</sup> Periodontology, Kings College London, United Kingdom

### Problem Statement

Ultrasonic scalers present health risks to dental staff, awareness of this has been emphasised during the Covid 19 pandemic. These instruments require a constant flow of coolant (distilled water) to prevent thermal injury to oral tissues. This coolant is contaminated on contact with oral tissues, saliva, and exhaled air, producing a bioaerosol. Particles of  $<5\mu\text{m}$  diameter remain suspended in the air, travel long distances, and penetrate deep into the respiratory tract.

### Purpose

Aims: 1. To compare aerosol production in a controlled environment using water and two novel coolants. 2. To compare cooling performance of water and the novel coolants.

### Methods

Aerosol measurements using laser particle detectors were undertaken in a sealed environmental chamber to ensure reproducible conditions, providing time-resolved measurements of droplet particle concentrations and sizes at multiple positions during instrument use. Complementary high-speed imaging was used to visualise and study coolant behaviour during tip activation. Instrument and tooth temperatures were recorded using real-time data logger during instrumentation procedures using water and novel based coolants.

### Results

Results: Water increased particle count compared with baseline levels 0.3m from the source by 20,000%. Coolant substitution with a 75% glycerol solution resulted in a statistically significant reduction ( $p < 0.0001$ ) in particle count compared to water. A further reduction was achieved with 80% glycerol solution compared to 75% solution ( $p = 0.0016$ ). Particle counts using ultrasonic instrumentation and 80% glycerol solution were not significantly different from baseline measurements.

### Conclusions

Conclusion: Novel glycerol-based coolants controlled aerosol ( $<5\mu\text{m}$ ) production in ultrasonic devices whilst maintaining cooling function and tip activation. Thermal data demonstrated no increase in temperature during simulated instrumentation, either in the instrument or in the tooth being instrumented.

### Learning Outcomes

1. Raise awareness of particulate matter and sources in dentistry
2. Appreciate the methodology required to detect, characterise and analyse aerosols produced by ultrasonic devices.
3. Discuss the results of using novel liquid coolants on aerosol formation compared to water during ultrasonic instrumentation

### Presenting Author Brief CV

Claire graduated in Dental Hygiene from Trinity College Dublin, Ireland in 2000. She began her teaching career in 2003 and has 20 years experience as teaching faculty at undergraduate and postgraduate level at Kings College London where she is clinical research fellow and clinical teacher in the periodontal department. She completed her Masters Degree in education in 2007 and she is currently completing her PhD in clinical dentistry and her research area is ultrasonic Instrumentation. Claire is also visiting professor at NYU college of Dentistry in New York. Claire has contributed chapters in two textbooks, she sits on executive council of the British Society of Dental Hygiene and Therapy and she is chair of the Irish Dental Council programme accreditation committee.

## The dental hygienist as an oral medicine specialist.

**Nancy W. Burkhart<sup>1\*</sup>**

<sup>1</sup> Periodontics, Texas A&M College of Dentistry, Dallas Texas, USA

### Problem Statement

Oral medicine became the 11th dental specialty in 2021, joining the other 10 dental specialty areas recognized by the American Dental Association. The specialty has become a recognized concept in dental practices. Oral medicine commands a wide range of knowledge that connects the oral tissues with the systems of the body, requiring expertise in the science of complex medical conditions. The AAOM defines Oral medicine as primarily a non-surgical specialty consisting of diagnostic biopsy, small excisions, therapeutic injections and other minor surgical interventions-including the diagnosis and management of medical conditions that affect the oral and maxillofacial region. Hygienists spend a great amount of time with a patient, and they are in an excellent position to recognize changes in tissue, monitor patients, arrange referrals when needed and certainly incorporate oral medicine concepts into their practice. As the population ages worldwide, we need more hygienists well-versed in oral medicine and specific disease states that occur with age.

### Purpose / Goals / Objective

This presentation is designed to:

Present the important goals related to oral medicine that involve the dental hygienist in a dental practice setting, a university, or an oral medicine clinic.

Provide medical concepts that hygienists can incorporate into an oral medicine practice, a stomatology clinic or a dental practice.

Emphasize the changing roles of the dental hygienist in dentistry and specifically oral medicine.

### Key Features

The American Academy of Oral Medicine has instituted a membership category for non-dentists, licensed professionals who want to learn more about oral medicine. After attending two annual conferences, the individual can challenge the Affiliate Fellowship exam and become an Academic Affiliate Fellow on passing the exam. The membership and exam are open to other specialty areas

such as nurses and other licensed professionals who include oral medicine protocols in their practice.

### Impact

This concept is especially important in under-served populations and rural areas. Patients may see their dentist and hygienist more often than their physician.

### Conclusions

The future of medicine and dentistry has changed over the years, and today more emphasis is placed on the role of dentistry in identifying, treating and working in collaboration with medical providers. Medical concepts involving functional medicine, integrative medicine and precision medicine are being introduced into the healthcare system with much interest and excellent results. Oral medicine dental hygienists are valuable in early identification of disease- often resulting in less surgery, fewer medications and better outcomes long-term for all patients.

### Learning Outcomes

To extend viewpoints regarding oral medicine and to promote this concept to dental hygienists within the international community.

### Citation for Publication

RDH Magazine: Where is the dental community heading in 2020?

<https://www.rdhmag.com/career-profession/continuing-education/article/14068566/where-is-the-dental-community-heading-in-2020>

<https://dimensionsofdentalhygiene.com/article/six-dental-hygienist-want-to-know-december-2020/>

<https://www.rdhmag.com/print/content/1-4068566>

### Presenting Author Brief CV

Nancy W. Burkhart, EdD, MEd, BSDH, AAFAAOM has more than 23 years of experience as a dental hygiene educator. She is currently an adjunct professor at Texas A&M College



of Dentistry in Dallas Texas. After earning a master's and doctorate degree from North Carolina State University, she completed a one-year post-doctoral fellowship in the section of oral pathology at the University of North Carolina-Chapel Hill Adams School of Dentistry. Burkhart is director of the International Oral Lichen Planus Support Group that she founded with Dr. T.D. Rees in 1997 at Texas A&M. She is the co-author of General and Oral Pathology for the Dental Hygienist now in its third edition. Burkhart is the past columnist for RDH Magazine writing the oral pathology/oral medicine column from 2007-2022. She is a past representative on the joint commission for National Dental Examinations for Dental Hygiene from 2014-2018.

# Oral health belief and satisfaction after scaling experience with comprehensive dental hygiene care

Mihye Kim<sup>1</sup>, Sang-Eun Moon<sup>2,1\*</sup>

<sup>1</sup> Dental Hygiene, Kwangju Women's University, South Korea

<sup>2</sup> Dental Hygiene, Kwangju Women's University, South Korea

## Problem Statement

Scaling to remove oral biofilms and plaques is an essential procedure that determines the prevention and treatment of periodontal disease. Local factors such as dental plaques and deposits that cause dental caries and periodontal disease may be removed to improve the oral health.

Comprehensive dental hygiene care (CDHC) [assessment-dental hygiene diagnosis-planning-implementation-evaluation (re-evaluation after 4 weeks) + documentation] applied to scaling for more systematic and efficient management of periodontal disease is an evidence-based process to improve the oral health through oral disease prevention and treatment.

The health belief model is the most influential and universally used model for explaining health-related behaviors [10]. The model has been previously used to describe the behaviors of people who believe oneself is healthy for the prevention and detection of disease in asymptomatic stage and its related factors. Therefore, the purpose of this study was to assess oral health belief and satisfaction after scaling experience with CDHC at dental hospitals and clinics and provide basic data on the necessity and clinical application of CDHC.

## Purpose

This study was conducted to find scaling patients' oral health belief and satisfaction by applying Comprehensive Dental Hygiene Care (CDHC) process.

## Methods

From July 1 to September 20, 2020, the data about 182 patients who had scaling in dental clinics and hospitals had been collected and analyzed. For data analysis, SPSS Statistics 22.0 was applied to conduct frequency analysis, chi-square, t-test, One way ANOVA and Pearson's correlation analysis.

## Results

Regarding oral health behavior, in the CDHC group 92.4%

used oral care products ( $p < 0.001$ ), and 67.4% regularly visited dental clinics for oral care ( $p < 0.001$ ). Regarding the oral health belief according to general characteristics, in the CDHC group, persons aged '50-65' scored 2.4 (the highest), and were significantly different from those aged '20-29' as the result of post-hoc analysis ( $p < 0.001$ ). Regarding the oral health belief of the CDHC group according to oral health behavior, the scaling cycle '3 months' scored the highest ( $p < 0.05$ ). The patients' satisfaction had high correlations with benefit ( $p < 0.01$ ) and Importance ( $p < 0.05$ ) as the sub factors of the oral health belief of the CDHC group.

## Conclusions

CDHC positively influenced scaling patients' oral health belief and satisfaction. Therefore, it is necessary to expand CDHC, as the medium to improve oral health belief and satisfaction, to clinical settings.

## Learning Outcomes

This study demonstrated that CDHC during scaling and non-surgical periodontal treatment may have positive effects of increasing oral health belief and satisfaction of patients and that scaling with CDHC by dental hygienists may contribute to the management of oral health. Therefore, CDHC should be more actively used in clinical practice to improve the expertise of dental hygienists and increase the belief and satisfaction of patients in oral health.

## Citation for Publication

J Korean Soc Dent Hyg 2022;22(1):1-9

<https://doi.org/10.13065/jksdh.20220001>

## Presenting Author Brief CV

-Master's degree in Department of Dental Hygiene, Kwangju Women's University.

-Clinician dental hygienist

## Differences in Resilience and Stress between American and Japanese Dental Hygiene Students

**Yuki Sawada<sup>1</sup>, Danielle Rulli<sup>2</sup>, Kayoko Shinada<sup>1</sup>, Naoko Adachi<sup>1\*</sup>**

<sup>1</sup> Department of Preventive Oral Health Care Sciences, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

<sup>2</sup> Department of Periodontics and Oral Medicine, Division of Dental Hygiene, School of Dentistry, University of Michigan, USA

### Problem Statement

Mental wellbeing, burnout and resilience in dental education and practice has emerged as a significant issue, highlighted by the pandemic. Therefore, understanding the social and environmental contexts that impact stress and resilience in dental hygiene education is a crucial step to reimagining curriculum and practice to better support mental wellbeing across the career span of dental hygienists.

### Purpose

The purpose of this study is to gain an understanding of the factors that contribute to stress for dental hygiene students, and to assess student resilience. The purpose of exploring the perceptions of students from two significantly different cultures and educational approaches, is to allow for more global generalization of the social and environmental impacts on dental hygiene students as they become licensed professionals.

### Methods

This study is a collaborative effort between the University of Michigan (UM) and Tokyo Medical and Dental University (TMDU). Third and fourth year students from both universities will be surveyed to capture differences in stress and resilience by educational progression. Participants are about 40 students from TMDU and 64 students from UM will be surveyed. The survey assessment will use previously validated instruments: the "Dental Environment Stress Questionnaire", and the "Ego Resilience Scale".

### Results

Descriptive and inferential statistics will be analyzed using SPSS. Student's t-tests or Mann-Whitney U tests to compare the continuous variables and chi-square tests or Fisher's exact tests will be used to compare the proportions of categorical variables between American and Japanese students. In addition, multivariate analysis to adjust for confounding factors will be performed.

### Conclusions

The differences in stress and resilience between American

and Japanese students and their backgrounds will be suggested.

### Studies in Progress

We are going to conduct the questionnaire survey in January and March 2024, with analysis immediately following.

### Learning Outcomes

I want the attendees to learn what the problem is and what is needed for dental hygiene students. I hope dental hygiene education will be improved and more good dental hygiene students increase.

### Presenting Author Brief CV

Dental Hygienist

<Education>

Master's Graduate Student, Preventive Oral Health Care Science, Tokyo Medical and Dental University

B.S. Course for Oral Health Care Sciences, Tokyo Medical and Dental University, graduated in 2023.

<Occupation>

-Dental Hygienist, Root Dental Clinic, Tokyo, Japan

-Dental Hygienist, Hiratsuka City Community Health Center, Kanagawa, Japan

I joined the University of Michigan dental hygiene exchange program for about one month and wrote the article of the Japanese journal of "Dental Hygienist".

I went to the elementary school in Taiwan and had some lectures, fluoride for the students there.

<Research Themes>

-Difference between American dental hygiene students and Japanese dental hygiene students

-The public health including oral conditions in Nepal

-Oral condition of artistic swimmers

<Summary of roles in this study>

-I managed and contributed to the study design, implementing the education program, gathering data, analysis, and drafting the manuscript.

# Relationship between Self-Leadership, Self-Efficacy, and Customer Orientation of Dental Hospital and Clinic Consultants

**Daeun Kim<sup>1\*</sup>**

<sup>1</sup> Health Science, Dankook University, South Korea

## Problem Statement

The competition among dental medical institutions and hospitals has been escalating. With the improvement in medical consumers' living standards and the subsequent increase in their expectations for medical services, enhancing the quality of medical services has become a universal challenge for all hospitals (Han & Park, 2013). In order to enhance the quality of medical services, effective management of personnel directly providing services to patients is crucial. The management of core human resources through skill enhancement is considered a highly necessary factor for an organization's competitiveness (Kim & Han, 2016). Dental hygienists are specialized professionals responsible for crucial tasks within dental medical institutions (Kim & Han, 2016). The skills required for dental hygienists have expanded beyond simple dental care cooperation tasks to include prevention, education, interpersonal skills, and a role as managerial partners,

## Purpose

The objective of this study is to examine the levels of self-leadership, self-efficacy, and customer-oriented mindset among dental consultants, as well as to identify the relationships between these factors.

## Methods

An online survey was administered to 237 dental consultants employed in dental hospitals and clinics. Self-leadership, self-efficacy, and customer orientation were assessed using a 5-point Likert scale. Path analysis, involving factor analysis and structural modeling, was conducted to explore the interconnections among the subfactors.

## Results

In the relationship between self-leadership and self-efficacy, action-oriented strategies, constructive thinking strategies, and natural compensation strategies were found to have a significant effect on goal-achieving self-efficacy. In addition, action-oriented strategies and natural compensation strategies were found to have a significant

effect on self-confidence self-efficacy. In the relationship between self-efficacy and customer orientation, both goal-achieving and self-confidence self-efficacy were found to have a significant impact on voluntary customer orientation and business customer orientation. The subfactors of self-leadership—specifically, action-oriented strategies and natural compensation strategies—were found to have a significant impact on customer orientation. However, constructive thinking strategies did not exhibit a notable impact on customer orientation. The mediating role of self-efficacy in the relationship between self-leadership and customer orientation was partly facilitated by goal-achieving and self-confidence self-efficacy through action-oriented strategies. Additionally, natural compensation strategies were identified as fully mediating through self-confidence self-efficacy.

## Conclusions

The results of verifying the mediating effect of self-efficacy in the relationship between self-leadership and customer orientation showed that the subfactors of self-leadership and self-efficacy emerged as influencing factors on customer orientation, demonstrating a significant mediating effect. It is suggested that measures be taken to enhance proactive thinking and internal rewards among dental consultants.

## Learning Outcomes

This study extensively explores the impact of self-leadership and self-efficacy on customer orientation among consultants in dental healthcare institutions. The aim is to provide in-depth insights into the organizational characteristics needed in dental healthcare institutions and to suggest directions for future organizational management.

## Presenting Author Brief CV

Ph.D. graduate student. Dept. of Health Science, Graduate school Dankook University, Korea



# The review of the history in individual oral hygiene with original articles and reconsideration of the improvement in education and role of dental hygienists

**Ho seon Kim<sup>1\*</sup>**

<sup>1</sup> Department of Dental Hygiene, daewon university college, South Korea

## Objective

The various techniques in individual oral hygiene in the textbook of colleges in the department of dental hygiene are based on the publication of the historical articles. Through review of those articles, there are considerations about the improvement of the techniques in individual oral hygiene and the dental hygienists as educators.

## Search Strategy / Selection Criteria

The established techniques developed by Fone, Charters, Stillman and Bass were reviewed with their own original articles based on the objectives, evidence and claims. simultaneously the importance of the individual oral hygiene, origin and development of the new career named dental hygienists are reviewed. Also the other articles focused on the importance of the individual oral hygiene were reviewed to clarify the efforts and trials to improve the individual oral hygiene method.

## Data Collection and Analysis

The original articles which are the fundamentals of present individual oral hygiene techniques educated in the colleges are analyzed with objective, method, tools and discussions. The characteristics and refinement compared to previous techniques are also reviewed. Considering the analysis, a better method for effective individual oral hygiene can be designed.

## Main Results

Individual oral hygiene is the most important area in the treatment and prevention of dental disease. Above statements are repeatedly mentioned and emphasized in each era, and finally new professionals named dental hygienists are made for those objectives. But all the techniques related to individual oral hygiene were developed in the early and middle of the 20th century. There's been no significant improvement during the past 100 years.

## Conclusions

The self-care by the patients is essential in prevention of the oral disease and maintenance of dental health. The dental hygienists are instructors and teachers for the proper tools and methods. The motivation and education about the individual oral hygiene is prior to the clinical approach as calculus removal and oral prophylaxis in the aspect of the vocation of the dental hygienists. The techniques of the individual oral hygiene control which were educated in the college for the dental hygienists has avoided the criticism and kept their position in the textbook over 100 years on the authority of history. Now, we dental hygienists should consider a new performance of duty based on the improved techniques.

## Free of Bias

This study is based on the historical original articles by Fones. Stillman, Charters and Bass about the individual oral hygiene, so data collection is not biased.

## Learning Outcomes

The attendees can learn about the history and development of the individual oral hygiene technique and philosophy to consider the improvement of professionalism of dental hygienists

## Presenting Author Brief CV

30 years of experience as a dental hygienist  
professor in the Department of Dental Hygiene at Daewon University college

# Prevention of oral health in elderly patients: A survey of practices and challenges experienced by dental hygienists in Norway

**Linda Stein<sup>1\*</sup>**

<sup>1</sup> Department of Clinical Dentistry, UiT The Arctic University of Norway, Norway

## Problem Statement

As the share of elderly people with natural dentition is projected to accelerate in the coming decades, the need for optimizing dental hygiene for these patients will increase. However, the information about practices and experiences of dental hygienists in Norway regarding this topic is scarce.

## Purpose

The purpose of the present study was to gain knowledge of general oral health preventive measures and specific root caries preventive measures for patients  $\geq 65$  years old, performed by Norwegian dental hygienists in public and private dental health services. A secondary aim was to investigate differences in challenges perceived by dental hygienists in the public sector and private practice.

## Methods

An electronic survey was sent to all members of the Norwegian Dental Hygienist Federation in the last part of 2022. A total of 365 Norwegian dental hygienists in public and private dental services responded, leaving a response rate of 52.5 %. SPSS was utilised to perform all statistical analyses. Chi-square test was used to analyse the differences between dental hygienists working in both private and public dental services regarding preventive measures and experienced challenges.

## Results

The most frequently reported general oral preventive measure in both groups were oral hygiene instruction, professional tooth cleaning, tooth scale removal, and mapping of oral hygiene habits. Oral hygiene instruction and application of fluoride varnish were the most performed root caries preventive measure and reduced manual dexterity in patients was the most experienced challenge in both groups. Dental hygienists in the public sector experienced challenges to a greater extent than dental hygienists in private practice, particularly related to mobility and ergonomic challenges in patients.

## Conclusions

In conclusion, this survey indicates that dental care for older people is challenging, especially in the public sector due to the number of frail elderly eligible for dental care. To meet the future needs of preventive oral care in the ageing population in Norway, more knowledge of the underlying factors hampering the provision of oral health care is necessary.

## Learning Outcomes

To gain knowledge of the challenges with increasing number of elderly frail patients with teeth

To reflect on differences in oral health care systems and eligibility for oral health care for elderly between countries

## Presenting Author Brief CV

Dr Linda Stein is a Norwegian licenced dental hygienist who started her career in private dental practice. After a few years, she underwent postgraduate training in educational pedagogics. Linda combined her clinical practice with part-time clinical teaching for Bachelor of dental hygiene students at the University of Oslo. After completing a Master's degree in Public Health, a desire to do more research made her move up north to UiT The Arctic University of Norway, where she completed her PhD in 2015.

Linda's research interests include population oral health, health literacy, health services research and Indigenous oral health. Teaching responsibilities include dental public health and epidemiology, along with supervision of Bachelor, Master and PhD students.

Dr Stein holds an Associate Professor appointment at UiT The Arctic University of Norway. She is honored to be a guest researcher at Melbourne Dental School in 2024.

## Outcomes of Non Surgical Periodontal Therapy on the Periodontal Status among Electronic Cigarette Smokers, Conventional Smokers and Non-smokers

**Shazia Taimoor<sup>1</sup>, Misbah Shams<sup>2</sup>, Dr. Ali Sadiq<sup>1\*</sup>, Dr. Farhan Raza Khan<sup>1</sup>**

<sup>1</sup> Surgery, Aga Khan University Hospital Pakistan, Pakistan

<sup>2</sup> Obs/Gyn (Early Childhood Development), Aga Khan University, Pakistan

### Problem Statement

Smoking is known to increase the risk of periodontal disease. It increases the severity of the disease and adversely affects the outcomes of non-surgical periodontal therapy (NSPT). The liquid in e-cigarettes (E-cig) contains nicotine, flavoring agents, and chemicals. It is heated by a battery-operated smoking device to generate the inhaled vapors. Over the past few years, the knowledge of how electronic cigarettes affect periodontium has significantly increased. However, there is still a lack of data regarding how E-cig smokers respond differently to NSPT than conventional smokers (CS).

### Purpose

The purpose of this study is to compare the effect of NSPT on the status of periodontitis among E-cig, CS, and non-smoker (NS) groups per the 2017 periodontal classification.

### Methods

It's an observational, prospective, cohort study comprising 44 participants in three groups. Six-point pocket charting, bleeding on probing (BOP) and radiographic presentation were assessed for periodontal staging, grading, and stability as per the 2017 periodontal classification. Participants were evaluated post-NSPT after 12 weeks, to assess the improvement in periodontal condition. SPSS 23.0 was used for data analysis.

### Results

Out of 44 participants, 16 were NS, 16 were E-cig users and 16 were CS respectively. In our study, significant variations in periodontal health and disease progression were observed among non-smokers, smokers, and electronic cigarette users. The baseline and follow-up data revealed that non-smokers exhibited a substantial decrease in sites with Bleeding on Probing (BOP) from 81% to 27% and an increase in periodontal stability from 12% to 56%. In contrast, smokers and electronic cigarette users displayed persistently higher BOP percentages at baseline (47% and 49%, respectively), with stability rates of 25% and 17%, respectively, and fluctuating levels of generalized and localized periodontitis. Specifically, smokers exhibited a change in Generalized Periodontitis from 75% to 44%, Local Periodontitis from 19% to 44%, and Unknown from

6% to 12%. Electronic cigarette users showed changes from Generalized Periodontitis 50% to 40%, Local Periodontitis 33% to 44%, and Unknown 17% to 16%.

### Conclusions

The study concludes that both e-cigarettes/vaping and conventional smoking negatively affect the stage, grade, and distribution of periodontal disease.

### Studies in Progress

Not Applicable

### Learning Outcomes

Understand the effects of vaping or e-cigarette use on periodontal health  
Compare how conventional and e-cigarette smokers respond to the NSPT  
Identify the potential treatment outcomes in three groups  
Contribute to the broader understanding of the relationship between smoking and periodontal health and improved patient care

### Citation for Publication

Not Applicable

### Presenting Author Brief CV

Shazia Taimoor is a dedicated dental hygienist at the Aga Khan University Hospital Dental Clinic and has been affiliated with the Associate of Science in Dental Hygiene Academic program for the last 5 years. She has vast experience as a clinician-working in dental clinic as well as in collaboration with palliative care and pediatric oncology departments to fulfill the oral health needs of the population. Furthermore, she is directly involved in student teaching and training at the university. This multi-dimensional exposure to multiple settings has equipped her with all the necessary skills as a leader in health care profession. She is committed to promoting optimal oral health through prevention and comprehensive patient care, especially in underserved populations in the country. Based on her keen interest in research and evidence based practice, this is one of her endeavors to represent the dental hygiene program at the international platforms.

# Optical Detection of Mucosal Biofilm in Pneumonia Geriatric Inpatients Utilizing Bacterial Biofluorescence and Microbiome Properties

Sol Park<sup>1</sup>, Eun Song Lee<sup>1</sup>, Hoi In Jung<sup>1</sup>, Kwang Joon Kim<sup>2</sup>, Chang Oh Kim<sup>2</sup>, Baek Il Kim<sup>1\*</sup>

<sup>1</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea

<sup>2</sup> Division of Geriatrics, Department of Internal Medicine, Yonsei University College of Medicine, South Korea

## Problem Statement

Geriatric inpatients have deteriorated oral function, causing biofilm accumulation on the oral mucosa. These oral biofilms, including mucosal biofilm (MB), are respiratory pathogen reservoirs and increase the risk of aspiration pneumonia, necessitating MB detection and control. Visual detection of MB is challenging, and conventional plaque-disclosing methods are unsuitable for frail inpatients. However, exposing oral bacteria to specific light wavelengths causes bacterial cell metabolic by producing biofluorescence, visualizing bacterial structures in the oral cavity in real-time, and aiding MB detection. Despite its potential, current research on MB biofluorescence is limited; however, assessing it could enable objective detection and management in geriatric patients.

## Purpose

This study aimed to detect MB in geriatric inpatients with pneumonia using bacterial biofluorescence and analyze composition and function of microbiome according to biofluorescence properties.

## Methods

MB was detected and collected from hospitalized patients in the Severance Hospital (N=14) using Qraycam Pro (Aiobio, Korea) and were imaged using a Qray device for fluorescence analysis. RGB analysis categorized MB into green (GF) or red fluorescence (RF) groups. Microbiome differences were determined via 16s rRNA analysis.

## Results

MBs that appeared transparent or white under white light and challenging to distinguish from normal tissue were identified by GF properties. Conversely MB appearing yellow or brown by the naked eye, exhibited RF properties. Based on these biofluorescence properties, MB was allocated to the GF (n=8) or RF (n=6) groups with an R/G ratio (cutoff of 2.0). In GF, respiratory pathogens such as *Staphylococcus aureus* were predominant (13.3%), whereas oral anaerobic bacteria, such as *Fusobacterium nucleatum* (9.1%), *Parvimonas micra* (6.4%), *Prevotella denticola* (3.7%), and *Porphyromonas gingivalis* (2.4%) were predominant in RF. The functional prediction from PICRUSt analysis revealed that metabolic pathways, such as aminoacyl-tRNA (LDA score 2.9) and lipopolysaccharide biosynthesis (LDA score 2.9), were

significantly enhanced in RF compared to GF. This indicates that RF MBs possess potent protein synthesis capabilities and characteristics that induce immune responses, implying a direct connection to pathogenicity.

## Conclusions

MBs in geriatric inpatients with pneumonia were detected using bacterial biofluorescence, distinguished by green and red fluorescence. MBs exhibiting GF or RF were associated with respiratory disease-related or oral anaerobic bacteria, respectively, each with distinct pathogenic properties. Therefore, using bacterial biofluorescence may improve oral care strategies for geriatric inpatients with pneumonia.

## Studies in Progress

The completed oral microbiome analysis results of 14 subjects have been included herein. Additional participant recruitment is planned; however, only the results obtained thus far will be shared at this symposium.

## Learning Outcomes

Using bacterial biofluorescence may improve oral care strategies for geriatric inpatients with pneumonia.

## Presenting Author Brief CV

[Education]

Integrated Master's and Doctoral Program (Currently Enrolled)

Yonsei University College of Dentistry, Department of Preventive Dentistry, 2020 - Present

7th Semester of Integrated Program

Bachelor of Science in Dental Hygiene

Gwangju Health University, Department of Dental Hygiene, Graduated February 2014

[Research Interests]

Improvement of Oral Health in Frail Elderly Patients in Long-term Care

Focusing on the management and enhancement of oral health in frail elderly patients in long-term care settings.

[Major Publications]

Park, Sol, et al. "Optical detection of oral biofilm in hospitalized geriatric patients using quantitative light-induced fluorescence technology." *Photodiagnosis and Photodynamic Therapy* 39 (2022): 102962.



# Transgender patients, engagement strategies and Oral Health impacts

**Andrew Terry<sup>1\*</sup>**

<sup>1</sup> School of Dentistry, Senior Lecturer, Australia

## Problem Statement

Within the last few years in particular there has been global increase in awareness of the evolution of the identification of Transgender health issues. How does this impact us as oral health professionals in the dental setting? How do I address my patient correctly? If they are taking any medications to assist in their transition will this impact the way I may need to treat my patient?

## Purpose / Goals / Objective

The purpose of this presentation is to provide evidence-based strategies for oral health professionals to both manage and engage with patients transitioning their gender or who have fully transitioned, from a treatment provision and human engagement perspective.

## Key Features

The key features of the presentation will look to explore a number of aspects associated with Transgender patients. Firstly, reviewing the correct way to respectfully address and engage with your patient that identifies as transgender. Following this, discussing any oral manifestations associated with patients taking gender affirming medication and any specific oral hygiene advice that may benefit this patient cohort. Finally, to raise awareness about the process of transition including the psychological support they are offered.

## Impact

This evidence-based presentation will drive positive change in oral healthcare practices by increasing awareness of how to appropriately engage with transgender patients respectfully. Further, attendees will be able to take back to practice useful information on any connection between gender affirming medications and their potential impacts on oral health.

## Conclusions

Striving to raise awareness and highlight the various current

medical treatment options available to patients seeking to affirm their gender. It will provide clinicians with a deeper understanding around the process and foster a recognition of the potential psychological impacts of undertaking the journey to transition their gender.

## Learning Outcomes

1. Gain an increased understanding of the complex issues around patients who transition their gender from both a psychological and physical perspective
2. Discuss the possible effects any gender affirming medication may have on the oral cavity.
3. Consider the most respectful way to engage with patients who have transitioned or are in the process of transitioning their gender

## Presenting Author Brief CV

Andrew Terry is a Senior Lecturer working for the School of Dentistry at The University of Sydney. He works with both the Bachelor of Oral Health (BOH) and the Doctor of Dental Medicine (DMD) programs since August 2015.

He is responsible primarily for the education of Periodontal instrumentation/screening and Oral Hygiene instruction education for both the BOH1 and DMD1&2 year levels. He supervises clinical practice of the initial Clinical Periodontal treatment provided by DMD2 students. Andrew has approximately 30 years' clinical experience first qualifying as a Dental Therapist in QLD, Australia in 1993 and as a Dental Hygienist in London, U.K in 1998. He ratified his Australian and U.K education in Switzerland with the Swiss red cross and attained the protected title of "Dip. Dental Hygienist of Higher Education". He completed his Master in Education in 2019 and accepted as a member of the Higher Education Academy in 2021.

# Experience and feelings of patients undergoing root canal instrument separation—A qualitative study

**Xiaohui Liu<sup>1</sup>, Aiqin Lv<sup>1\*</sup>**

<sup>1</sup> School and Hospital of Stomatology, Shandong University, China

## Problem Statement

The instrument separation that occurs during root canal treatment is inevitable. Currently, scholars mainly focus on exploring the techniques and methods of removing broken needles. There have been no reports on the true thoughts and feelings of patients after instrument separation. This study uses qualitative interviews to understand the true feelings and experiences of patients after instrument separation, Provide guidance for medical workers on how to respond to device separation incidents.

## Purpose

Understand the feelings and experiences of patients with root canal instrument separation, and provide theoretical basis for constructing a management model for instrument separation in oral diagnosis and treatment.

## Methods

Descriptive research methods were used to conduct semi-structured interviews with 17 patients with root canal instrument separation, and the data was analyzed using targeted content analysis.

## Results

5 themes were extracted, including, Shock and anger period, negotiation period, questioning period, acceptance and cooperation period, behavior change period.

## Conclusions

Different psychological plans should be adopted for the different reactions that occur in patients with root canal instrument separation at different stages, and timely notification should be given after the occurrence of needle breakage, actively seeking their comfort and coping methods. Inform patients of the potential risk of instrument separation before root canal treatment.

## Learning Outcomes

Providing oral reports can improve dentists' awareness of

informed consent before treatment of root canal device separation patients, as well as timely notification and reassurance awareness after surgery, and reduce the resulting doctor-patient disputes

## Citation for Publication

LIU Xiaohui, ZHAO Qinghua, XIAO Mingzhao. Construction of service quality evaluation index system for long-term care of disabled elderly in nursing home based on Service Quality Gap Model[J]. Chinese Journal of Nursing, 2019, 54(6): 902-907.

## Presenting Author Brief CV

Nursing Department Officer, Dental Hospital; Master of Science in Nursing; have published 3 articles as the first author or corresponding author; Participated in 5 projects; 3 years of experience in clinical oral care;

## A qualitative analysis study on the needs and perceptions of visiting oral health care services : by using Q methodology

**Sue-Hyang Lee<sup>1</sup>, Sun-Jung Shin<sup>1,2,3\*</sup>, Soo-Myoung Bae<sup>1,2,3</sup>, Bo-Mi Shin<sup>1,2,3</sup>**

<sup>1</sup> Department of dental hygiene, College of Dentistry, Gangneung-Wonju National University, South Korea

<sup>2</sup> Research Institute of Dental Hygiene Science, Gangneung-Wonju National University, South Korea

<sup>3</sup> Research Institute of Oral Science, Gangneung-Wonju National University, South Korea

### Problem Statement

The increase in the elderly population increases medical expenses for the elderly, increasing the burden on national welfare finances. Accordingly, policies to prevent medical expenses for the elderly by managing their own health in the community are being emphasized. The oral health of the elderly is related to nutritional intake, NCDs, and quality of life. Therefore, it is important to prevent and manage the health and oral health of the elderly together. In Korea, there is a policy that allows professionals to visit places where the elderly live and provide health care services. As a result of the dental hygienist providing visiting oral health care services for the elderly, it was effective in preventing bad breath and improving the oral hygiene of the subjects. However, the utilization rate of visiting oral health care services for the elderly is low. It is necessary to prepare a plan to revitalize oral health care services for the elderly in preparation for the upcoming super-aged society.

### Purpose

This study aims to identify the framework of the elderly's perception of visiting oral health care services using the Q methodology to explore the actual visiting oral health care service items centered on the elderly and the role of dental personnel.

### Methods

Thirty-two Q samples related to oral health care services for the elderly were classified according to the degree to which 32 elderly people aged 65 or older agreed. Thirty-two Q-classification data were analyzed through the PC-QUANL Program.

### Results

Seven types of six-factor structures were derived, which were found to account for 49.6% of the total variance. The range of services and roles of professional personnel required by the elderly in Korea vary depending on their physical, economic, psychological, and social conditions. In addition, it was found that they were not aware of the procedure for using the visiting oral health care service.

### Conclusions

In order to promote the oral health of the elderly in Korea, it is essential to publicize oral health care services for the elderly. In addition to the oral care needs of the elderly, it is necessary to develop an assessment tool that can check the psychological and social care needs and to develop multifaceted service items accordingly. Dental personnel should be supported by training to develop competencies to provide social welfare judgment and emotional support so that the elderly can continue their oral health practice on their own.

### Studies in Progress

This study is part of the research that "Lee SH, Bae SM, Shin BM, Shin SJ. (2021). Types of Perception of Home Visiting Oral Health Care Services for Korean Older Persons: A Q Methodology Study. Int J Environ Res Public Health, 18(1); 214."

### Learning Outcomes

To understand the diversity and characteristics of visiting oral health services items expected by the elderly.  
To understand the necessity of the role of dental hygienists for visiting oral health care services for the elderly.

### Citation for Publication

Lee SH, Bae SM, Shin BM, Shin SJ. (2021). Types of Perception of Home Visiting Oral Health Care Services for Korean Older Persons: A Q Methodology Study. Int J Environ Res Public Health, 18(1); 214.

### Presenting Author Brief CV

Dental Hygiene Department, Gangneung-Wonju National University, Ph.D.  
Research Professor, Liberal Arts & General Education of Gangneung-Wonju National University  
Lecturer, Department of Dental Hygiene, Gangneung-Wonju University (since September 2018)  
Committee Member, Social Dental Hygiene Subcommittee, Korean Society of Dental Hygiene Science

## The immediate effectiveness of a 3D intraoral scanner as an adjunctive oral hygiene educational tool: A randomized controlled trial.

Hui Jia Sophia Choo<sup>1,2</sup>, Jiaming Joshua Xie<sup>1,2</sup>, Xiaotong, Jacinta Lu<sup>1</sup>, Lum Peng Lim<sup>2</sup>, Wei Ming Clement Lai<sup>2</sup>, Boon Keng, Alvin Yeo<sup>2,1\*</sup>

<sup>1</sup> Department of Periodontics, National University Centre of Oral Health, Singapore, Singapore

<sup>2</sup> Faculty of Dentistry, National University of Singapore, Singapore

### Problem Statement

Interproximal and lingual surfaces of teeth were shown to have consistently more plaque accumulation (Axelsson et al. 2004) compared to buccal surfaces. Traditional oral hygiene education methods are unable to offer a 3-dimensional (3D) visualisation of one's oral hygiene status. In contrast, the intra-oral 3D imaging may allow better visual cues and may promote behavioural improvement.

### Purpose

The purpose of this study was to determine if 3D-rendered intraoral images using an intra-oral scanner (3Shape®) would improve immediate oral hygiene compared to the conventional method of tell-show-do. The primary and secondary outcomes were the percentage reduction of plaque score and the subjects' feedback on the intervention, respectively.

### Methods

A single-blinded, randomised controlled clinical trial was conducted on 40 healthy subjects in the National University Centre of Oral Health, Singapore (NUCOHS). Subjects were randomly allocated into the intra-oral scan group (test group) and standard oral hygiene education group (control group). Full mouth plaque score (FMPS) and full mouth bleeding score (FMBS) were used to evaluate oral hygiene at baseline to assess for inclusion. The subjects were instructed to brush their teeth 30 minutes after the intervention and FMPS was reassessed. The subjects' acceptance of both interventions was assessed with a questionnaire.

Average plaque score reduction after intervention in the test and control groups was analysed with paired t-tests separately. The difference between the test and control groups was analysed using the student t-test. Statistical significance was considered at  $p\text{-value} < 0.05$ . Qualitative analysis was performed on the data collected from the questionnaire.

### Results

40 subjects completed the study. The intra-group mean reduction of FMPS following oral health education (OHE) was statistically significant at  $42.0 \pm 14.0\%$  and  $32.0 \pm 16.0\%$  in test ( $n=20$ ) and control ( $n=20$ ) respectively compared with baseline. The test group demonstrated a better mean FMPS ( $36.0 \pm 8.0\%$ ) compared to the control group ( $45.0 \pm 16\%$ ) post intervention, which was statistically significant ( $p=0.039$ ).

Majority of test subjects rated better visibility of plaque stain at all surfaces of teeth compared to the control group. In addition, a greater proportion of control subjects compared to the test subjects rated poorer visualisation of plaque stain on the inner surfaces of posterior teeth.

### Conclusions

OHE is essential to improve the subject's FMPS, regardless of the mode of instruction. 3D imaging may serve as an adjunct to standard OHE methods but more long-term follow up studies would be required to assess its impact on improving oral hygiene.

### Studies in Progress

Recruitment is completed.

### Learning Outcomes

3D imaging may be used as an adjunct tool in helping patients visualise their state of oral hygiene, especially at the posterior and lingual/palatal segments, as compared to that of standard oral hygiene education methods.

### Citation for Publication

Not applicable. Research has not been published.

### Presenting Author Brief CV

Dr Choo Hui Jia Sophia obtained her Bachelor Dental Surgery (B.D.S) from National University of Singapore (NUS) in 2019. Thereafter, she embarked on her specialist training in periodontology in NUS in 2022.

## Developing a novel tongue biofilm index using bacterial biofluorescence

**Arem Kim<sup>1</sup>, Sol Park<sup>2</sup>, Eun-Song Lee<sup>2</sup>, Hoi-In Jung<sup>2</sup>, Baek-II Kim<sup>2\*</sup>**

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<sup>2</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea

### Problem Statement

Bacteria in tongue biofilm (TB) are associated with oral and systemic disease pathogenicity. Therefore, accurately detecting and appropriately managing the TB is necessary to prevent these diseases. Conventional evaluation indices for the TB have a low inter-rater reproducibility because of ambiguous criteria. Bacterial biofluorescence is a phenomenon of bacterial metabolites emitting fluorescence when bacteria are irradiated with light of a specific wavelength. The TB can be quantitatively evaluated using red fluorescence via a technology that can immediately detect bacterial biofluorescence. Developing a new index using bacterial biofluorescence that can be evaluated simply and immediately in clinical settings while addressing the limitations of conventional indices is essential.

### Purpose

This study aimed to confirm the reliability and validity of the Tongue Biofilm Fluorescence Index (TBFI) using bacterial biofluorescence in TB.

### Methods

Data were collected twice from 81 participants in a one-week interval (N=162). The reliability and validity of the newly developed TBFI was compared with two conventional tongue coating indices [Winkel's tongue coating index (WTCl) and Oho's index (Oho)]. TBFI categorizes red fluorescence emitted from TB into two variables—intensity and area, each evaluated on 0–2point scale and then multiplied to obtain a final score. For the reliability assessment, white light and fluorescence images of TB were acquired using Qraycam (AIOBIO, Seoul, Republic of Korea), an oral camera capable of detecting bacterial biofluorescence. Kappa values were calculated to assess the inter-rater reproducibility of each index based on these images. To evaluate validity, the concentrations of TB pathogenicity indicators hydrogen sulfide (H<sub>2</sub>S) and methyl mercaptan (CH<sub>3</sub>SH), were measured and the correlation between TBFI and these concentrations was evaluated. Additionally, the Integrated Fluorescence (IF)

scores quantifying the red fluorescence were calculated to compare with TBFI result.

### Results

In the reliability results, TBFI showed the highest inter-rater agreement level (TBFI,  $\kappa=0.725$ ; WTCl,  $\kappa=0.342$ ; Oho,  $\kappa=0.598$ ). Validity results showed H<sub>2</sub>S and CH<sub>3</sub>SH concentrations to be significantly correlated with all three indices; TBFI had the strongest correlation (TBFI,  $r=0.391$ ; WTCl,  $r=0.308$ ; Oho,  $r=0.304$ ,  $p<0.01$ ). The TBFI score also significantly increased as the IF score increased ( $p<0.05$ ).

### Conclusions

TBFI demonstrated higher reliability and validity compared to existing indices and was significantly correlated with oral malodor indicators, indicating the potential usefulness of objective and real-time TB assessment in clinical practice.

### Studies in Progress

This study has been completed in its entirety prior to submission.

### Learning Outcomes

The Tongue Biofilm Fluorescence Index (TBFI), detecting bacterial biofluorescence, enables the immediate and convenient assessment of quantitative and qualitative factors of tongue biofilm in a clinical practice.

### Presenting Author Brief CV

Integrated Master's and Doctoral Program (Currently Enrolled)

Yonsei University College of Dentistry, Department of Preventive Dentistry, March 2022 - Present

4th Semester of Integrated Program

Bachelor of Science in Dental Hygiene

Yonsei University, Wonju College of Medicine, Department of Dental Hygiene, Graduated February 2022

## Evaluation of tooth sensitivity scale according to use of microcurrent toothbrush

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<sup>5</sup> Dental Hospital, ENMI Dental Hospital, South Korea

<sup>6</sup> Dental Clinic, Bardakwon Dental Clinic, South Korea

### Problem Statement

Recently, a method has been developed to remove biofilm using the power of electricity: biofriendly electromagnetic waves. It is a toothbrush that uses microcurrents that are harmless to the human body and separates the microbiological film from the surface in a non-invasive way. This can be effectively used to remove biofilm from the surface of teeth in the oral cavity. In particular, the reaction of saliva and fluoride toothpaste with a microcurrent toothbrush is expected to provide microcurrent to the tooth to close the dentinal tubules effectively.

### Purpose

This study aims to determine the effectiveness of microcurrent toothbrushes in relieving dentin hypersensitivity by separating biofilm on tooth surfaces based on electrostatic forces and promoting remineralization through fluoride toothpaste.

### Methods

The subjects were divided into two groups: those who did not use fluoride toothpaste and those who used fluoride toothpaste, and the toothpastes were F1450 (fluoride toothpaste) and tromatz (fluoride-free toothpaste). Data were collected four times during home care for about 6 weeks. The Visual Analogue Scale (VAS) was used as a subjective pain test for cold symptoms, and the Schiff air sensitivity score (SCASS) as an objective pain test. CT, air, and an ice stick were evaluated. Results were analyzed using SPSS 27.0 for Windows (IBM Corp., Armonk, NY, USA) at a 5% significance level.

### Results

When using a microcurrent toothbrush, VAS decreased significantly over time with F1450 (fluoride toothpaste)

compared to tromatz (fluoride-free toothpaste). The SCASS also showed a decrease in pain over time, with different changes over time depending on the presence or absence of fluoride. The number of hypersensitive teeth also decreased significantly over time. In addition, the same application of F1450 (fluoride toothpaste) was used to determine the effect of microcurrent and non-microcurrent. The results showed that the VAS decreased significantly over time with the microcurrent toothbrush compared to the non-microcurrent toothbrush. The SCASS also showed a difference between microcurrent and non-microcurrent, and pain decreased over time. The number of hypersensitive teeth also decreased significantly over time.

### Conclusions

Microcurrent toothbrushes have been shown to reduce pain when applied in combination with fluoride toothpaste for hypersensitivity symptoms. Based on these results, the use of microcurrent toothbrushes and fluoride toothpaste should be actively promoted to patients who complain of pain due to dentin hypersensitivity symptoms and should be recommended to potentially hypersensitive patients in dental clinical settings as a preventive oral care product for dentin hypersensitivity.

### Learning Outcomes

- 1) Microcurrent toothbrushes have been shown to reduce pain when applied in combination with fluoride toothpaste for hypersensitivity symptoms.
- 2) The number of hypersensitive teeth also decreased significantly over time.

### Citation for Publication



This study has not been published before.

## Presenting Author Brief CV

Hyun-Kyung Kang has been a professor of dental hygiene from 2005 to the present, and I have been a professor at Silla University in Busan, South Korea since 2010. And I have been a graduate school head professor since 2014.

My research interests are mainly in clinical dental hygiene, oral prevention, and analysis using various equipment. I have conducted research on oral prevention with Q-ray and am currently conducting research on microcurrent toothbrushes.

I served as the president of the Korean Society of Oral Health Sciences and am currently working as the Director of External Affairs at Silla University.

# Impact on dental hygiene students' adaptation to clinical practice

EunJi You<sup>1</sup>, HeeHong Min<sup>1\*</sup>

<sup>1</sup> dental hygiene, Daejeon Health University, South Korea

## Problem Statement

Adaptation to clinical practice means utilizing major knowledge related to dental hygiene work at a clinical training institution, adapting well to clinical practice, and gaining a positive indirect experience as a dental hygienist. Although there are positive aspects that students gain through clinical training, on the other hand, it can be difficult to maintain smooth interpersonal relationships and adapt to the training at the training institution. Accordingly, although prior research has been conducted on clinical practice targeting dental hygiene students, there is currently no research on the relationship between dental hygiene students' adaptation to college life, interpersonal competence, and clinical practice adaptation. Therefore, in order to provide an effective clinical practice curriculum for dental hygiene students, additional research is needed on factors that affect adaptation to clinical practice.

## Purpose

We aim to identify the degree and relevance of dental hygiene students' interpersonal competence, adaptation to college life, and adaptation to clinical practice, and provide basic data for an efficient clinical practice curriculum by helping students adapt well to the clinical practice course.

## Methods

The data was prepared through a self-administered survey by convenience sampling of dental hygiene students with clinical practice experience among dental hygiene students in Daejeon, Chungcheong, Gyeongsang, and Jeolla regions from December 21, 2023 to January 5, 2024. The sample size was using the G\*power 3.1.9.7 program with an effect size of 0.15, significance level of 0.05, power of 0.95, and 9 predictor variables (adaptation to clinical practice, interpersonal competence, adaptation to college life, and 6 general characteristics). The minimum number of people required for the study was 166, and the final analysis subjects were 180.

## Results

Factors affecting dental hygiene students' adaptation

to clinical practice were department satisfaction and adaptation to university life, with an explanatory power of 25.7%.

## Conclusions

In order for dental hygiene students to adapt to clinical practice, it is important to increase department satisfaction and help students adapt well to university life. Therefore, it is believed that it is necessary to provide students with interest and adapt to university life through a program to improve their adaptation to university life with department professors and seniors, and to provide clinical practice education using virtual reality to target students before clinical practice.

## Learning Outcomes

1. Dental hygiene students' adaptation to clinical practice was 3.54 points, interpersonal competence was 3.60 points, and adjustment to university life was 3.38 points.
2. In terms of the degree of variables according to general characteristics, there was a significant difference in interpersonal competence and adjustment to university life in personality type and satisfaction with the department ( $p < 0.05$ ).
3. Correlation analysis with clinical practice adaptation showed a positive correlation with interpersonal competence ( $r = 0.319$ ) and adjustment to university life ( $r = 0.489$ ). The correlation between the independent variables was positively correlated with interpersonal competence and adjustment to university life ( $r = 0.608$ ).
4. Factors affecting dental hygiene students' adaptation to clinical practice were significantly related in department satisfaction (dissatisfaction/usually) ( $\beta = 1.181$ ,  $p < 0.008$ ) and adjustment to university life ( $\beta = 0.545$ ,  $p < 0.001$ ), and the explanatory power was 25.7%.

## Presenting Author Brief CV

Dental hygienist  
Dankook University Graduate School, Dental Hygiene  
Doctorate Program  
Dept. of Dental Hygiene, Daejeon Health University,  
adjunct Professor

# What is an Oral Health Practitioner? A scoping review of the Australian Oral Health Workforce

**William Carlson-jones<sup>1</sup>, Nicole Stormon<sup>2\*</sup>**

<sup>1</sup> Oral Health, PhD Candidate – University of Queensland, Lecturer – University of Sydney, ADOHTA President, Australia

<sup>2</sup> School of Dentistry, Senior Lecturer, DMD Program Convenor – University of Queensland & Research Fellow–Queensland Health, Australia

## Objective

The objective of this scoping review is to understand the education, scope of practice and distribution of oral health practitioners in Australia since national registration in 2012. This information will help to identify potential shortcomings in service provision and inform future workforce planning.

## Search Strategy / Selection Criteria

Literature was included was published peer reviewed papers, government reports, intervention, longitudinal, cross-sectional, case reports, case series, qualitative, economic studies published in English. The population included are registered, practicing and non-practicing Oral health practitioners in Australia. The concepts included will be on the scope of practice, training, and practitioner characteristics of the oral health practitioners between 1st January 2012 through to the 31st December 2022.

## Data Collection and Analysis

Papers collected from the search strategy were imported into Covidence for screening by two researchers. Papers that have been validated to meet the inclusion criteria based on the paper abstracts will then have the full texts of the articles reviewed. Data extracted included participant characteristics, concept, context, study methods and key findings relevant to the review question.

## Main Results

Of the 1094 papers were imported from a range of databases, 520 papers were removed as duplicates, and a further 550 papers were excluded based on the inclusion/exclusion criteria.

Limited evidence were available on the oral health practitioner workforce in Australia since 2012, but registration data and reports have highlighted the exponential decline of registered Dental therapists in the country, with an exponential increase of Oral health therapists. Dental therapists were located in regional areas, whereas Dental hygienists in urban centers of Australia. No studies utilised validated tools to measure scope of practice, and relied on using services provided and billing as indicators of scope.

## Conclusions

Further research is required into the service provision of dental therapists, dental hygienists and oral health therapists, and the employment characteristics of these practitioner divisions. This will provide a more accurate picture of potential areas of decline in service provision and access to care.

## Free of Bias

The JBI Critical Appraisal Checklist for Analytical Cross Sectional Studies was utilised to assess the risk of bias of the studies included.

## Learning Outcomes

-Understand the education, scope of practice and distribution of oral health practitioners in Australia since national registration in 2012.

-List the types of oral health practitioner registration divisions currently practicing in Australia.

## Presenting Author Brief CV

William 'CJ' Carlson-Jones is an Oral Health Therapist currently working as a lecturer with the University of Sydney teaching into their Bachelor of Oral Health program. Completing his undergraduate and postgraduate studies in oral health, education and business administration, CJ has strong aspirations to raise awareness of the important roles played by oral health professionals in improving access to care.

CJ has also commenced further studies undertaking a Doctor of Philosophy with the University of Queensland. His research will focus primarily on impact the transitional workforce from dental therapist to oral health therapist might have upon consumers, public dental services, tertiary institutions, and regional areas.

He is the President for the Australian Dental Oral Health Therapists' Association (ADOHTA) and is a strong advocate for a team approach to dental care.

# A Study on the Model for Predicting the Number of Periodontitis Patients Exposed to Particulate Matter and Atmospheric Factors Using Deep Learning Method

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<sup>2</sup> Department of Environmental Planning, Seoul National University, South Korea

## Problem Statement

Fine particulate matter (FPM) has been extensively observed due to its negative association with human health, with a focus on respiratory and cardiovascular systems. However, the associations between air pollutant exposure and the prevalence of periodontitis have not been observed yet.

## Purpose

This study purposed to investigate the prediction model of air pollutants, especially fine particulate matter exposure, to the number of periodontitis occurrences in South Korea using deep learning techniques.

## Methods

This study was a retrospective cohort study utilizing secondary data from the Korean Statistical Information Service (KOSIS) and the Health Insurance Review and Assessment (HIRA) database for air pollution and the number of periodontitis, respectively. The data from 2015 to 2022 were collected and consolidated on a monthly basis, organized by region. Following data matching and management, the Deep Neural Networks (DNN) model was applied to analyze the prediction model, and the mean absolute percentage error (MAPE) value was calculated to ensure the accuracy of the model.

## Results

As we evaluated the DNN model with MAPE, the multivariate model of air pollution including exposure to PM<sub>2.5</sub>, PM<sub>10</sub>, and other atmospheric factors was able to predict around 85% of the number of periodontitis patients. The MAPE value ranged from 12.85 to 17.10 (mean  $\pm$  SD = 14.12  $\pm$  1.30), indicating a commendable level of accuracy.

## Conclusions

Fine particulate matter along with other atmospheric

air pollutants possibly have an impact on oral health, especially periodontitis. Further investigation utilizing additional relevant variables and diverse methodologies is recommended.

## Learning Outcomes

Attendees can gain an insight into the possible effect of particulate matter exposure on human health, especially oral health. Further, attendees can have new knowledge about the DNN model for predicting events or disease occurrence.

## Presenting Author Brief CV

Septika Priskasari is an Indonesian dental nurse that currently receiving a scholarship from the Global Korea Scholarship (GKS) Program to attend the Doctoral Program at the Department of Dental Hygiene, Yonsei University. After graduating from Prince of Songkla University (Thailand) with a Master's degree in Applied Oral Health Science, she continues to work in academia by being a research and teaching assistant at her former university, Universitas Gadjah Mada (Indonesia). Her research interests in cellular physiology, dental caries and periodontal disease-related factors, and preventive dentistry. In this current research, under the supervision of Prof. Kim and Prof. Kang, she conceptualized and designed the study, collected and analyzed the data, wrote the paper, and presented the poster. For future collaboration, she can be contacted through email: septika.p@yonsei.ac.kr

## Development of oral health care manual for elderly people

**Mi gyung Seong<sup>1\*</sup>, JongWha Jang<sup>2</sup>, Young-Sun Kim<sup>3</sup>, Sun-Hee Hwang<sup>4</sup>, Min-Young Kim<sup>5</sup>,  
Myoung Ok Jeong<sup>6</sup>, Myeong-Hwa Park<sup>7</sup>, Yu-Mi Kim<sup>8</sup>, A-Young Chun<sup>9</sup>, Yu-Rin Kim<sup>10</sup>**

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<sup>8</sup> Clinic director, Liborn Dental Clinic, South Korea

<sup>9</sup> Dental Hygiene, Gachon University, South Korea

<sup>10</sup> Dental Hygiene, Silla University, South Korea

### Problem Statement

I believe that home-based oral care, which is excluded from integrated care in a super-aging society, is absolutely necessary.

### Purpose / Goals / Objective

To improve the oral health of the elderly in an aging society, a pilot project of on-site oral intervention was conducted for 80 people at four daycare centres in Seo-gu, Incheon from July 6 to November 8, 2023. After completing the geriatric specialist program, a practice manual was developed by combining actual oral intervention techniques

### Key Features

When oral muscle function in elderly people declines and they have difficulty chewing and swallowing, they become undernourished. Low nutritional status is highly likely to lead to aging and reduces the quality of life where one can enjoy delicious food and stay healthy. Through oral health care provided by dental hygienists specializing in the elderly, we aim to maintain overall health and extend healthy lifespan.

### Impact

Through pilot projects, we will find the effectiveness of oral health management and continuously train professional manpower. We would like to develop a manual that will be helpful in oral intervention visits by dental hygienists specializing in the elderly.

### Conclusions

Dental hygienists who have completed a geriatric program also want to prepare for the difficulties of oral intervention in

the actual field. In addition, by turning the experience of the pilot project into a manual, we aim to play a role in expanding the capabilities of dental hygienists in an aging society and improving the people's oral health.

### Learning Outcomes

Dental hygienists who received professional training and elderly people who received oral intervention had very high levels of satisfaction. We hope to continue training human resources and provide on-site oral intervention in the future.

### Citation for Publication

Planned to proceed in the future.

### Presenting Author Brief CV

Professor, Department of Dental Hygiene, Masan University. Chairman of the Special Committee on Oral Health for the Elderly and the Disabled, Korean Dental Hygienists Association.

Member of the Korea Dental Hygiene Education Accreditation and Evaluation Institute, Korean Dental Hygienists Association.

Member of the Korean Dental Hygienist National Examination Committee

# Expansive learning trough collaboration towards healthy ageing: An action research study

**Jessica Persson Kylén<sup>1,2\*</sup>, Annsofi Brattbäck Atzori<sup>2,3</sup>, Sven Persson Kylén<sup>3</sup>**

<sup>1</sup> Department of Health Sciences, University West, Sweden

<sup>2</sup> Centre for Gerodontology, Public Dental Service, Region Västra Götaland, Sweden

<sup>3</sup> R&D Department, Primary Health Care, Regionhälsan, Region Västra Götaland, Sweden

## Problem Statement

Collaboration happens differently. There is a need for further understanding success or failure within collaboration. Expansive learning is based on contradictions, which cannot be solved alone, by separate individual actions. Therefore, expansive learning could contribute to understand success or failure when reflecting on a surprisingly good outcome within a collaborative project between dental care professionals and municipal healthcare professionals.

## Purpose

To identify change and learning outcomes through the lens of expansive learning within collaboration between dental care and healthcare professionals.

## Methods

The design was action research, with an insider/outsider research team-approach. The data consisted of the interorganizational and interprofessional meetings (n = 23) documented in protocols; in-depth interviews with two dental hygienists and one local head nurse working in the studied project; Nurses and nursing assistants in long-term care; paper-based questionnaires (n = 619) non-validated open and closed questions, with a response rate of 87% (n = 537). Mixed method was used for analyzing of qualitative (content analysis) and quantitative (descriptive statistics) data.

## Results

One identified outcome is a major, ten-fold increase in the number of oral assessments (ROAG) from 2018 to 2021: in 2018, 224 ROAG assessments were performed by nursing staff on older adults with frailty in the municipal organization, whereas in 2021, 2127 such assessments were performed. The key concepts from expansive learning supported in the analyze; i) An expanded pattern of activity, ii) a new type of agency – reinventing oneself as

professional, and iii) corresponding theoretical concepts.

## Conclusions

Applying an approach of expansive learning made it possible to identify change, described as contradictions, which can be manifested as social dilemmas which cannot be solved alone. For example, using the lens of expansive learning a ten-fold increase in the number of ROAG assessments in a municipal organization was explored. Long-term interprofessional and interorganizational collaboration became apparent as supporting factors when enabling healthy ageing from an oral health perspective.

## Studies in Progress

The presentation will be inspired of reports and articles, some published, and some submitted.

## Learning Outcomes

Understanding how to contribute to healthy ageing through collaboration and expansive learning.

## Citation for Publication

Persson J, Svensson A, Lindén IG, Kylén S, Hägglin C. Aspects of Expansive Learning in the Context of Healthy Ageing—A Formative Intervention between Dental Care and Municipal Healthcare. *International Journal of Environmental Research and Public Health*. 2022; 19(3):1089. <https://doi.org/10.3390/ijerph19031089>

Also, one article is submitted and under peer review.

## Presenting Author Brief CV

Jessica Persson Kylén is a registered dental hygienist and M.Sc. in Oral health. She is PhD-candidate at University West and is currently working on a compilation thesis exploring collaboration between dental care organization and municipal health care organization.

# Effect of non-surgical periodontal therapy with the application of a comprehensive dental hygiene care process for periodontal disease patients: using mixed methods research

**Gahye Seo<sup>1</sup>, SangEun Moon<sup>1\*</sup>**

<sup>1</sup> Dental hygiene, Graduate School of Kwangju Women's University, South Korea

## Problem Statement

Participants to perceive the importance of dental oral care and professionalism of dental hygienists.

## Purpose

This study aims to conduct in-depth research on the effect of non-surgical periodontal therapy (NSPT) with the application of a comprehensive dental hygiene care (CDHC) process, and provide basic data for the wide application of CDHC.

## Methods

From May 8, 2021 to September 24, 2021, mixed-methods research was conducted in 36 patients with periodontal diseases. A paired samples t-test was used to analyze the quantitative research data using IBM SPSS program(ver. 22.0; IBM Corp., Armonk, NY, USA) and qualitative research data were analyzed using the thematic analysis method.

## Results

With NSPT applying the CDHC process, the perception of periodontal health and self-efficacy of periodontal healthcare were increased ( $p < 0.001$ ). Presence of gingivitis, probing pocket depth, bleeding on probing rate, presence of subgingival calculus, and dental plaque index were reduced ( $p < 0.001$ ). Based on 195 meaningful statements, 26 concepts, 12 sub-themes, and 5 themes <Trauma>, <Absence of expertise>, <Systematic care>, <Open mind> and <Companion> were drawn.

The experiences related to non-surgical periodontal treatment were categorized into two themes before applying CDHC process, and three themes after applying the process.

The first theme is <Trauma>, where participants expressed reluctance to visit the dentist due to uncomfortable memories from past scaling experiences. The second theme is <Absence of expertise>, as participants perceived scaling conducted without examination and evaluation

processes as merely removing surface calculus from the teeth.

The third theme is <Systematic care>, where participants discovered a transformation in themselves, actively adapting to new information about gum care and maintaining healthier gums. The fourth theme is <Open mind>, indicating a positive change in perception regarding scaling and oral care through the consideration and communication of dental hygienists. The fifth theme is <Companion>, as participants developed a different perspective on dental hygienists and expressed a desire to continue seeking their assistance to maintain oral health.

## Conclusions

The perception of periodontal health and the self-efficacy were improved, and substantial change in the clinical index. The CDHC application allowed the study participants to perceive the importance of dental care and professionalism of dental hygienists.

## Learning Outcomes

Learning to CDHC! Applying to CDHC!

## Presenting Author Brief CV

To sincerely touch upon health and joy.  
Clinician.  
Dental hygienist.

# Qualitative study on the scaling experience through the application of comprehensive dental hygiene care: A grounded theory approach

SeonMi Park<sup>1</sup>, SangEun Moon<sup>1\*</sup>

<sup>1</sup> Dental hygiene, Graduate School of Kwangju Women's University, South Korea

## Problem Statement

To strengthen the abilities of dental hygienists and position them as dental hygienists with expertise in carrying out scaling services.

## Purpose

This study was performed in order to provide evidence-based data for the expected professional impact of dental hygienists, and to apply and disclose the comprehensive dental hygiene care process through an in-depth analysis of their scaling experience and investigation of the importance of an evidence-based scaling work performance.

## Methods

The data were collected from June 3, 2019 to October 3, 2019 by conducting in-depth individual interviews on 10 dental hygienists who are working in dental clinics and hospitals by region. The data were analyzed by using the grounded theory methodology, which is a field of qualitative research method.

## Results

1. In the open coding stage, the analysis of raw data resulted in 68 concepts, 23 subcategories, and 12 categories.
2. In the axial coding stage, the experience of scaling management applying the comprehensive dental hygiene management process was structured into causal conditions, contextual conditions, central phenomenon, intervening conditions, action/interaction strategies, and outcomes. Causal conditions were identified as "Commerciality of dental care" and "Unrecognized professionalism of dental hygienists". Contextual conditions appeared as "Heterogeneity of clinical work and college education" and "Recognition of the limits to growth". The central phenomenon manifested as the "Disappearance of scaling professionalism". Intervening conditions included "Inability to use the insurance system", "Sabotaged by peers" and "Distrust and suspicion of the people around

me". Action/interaction strategies were represented as "Meeting with other important people", "Motivating study play" and "Providing an opportunity to grow". The outcome was identified as the "New CDHC opportunity for dental hygienists".

3. In the selective coding, through the stages of the paradigm model and the process of change, the core category regarding the scaling experience of dental hygienists applying the comprehensive dental hygiene management process emerged as the 'a process of becoming a mature professional outside practical work'.

## Conclusions

In this study, the participants were able to gain a sense of occupational accomplishment as dental hygienists by performing scaling based on the comprehensive dental hygiene care (CDHC) process, and to advance into professionals through continuous efforts and research in order to enhance their job competencies.

## Learning Outcomes

Let's re-emphasize the professional mission of clinical dental hygienists, directing our focus towards expert management for oral health care rather than disease care.

## Presenting Author Brief CV

Path Provider for Clinicians.

## Exploring migrant mothers' utilization of oral health-related information: a qualitative interview study in the Swedish context.

**Elena Shmarina<sup>1,2\*</sup>, Malin Stensson<sup>1</sup>, Brittmarie Jacobsson<sup>1</sup>**

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<sup>2</sup> Public Dental Service, Kalmar County Council, Oskarshamn, Sweden

### Problem Statement

Children of migrant parents have significantly poorer oral health than their peers with native-born parents. Parents can be considered gatekeepers for the oral healthcare of their young children. Children's oral health and oral status are influenced by parental oral health literacy and health-related behavior. However, there are knowledge gaps regarding migrant mothers' utilization of oral health-related information.

### Purpose

To explore how migrant mothers utilize oral health-related information to maintain and promote oral health in their children.

### Methods

In-depth interviews were conducted with seven migrant mothers of children up to ten years old resettled in Kalmar County, Sweden. The mothers had entered Sweden from 2015 onwards, and their native language was Somali, Dari, or Arabic. The participants were encouraged to describe their experiences of seeking oral health information and oral health in general and dental health services. The interviews were analyzed by qualitative content analysis with coding in categories, followed by formulating a theme.

### Results

The main findings revealed an overall theme – combining different ways of information utilization. The theme captures the migrant mothers' approach to managing four distinct ways to use oral health information. The theme draws upon four categories that emerged from the analysis: cognitive processing, utilizing self-efficacy beliefs, adapting to social norms, and practical application. The categories intend to make visible a basic structure of how the migrant mothers' use oral health-related information. They put this information to various uses depending on the individual

contexts they are living in and the issues and problems they face. Depending on personal circumstances, they may use the same information differently and simultaneously combine these to maintain and promote oral health in their children.

### Conclusions

Overall, the findings provide important insights into the information-related capacity of oral health literacy conceptual content and identify four ways migrant mothers combine to manage the utilization of oral health-related information. The main categories constructed in this paper represent our insights that can be used to understand how migrant mothers utilize oral health-related information. Understanding the phenomena can contribute to informing and structuring oral health information interventions that work in concert with migrant mothers' own information practices.

### Learning Outcomes

The categories that emerged in this study reflect essential areas, which can be targeted to promote the oral health of migrant children. These findings can, for instance, be used for (1) designing an effective person-focused approach that holds good potential for teaching migrant parents to use information meaningfully to accomplish oral health goals for their children; (2) guiding clinicians' and policymakers' decision-making efforts in tailoring information programs and services for this population; (3) increasing collaborations between health sectors, government, communities, and other actors to shape appropriate interventions for migrant communities.

### Presenting Author Brief CV

Associate Professor, Department of Odontology and Oral Health Sciences, Jönköping University, Sweden

# Interrupted time series analysis of the effects of Korea's scaling reimbursement policy.

**Yu-Rin Kim<sup>1</sup>, Seon-Rye Kim<sup>2</sup>, Minkook Son<sup>3\*</sup>**

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## Problem Statement

Previous studies have reported the effectiveness of scaling reimbursement policy for chronic periodontitis, but this remains controversial. Additionally, there is no study that analyzed the policy effect through an interrupted time series by comparing two quantitative data (National Sample Cohort data and Health Screening Cohort data).

## Purpose

The objective is to conduct a comprehensive analysis of immediate changes and gradual effects through an interrupted time series (ITS) analysis of chronic periodontitis-related procedures before and after the implementation of Korea's scaling reimbursement policy.

## Methods

Interrupted time series analysis was conducted to compare effects before and after the implementation of scaling reimbursement policies using data from the Korean National Health Insurance Service-National Sample Cohort (n = 740,467) and the Korean National Health Insurance Service-Health Screening Cohort (n = 337,904) spanning from 2002 to 2019. Periodontitis-related procedures were categorized into three groups (mild, moderate, and severe) based on diagnostic codes and procedures. Immediate changes and gradual effects on the risk of occurrence before and after policy implementation were assessed.

## Results

Results including data analysis (or a plan for analysis) are included.

Starting from July 2013, the expansion of scaling reimbursement policies increased the slope of the mild group (coefficients before scaling reimbursement; 7.5 with gradual effects; 8.7) and decreased the slope of the moderate group (coefficients before scaling reimbursement; 2.8 with gradual effects; -2.1) concerning periodontal status.

However, in the Health Screening Cohort data, where the proportion of subjects with comorbidities increased before and after scaling reimbursement, the slope of the severe group increased (coefficients before scaling reimbursement; 0.2 with gradual effects; 1.3).

## Conclusions

The findings of this study suggest that scaling reimbursement policies prompt dental visits for patients with severe periodontal disease and systemic conditions, facilitating regular oral care. This policy has demonstrated an increase in access to potential periodontal disease treatment for patients with systemic diseases, often overlooked by the medical community, and has shown to hinder the progression of periodontal disease in the Korean population.

## Learning Outcomes

This study revealed that the scaling reimbursement policy tended to increase mild procedures while decreasing moderate procedures during periodontal treatment. However, it showed a growing impact on severe procedures, especially within groups characterized by a high prevalence of comorbidities.

## Citation for Publication

This study has not been published before.

## Presenting Author Brief CV

Professor Kim Yu-rin

Since 2020, she has been working as a professor at Silla University in Busan, South Korea. My research interests are mainly oral epidemiology, oral prevention and their analysis. She is conducting research on various clinical trials and medical big data analysis.

# Relationship between receiving professional dental care and the survival rate of long-term care patients: a cohort study of 1,459,163 long-term care beneficiaries in South Korea

**KYUNG-A Ko<sup>1</sup>, Bo-A Lee<sup>2</sup>, Young-Taek Kim<sup>2</sup>, Jung-Seok Lee<sup>1\*</sup>**

<sup>1</sup> Department of periodontology, Research institute of periodontal regeneration, Yonsei University College of Dentistry, South Korea

<sup>2</sup> Department of Periodontology, National Health Insurance Service Ilsan Hospital, South Korea

## Problem Statement

South Korea is one of the countries supporting the aged person according to their physical and mental conditions. The Korean long-term care insurance (LTCI) system started since 2008, and all information of the beneficiaries have been recorded in a government database. Thus, we made a specific cohort of the LTC beneficiaries and the matched cohort in South Korea, and evaluated receiving pattern of dental care service and its relationship with their mortality. We believe that this large cohort result would be an important evidence on the rationale of the professional dental service for LTC patients.

## Purpose

To retrospectively establish a cohort of patients received long-term care (LTC) and a matched control cohort in South Korea, and to determine their dental care pattern and survival rates.

## Methods

We retrieved 1,459,163 individuals eligible for LTC insurance in the Korean National Health Insurance Service database from July 2008 to 2015 (LTC cohort) and 1,459,544 individuals matched through propensity-score matching (matched cohort). The LTC insurance users were further categorized into subgroups based on their care type; institutional, home and mixed care. The numbers of dental visits and utilizations were counted in each cohort, and the survival rate of each LTC cohort was determined according to their dental care utilization.

## Results

Dental care utilization increased steadily in all cohorts except for institutional care, with the highest utilization (around 30%) observed in the matched cohort. Lower independence in LTC cohorts correlated with reduced dental utilization: 18–27% for home care, 12–18% for

mixed care, and 10% for institutional care. Dental service utilization significantly improved survival rates in all LTC cohorts.

## Conclusions

The present large-scale cohort data revealed that LTC patients readily experience social neglect for oral care, but dental care utilization may significantly improve their survival rate.

## Learning Outcomes

Professional dental care has been associated with a lower survival rate among long-term care patients, emphasizing the importance of developing evidence-based policies aimed at reducing mortality among these individuals through professional dental care.

## Presenting Author Brief CV

Mar. 2017 - Feb. 2021 Ph.D, Yonsei University College of Dentistry, Seoul, Korea

Mar. 2022~ present Department of periodontology research assistant professor

# Association Between Adverse Childhood Experiences And Oral Health Outcomes In The English Longitudinal Study Of Ageing

**M Mguni<sup>1\*</sup>**

<sup>1</sup>Dental Hygienist, Dental Hygienist/Therapist, United Kingdom

## Problem Statement

Oral health research increasingly uses a life course perspective to examine and understand the factors that influence oral health outcomes, starting in childhood. Adverse childhood experiences (ACEs) have recently gained the attention of oral health researchers and results from existing studies suggest that experiencing childhood adversities negatively impacts oral health outcomes. However, a huge gap in understanding their associations with oral health still exists and literature remains limited.

## Purpose

The aim of this study was to assess the relationship between Adverse Childhood Experiences (ACEs) and oral health outcomes using a nationally representative dataset for the older population of England.

## Methods

This was a cross sectional secondary analyses utilising data collected in the third wave of the English Longitudinal Study of Ageing (ELSA) for an older adult population aged 50 years and older. Eight ACEs were selected for consideration from data collected retrospectively during The Life History Interview at wave 3. These ACEs were : Child Abuse: (i) physical, (ii) emotional, and (iii) sexual; Household Challenges: (iv) violent treatment of mother, (v) divorce/separation of parents, (vi) substance abuse, (vii) incarceration of a family member, (viii) mental illness; Neglect: (ix) physical, and (x) emotional. The three oral health outcomes analysed for this study were edentulousness, self-rated oral health and oral impact on daily performance. Logistic regression was used for a complete case statistical analysis (n=5,575) of the associations between ACE exposure and the three oral health outcomes. Adjustments were made for selected demographicsocio-economic and behavioural factors.

## Results

After full adjustment, ACEs were significantly associated

with poorer oral health outcomes for two of the three oral health outcomes analysed. Adults with two or more ACEs had 1.51 times higher odds of rating their oral health as fair/poor (95% CI 1.23-1.84) and 2.31 times higher odds of reporting at least one oral impact on daily performance (95% CI 1.80-2.96). No significant associations were found between ACEs and edentulousness in both the unadjusted and adjusted analyses.

## Conclusions

This study identified that older adults with adverse childhood experiences were at a higher risk of experiencing poorer oral health outcomes. Targeted public health policies focusing on early intervention strategies to identify and prevent the occurrence of adverse experiences earlier in life would be beneficial in improving oral health outcomes later in life. Further research in the future, employing longitudinal study designs are needed to further explore causal pathways in these associations.

## Learning Outcomes

This study hopes to highlight to dental professionals the importance of a holistic approach when formulating treatment plans for dental patients. It also aims to raise awareness on the importance of a collaborative approach with other medical professionals when considering oral health outcomes

## Presenting Author Brief CV

I am a Bsc. Oral health Science graduate from the University of Manchester, UK with over 14 yrs clinical experience as a Dental Hygienist. In 2023 I completed my Masters in Dental Public Health from University College London (UCL) and graduated with a Merit. I am very passionate about preventative oral health care and a holistic approach in patient care. Dental public health has opened my eyes further into the deep socio economic issues that affect provision of dental care fairly in the society.

## Network Text Analysis about Oral Health in Aging-Well

**Seol-Hee Kim<sup>1\*</sup>**

<sup>1</sup> Dental Hygiene, Konyang University, South Korea

### Objective

Oral health is an important element of well aging. And oral health also affects overall health, mental health, and quality of life. In this study, we sought to identify oral health influencing factors and research trends for well-aging through text analysis of research on well-aging and oral health over the past 12 years

### Search Strategy / Selection Criteria

The research data was analyzed based on English literature published in PubMed from 2012 to 2023. Aging well and oral health were used as search terms, and 115 final papers were selected. Network text analysis included keyword frequency analysis, centrality analysis, and cohesion structure analysis using the Net-Miner 4.0 program.

### Data Collection and Analysis

There were 201 papers, including reviews and clinical trials, excluding books, documents, and abstracts. When organizing keywords and MeSH terms in Excel, 115 papers were finally selected, excluding basic experimental research related to aging well oral health. The literature was organized by author, title, journal, volume, year of publication, and keywords. Two people cross-examined the keywords and combined similar keywords

### Main Results

Excluding general characteristics, the most frequent keywords in 115 articles, 520 keywords (Mesh terms) were psychology, dental prosthesis and Alzheimer's disease, Dental caries, cognition, cognitive dysfunction, and bacteria. Research keywords with high degree centrality were Dental caries (0.864), Quality of life (0.833), Tooth loss (0.818), Health status (0.727), and Life expectancy (0.712). As a result of community analysis, it consisted of 4 groups. Group 1 consisted of chewing and nutrition, Group 2 consisted oral diseases, systemic diseases and management, Group 3 consisted oral health and mental health, Group 4 consisted oral frailty symptoms and quality of life

### Conclusions

In an aging society, oral dysfunction affects mental health

and quality of life. Preventing oral diseases for well-aging can have a positive impact on mental health and quality of life. Therefore, efforts are needed to prevent oral frailty in a super-aging society by developing and educating systematic oral care programs for each life cycle

### Free of Bias

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### Learning Outcomes

In an aging society, oral dysfunction affects mental health and quality of life. Preventing oral diseases for well-aging can have a positive impact on mental health and quality of life. Therefore, efforts are needed to prevent oral frailty in a super-aging society by developing and educating systematic oral care programs for each life cycle

### Citation for Publication

A Study on the Network Text Analysis about Oral Health in Aging-Well

J Dent Hyg Sci Vol. 23, No. 4, 2023, pp.302-311 <https://doi.org/10.17135/jdhs.2023.23.4.302>

### Presenting Author Brief CV

\*Department of dental hygiene, Konyang University

\*Education background : 2006-2009 Chosun University (PhD. Public Health)

\*Research interest : public health, oral education, Infection, Aging Well

\*References

1. A Study on the Awareness and Need for Connected-Convergence Education among College Students in Health-Related Fields(<https://doi.org/10.17135/jdhs.2022.22.4.233>)
2. A Study on Occupational Stress and Coping, Turnover, Knowledge and Practice of Infection Control in Dental Hygienists of COVID-19(<https://doi.org/10.17135/jdhs.2021.21.4.233>)
3. The Effects of Orofacial Myofunctional Training on the Changes of Lip and Tongue Strength in Elderly People(<https://doi.org/10.17135/jdhs.2019.19.4.279>)
4. Analysis of Correlation among Oral Environment, Oral Myofunction, and Oral Microorganisms(<https://doi.org/10.17135/jdhs.2019.19.2.96>)

# Trauma Informed Care for Dental Practitioners

**Tabitha Acret<sup>1\*</sup>**

<sup>1</sup> Oral Health, Univeristy of Sydney, Australia

## Problem Statement

Domestic Violence is a pervasive societal issue characterized by the systematic abuse, control, and intimidation inflicted upon individuals within intimate relationships. Oral health professionals have the potential to play a key role in intervention for victims of domestic and family violence

## Purpose / Goals / Objective

To highlight the often-overlooked intersection of domestic violence and oral health, aiming to increase awareness, foster understanding, and inspire proactive measures within the dental community.

By exploring the impact of oral health and proposing strategies for comprehensive care this presentation seeks to empower oral health care professionals to recognize, address and contribute to the well-being of individuals affected by domestic violence

## Key Features

1. An examination of the intersection between domestic violence and oral health providing insights into the unique challenges and implications for victims
2. Present relevant research findings and statistics that highlight the correlation between domestic violence and oral health issues, establishing a factual foundation for understanding.
3. Emphasis on the importance of trauma-informed care in addressing oral health concerns for survivors of domestic violence, recognizing the impact of trauma on overall well-being.
4. Discussion of collaborative strategies involving healthcare professionals, support organizations to enhance identification, intervention and support for those affected by violence

## Impact

The impact of this presentation is far reaching, aiming to bring about positive change in the approach to domestic violence and oral health. To improve clinician understanding and to help identify patients who would benefit from intervention

## Conclusions

This presentation underscores the critical intersection

of domestic violence and oral health, emphasizing the profound impact on the well-being of survivors. By examining research findings and advocating for a trauma informed care approach. Collaborative efforts of oral health care professionals are needed to address both the visible and hidden aspects of domestic violence so that compassionate and comprehensive care can be delivered while addressing the needs of survivors, fostering a path towards healing and recovery

## Learning Outcomes

1. Participants will gain a heightened awareness of the intricate relationship between domestic violence and oral health, recognizing the significance of oral health indicators in identifying and addressing abuse.
2. Healthcare professionals will be equipped with the knowledge to recognize oral health signs of domestic violence, enabling early intervention and support of survivors.
3. Understand the principals of trauma informed care and its application in unique oral health challenges faced by survivors of domestic violence
4. Equip oral health care professionals to contribute to a compassionate and informed response to domestic violence

## Presenting Author Brief CV

Tabitha Acret is an award winning dental hygienist and lecturer at the Univeristy of Sydney. Tabitha graduated with a Bachelor of Oral Health, Graduate certificate in Public Health and is a current 3 year Masters Student at The Eastman in London.

Along with working at the university Tabitha works in clinical practice 1 day a week and lectures internationally on periodontology and motivating patients. She has a passion for holistic care and making a difference in patients lives. Tabitha works as an advocate in the family violence space bringing awareness to gender based discrimination and violence and has incorporated this into her dental professional life providing training to dental professionals on providing trauma informed care and help to victims of violence.



# ISDH 2024

## International Symposium on Dental Hygiene 2024

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# ISDH 2024

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on Dental Hygiene 2024



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# Poster Presentations



## Poster Presentation

Programme Code	Title	Author
P-001	Competence development in dental hygienist's education. New innovative multidisciplinary learning and development environment HyMy Village.	<b>Johanna Manninen<sup>1</sup></b> <sup>1</sup> Oral Health, Metropolia University of Applied Sciences, Finland
P-002	The impact of metacognition and learning flow on the problem-solving ability of dental hygiene students	<b>Soo-Auk Park<sup>1</sup></b> <sup>1</sup> Dental hygiene, Namseoul University, South Korea
P-003	a dental hygiene case study- Management of periodontal debriefing of female college students -	<b>HeeJa Na<sup>1</sup></b> <sup>1</sup> Department of Dental Hygiene, Honam university, South Korea
P-004	A qualitative study of multidisciplinary perceptions and practices of home-based oral healthcare for the elderly in an integrated healthcare-care support system: Focus group interviews	<b>Se-Rim Jo<sup>1,2</sup>, Jong-Hwa Jang<sup>1,2</sup></b> <sup>1</sup> Department of Public Health Science, Graduate school of Natural Science, Dankook University, South Korea <sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, South Korea
P-005	Antifungal susceptibility and phospholipase activity of Candida isolated from patients with head and neck cancer and esophageal cancer	<b>KANAKO Yano<sup>1,2</sup>, Hiromi NISHI<sup>3</sup>, Hideo SHIGEISHI<sup>4</sup>, Yoshino KANEYASU<sup>4</sup>, Yoshie NITANI<sup>5</sup>, Miyuki NAKAOKA<sup>3</sup>, Hiroyuki KAWAGUCHI<sup>3</sup>, Koji OHTA<sup>4</sup></b> <sup>1</sup> Division of Integrated Health Sciences, Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan <sup>2</sup> Hiroshima University Hospital, Division of Dental, Department of Clinical Practice and Support, Japan <sup>3</sup> Hiroshima University Hospital, Department of General Dentistry, Japan <sup>4</sup> Department of Public Oral Health, Program of Oral Health Sciences, Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan <sup>5</sup> Departments of Oral Health Management, Program of Oral Health Sciences, Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan
P-006	Evaluating motivation related to the oral condition on receiving basic periodontal therapy; A case report	<b>Ai Sakuma<sup>1</sup></b> <sup>1</sup> Department of Hygiene and Oral Health Science, Tokushima University Graduate School of Biomedical Sciences, Japan
P-007	Mentor-Protégé vs. Traditional Approach in Dental Hygiene Clinical Education	<b>Dianne Sefo<sup>1</sup>, Victoria Benvenuto<sup>1</sup>, Xiao-Qing Fung<sup>1</sup>, Esther Tingué<sup>1</sup></b> <sup>1</sup> Department of Dental Hygiene and Dental Assisting, New York University, USA
P-008	A Study on Surface Contamination Investigation of Wired and Wireless Computer Mouse Used in Dental Unit Chair.	<b>Choi Yu-Ri<sup>1</sup>, Lee Su-Jung<sup>2</sup>, Choi Mi-Sook<sup>3</sup>, Nam Seoul-Hee<sup>4</sup></b> <sup>1</sup> Dept. of Dental Hygiene, Hallym polytechnic University, South Korea <sup>2</sup> Dept. of Dental Hygiene, Yong-in Arts&science University, South Korea <sup>3</sup> Dept. of Dental Hygiene, Andong Science College, South Korea <sup>4</sup> Dept. of Dental Hygiene, Kangwon National University, South Korea
P-009	Factors associated with interprofessional competencies of dental hygienists : a multicenter cross-sectional study.	<b>Yumeno Kato<sup>1</sup>, Yuhei Matsuda<sup>2</sup>, Kanade Ito<sup>1</sup>, Liao Shin-ru<sup>1</sup>, Haruna Ozawa<sup>1,3</sup>, Yuji Kabasawa<sup>1</sup></b> <sup>1</sup> Department of Oral Care for Systemic Health Support, Tokyo Medical and Dental University, Japan <sup>2</sup> Department of Oral and Maxillofacial Surgery, Shimane University, Japan <sup>3</sup> Department of Dental Hygiene, Tokyo Medical and Dental University, Japan
P-010	Providing oral hygiene care to hospitalized dependent patients: Habits, knowledge and attitudes of nurses and healthcare assistants	<b>Victor Assunção<sup>1,2,3</sup>, Mariana Passarinho<sup>1</sup>, Teresa Albuquerque<sup>1,2</sup>, Henrique Luis<sup>1,2,3</sup></b> <sup>1</sup> Faculdade de Medicina Dentária UICOB, Universidade de Lisboa, Portugal <sup>2</sup> Faculdade de Medicina Dentária, RHODEs, Universidade de Lisboa, Portugal <sup>3</sup> Center for Innovative Care and Health Technology (ciTechcare), Polytechnic of Leiria, Leiria, Portugal
P-011	Survey on the perceptions of dental hygiene and dental laboratory technology students after interprofessional education on dental prosthodontic treatment	<b>Ae-ri Shin<sup>1</sup>, Gum-ju Sun<sup>2</sup>, Hyung-Soon Shim<sup>1</sup>, Eun-mi Kim<sup>1</sup>, Myung-ok Ha<sup>1</sup></b> <sup>1</sup> Dental Hygiene, Gwangju Health University, South Korea <sup>2</sup> Dental Laboratory Technology, Gwangju Health University, South Korea

Programme Code	Title	Author
P-012	Are there any differences in dental caries prevalence between hypertensive persons with or without long-term experience of PAP-treated obstructive sleep apnea?	<b>Hanna Ahonen<sup>1,2*</sup>, Kristina Berggren<sup>1,2</sup>, Christine Kvarnvik<sup>1,3</sup>, Ola Sunnergren<sup>1,2,4</sup>, Ulrika Lindmark<sup>5</sup>, Anders Broström<sup>6,7,8</sup>, Malin Stenstrom<sup>1,2</sup></b> <sup>1</sup> Department of Odontology and Oral Health, School of Health and Welfare, Jönköping University, Jönköping, Sweden <sup>2</sup> Centre for Odontology and Oral Health, School of Health and Welfare, Jönköping University, Jönköping, Sweden <sup>3</sup> Department of Periodontology, Institute for postgraduate Education, Region Jönköping County Council, Jönköping Sweden, Sweden <sup>4</sup> Department of Otorhinolaryngology, Region Jönköping County Council, Jönköping, Sweden <sup>5</sup> Department of Health Sciences, Karlstad University, Karlstad, Sweden <sup>6</sup> Department of Clinical Neurophysiology, University Hospital Linköping, Linköping, Sweden <sup>7</sup> Department of Nursing, School of Health and Welfare, Jönköping University, Jönköping, Sweden <sup>8</sup> Department of Health and Caring Sciences, Western Norway University of Applied Sciences, Bergen, Vestlandet, Norway
P-013	A Study on the relationship between oral health factors and mental health factors in Korean adolescents	<b>Min Hee Hong<sup>1*</sup></b> <sup>1</sup> Dept. of Dental Hygiene, Division of Health Science, Baekseok University, South Korea
P-014	Impact of oral care education on the nutritional status of young adults	<b>Eun-Ha Jung<sup>1*</sup></b> <sup>1</sup> Department of dental hygiene, Yonsei University, South Korea
P-015	Improving the oral health education in university curriculums in Trøndelag county, Norway	<b>Line Cathrine Nymoen<sup>1*</sup>, Cecilie Y. Robertsen<sup>2</sup>, Lars Martin Berg<sup>1,2</sup>, Andrea S. Aspås<sup>3</sup></b> <sup>1</sup> Research, Center for Oral Health Services and Research (TkMidt), Norway <sup>2</sup> Public dental health services, Trøndelag County, Norway <sup>3</sup> Department of oral and maxillofacial surgery, St.Olavs Hospital, Norway
P-016	Meeting a Dental Hygienist at an Oral Care Center for a 50-Year-Old Patient with Low Oral Health Beliefs and Periodontitis! : A Case Report on Continued Oral Care Led by a Dental Hygienist	<b>Geumchae Youn<sup>1*</sup></b> <sup>1</sup> Dental hygienist, 275 dental clinic, South Korea
P-017	Evaluation of Pediatric Oral Care Program with a Focus on AIRFLOWING	<b>GaHye Seo<sup>1*</sup></b> <sup>1</sup> Dental hygiene, Erumi dental clinic, South Korea
P-018	Survey of dental infection control in some countries in Southeast Asia: Based on the dental infection control checklist of the U.S. Centers for Disease Control and Prevention (CDC)	<b>Youmi Kim<sup>1</sup>, Sojung Mun<sup>2*</sup>, Seo Young Jeong<sup>2</sup>, Da Jeong LEE<sup>2</sup></b> <sup>1</sup> Dept.Rehabilitation of Spinal Cord Injury/Dept. of Dental Hygiene, National Rehabilitation Center/Yonsei University Graduate School, South Korea <sup>2</sup> Department of Dental Hygiene, Yonsei University Graduate School, South Korea
P-019	Periodontal disease, systemic pathologies and psychological impact in patients with colorectal carcinoma.	<b>Antonia Abbinante<sup>1</sup>, Anna Antonacci<sup>2*</sup>, Cinzia Bizzoca<sup>2</sup>, Leonardo Vincenti<sup>2</sup>, Valeria Andriola<sup>2</sup>, Germano Orrù<sup>3</sup>, Nicola Bartolomeo<sup>2</sup>, Valeria Lorusso<sup>2</sup>, Maria Teresa Agneta<sup>2</sup>, Massimo Corsalini<sup>2</sup></b> <sup>1</sup> Interdisciplinary Department of Medicine, University of Bari "Aldo Moro", contract professor, Italy <sup>2</sup> Interdisciplinary Department of Medicine, University of Bari "Aldo Moro", other, Italy <sup>3</sup> Surgical Sciences Department, University of Cagliari, ordinary professor, Italy
P-020	An investigation exploring the education of dental hygienists (DHs) and dental therapists (DTs) employed in Oral Maxillofacial Surgery Departments (OMFS) in the United Kingdom.	<b>Jocelyn Harding<sup>1</sup>, Kenneth Eaton<sup>2*</sup></b> <sup>1</sup> Clinical Ambassador, Mouth Cancer Foundation, United Kingdom <sup>2</sup> Global and Lifelong Learning (GLL), University of Kent, United Kingdom
P-021	Integration of Dental Hygiene Care for pediatric oncology patients, experience at a tertiary care hospital in LMIC. A quality care improvement initiative.	<b>Shazia Taimoor<sup>1*</sup>, Dr. Naureen Mushtaq<sup>2</sup>, Dr. Asim Belgaumi<sup>2</sup>, Dr. Zehra Fadool<sup>2</sup>, Dr. Sadaf Altaf<sup>2</sup>, Salima Alibhai<sup>1</sup></b> <sup>1</sup> Surgery, Aga Khan University Hospital Pakistan, Pakistan <sup>2</sup> Oncology, Aga Khan University, Pakistan
P-022	The experience of dental hygiene students related to the elderly relevance to geriatricism	<b>Young Sun Kim<sup>1</sup>, Jung Hwa Lee<sup>1*</sup></b> <sup>1</sup> Dental Hygiene, Daegu Health College, South Korea

Programme Code	Title	Author
P-023	Expected results when using high concentration fluoride containing toothpaste fluoride exposure assessment	<b>Narae Oh<sup>1</sup>, Haekyoung Kim<sup>*</sup></b> <sup>1</sup> Dept. of Dental Hygiene, Daegu health college, South Korea
P-024	Validity Assessment for Competency Development in Clinical Dental Hygiene Based on Dental hygiene process of care	<b>Jin-Sun Choi<sup>1,2,3</sup>, Sun-Jung Shin<sup>1,2,3</sup>, Bo-Mi Shin<sup>1,2,3</sup>, Hyo-Jin Lee<sup>1,2,3</sup>, Hye-Young Yoon<sup>1,2,3</sup>, Soo-Myoung Bae<sup>1,2,3*</sup></b> <sup>1</sup> Dental hygiene, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>2</sup> Research Institute of Oral Science, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>3</sup> Research Institute of Dental Hygiene Science, College of Dentistry, Gangneung-Wonju National University, South Korea
P-025	Association between depressive mood and chronic periodontitis among senior residents using the National Health Insurance Service-Senior Cohort Database	<b>Seoul-Hee Nam<sup>1</sup>, Minkook Son<sup>2</sup>, Yu-Rin Kim<sup>3*</sup></b> <sup>1</sup> Dental Hygiene, Kangwon National University, South Korea <sup>2</sup> Physiology, Dong-A University, South Korea <sup>3</sup> Dental Hygiene, Silla University, South Korea
P-026	Analysis of the types of perceptions of dental hygienists and home care workers on visiting oral health services: Using the Q methodology	<b>Sue-Hyang Lee<sup>1</sup>, Sun-Jung Shin<sup>1,2,3*</sup>, Soo-Myoung Bae<sup>1,2,3</sup>, Bo-Mi Shin<sup>1,2,3</sup></b> <sup>1</sup> Dept. of Dental Hygiene, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>2</sup> Research Institute of Dental Hygiene Science, Gangneung-Wonju National University, South Korea <sup>3</sup> Research Institute of Oral Science, Gangneung-Wonju National University, South Korea
P-027	The impact of clinical dental hygienists' compassion competence on job satisfaction	<b>Hong Soomi<sup>1</sup>, Kim Youngim<sup>2*</sup></b> <sup>1</sup> Emergency Medical Services, Jeonju Vision University, South Korea <sup>2</sup> Dental Hygiene, Jeonju Vision University, South Korea
P-028	Motivations for and outcomes of graduate education among dental hygienists: A pan-Canadian study	<b>Leigha Rock<sup>1</sup>, Lindsay Macdonald<sup>1</sup>, Sharon Compton<sup>2</sup>, Laura MacDonald<sup>3</sup>, Zul Kanji<sup>4*</sup></b> <sup>1</sup> Faculty of Dentistry, Dalhousie University, Canada <sup>2</sup> Faculty of Medicine and Dentistry, University of Alberta, Canada <sup>3</sup> Dr. Gerald Niznick College of Dentistry, University of Manitoba, Canada <sup>4</sup> Faculty of Dentistry, University of British Columbia, Canada
P-029	Six Steps of Oral Personal Training for Dental Hygienists: A Case Report	<b>Seonmi Park<sup>1*</sup></b> <sup>1</sup> Lifetime oral care center, Yeonseiwooll dental hospital, South Korea
P-030	Current employment characteristics and career intentions of Lithuanian dental hygienists	<b>Gitana Rederiene<sup>1*</sup>, Yvonne Buunk-Werkhoven<sup>2</sup>, Alina Puriene<sup>1</sup></b> <sup>1</sup> Institute of odontology, Vilnius University, Lithuania <sup>2</sup> SPOH ARTS - International Optimizing Health Psychology, SPOH ARTS, Netherlands
P-031	Survey on Oral Frailty of Hospitalised Older Patients in Acute Medical Hospitals – Perspectives Review from Severity and Evaluators of Medical/Nursing Needs. –	<b>Yumi Ishikawa<sup>1*</sup>, Aiko Hoshiai<sup>1,3</sup>, Yukiko Yamamura<sup>1</sup>, Yujeong Shin<sup>1,3</sup>, Itsuski Takazawa<sup>1,4</sup>, Seiko Toraya<sup>1</sup>, Yasuyuki Tanahashi<sup>2</sup></b> <sup>1</sup> Oral Health Sciences, Meikai University, Japan <sup>2</sup> Nursing, Kanagawa Dental University Junior College, Japan <sup>3</sup> Pediatric Dentistry/Special Needs Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan <sup>4</sup> Oral Health Care Education, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan
P-032	Non-surgical periodontal treatment and maintenance in smokers with systemic disease(hypertension/diabetes) (Clinical case report of 'J dental clinic')	<b>Jinju Yang<sup>1,2*</sup>, Sangeun Moon<sup>1</sup>, Yunjeong Kim<sup>1</sup>, Seonyoung Kim<sup>1</sup>, Hyeun Cho<sup>1</sup>, Hyunjoo Kang<sup>1</sup></b> <sup>1</sup> Dental hygiene, Kwangju Womens University, South Korea <sup>2</sup> Dental hygienist, J Dental clinic, South Korea
P-033	The effectiveness of using the perioscope as an adjunct to non-surgical periodontal therapy: Clinical and radiographic results	<b>Meloshini Naicker<sup>1*</sup></b> <sup>1</sup> Specialist Perio Practice, The Perio Centre, Australia
P-034	Effectiveness of Curriculum for Professional Oral Hygiene Management of Inpatients in ICU	<b>Junghwa Lee<sup>1</sup>, Sojung Mun<sup>1*</sup>, Mai Choi<sup>2</sup>, Youmi Kim<sup>1</sup></b> <sup>1</sup> Dental Hygiene, Yonsei University, South Korea <sup>2</sup> Dental Hygiene, Kyungdong University, South Korea

Programme Code	Title	Author
P-035	Association of sleep duration with swallowing difficulty in adults	<p>Mizuki Mitsui<sup>1</sup>, Ayari Furuie<sup>1</sup>, Suzuna Shiomizu<sup>1</sup>, Rumi Nishimura<sup>1</sup>, Mayuka Asaeda<sup>1</sup>, Yuko Kurawaki<sup>1</sup>, Toshinobu Takemoto<sup>2</sup>, Nishiki Arimoto<sup>3</sup>, Toru Naito<sup>4</sup>, Kojima Masaaki<sup>5</sup>, Osami Umemura<sup>5</sup>, Makoto Yokota<sup>6</sup>, Nobuhiro Hanada<sup>7</sup>, Kenji Wakai<sup>8</sup>, Mariko Naito<sup>1*</sup></p> <p><sup>1</sup> Department of Oral Epidemiology, Hiroshima University, Japan  <sup>2</sup> Department of Oral Health Management, Hiroshima University, Japan  <sup>3</sup> Department of Oral Health Sciences, Otemae College, Japan  <sup>4</sup> Department of General Dentistry, Fukuoka Dental College, Japan  <sup>5</sup> Aichi Dental Association, Aichi, Japan  <sup>6</sup> Yokota Makoto Dental Clinic, Fukuoka, Japan  <sup>7</sup> Photocatalysis International Research Center, University of Shanghai for Science and Technology, China  <sup>8</sup> Department of Preventive Medicine, Nagoya University Graduate School of Medicine, Japan</p>
P-036	Development and evaluation of the artificial calculus composition using spent coffee grounds(SCG)	<p>Hye Wook Kim<sup>1</sup>, Yeji Kim<sup>1</sup>, Yoona Won<sup>1</sup>, Hyobin Park<sup>1</sup>, HieJin Noh<sup>2*</sup></p> <p><sup>1</sup> Graduate School, Yonsei University, South Korea  <sup>2</sup> Department of Dental Hygiene, Yonsei University, South Korea</p>
P-037	Validation of Korean version of Oral Hygiene relative Self-efficacy	<p>Eun-Ae Kim<sup>1*</sup>, Jae-Young Lee<sup>1</sup>, Jina Lim<sup>1</sup>, Tae-Hee Go<sup>2</sup></p> <p><sup>1</sup> Dental Hygiene, College of Health Science, Dankook University, South Korea  <sup>2</sup> Dental Hygiene, Chungcheong University, South Korea</p>
P-038	What is the effect of 2 compared to 1 minute brushing time on plaque removal	<p>Marion Seuntjens<sup>1*</sup></p> <p><sup>1</sup> Dental Hygiene/Department of Periodontology, HAN/ACTA, Netherlands</p>
P-039	Exploring mental health issues amongst oral health practitioners in Australia	<p>Roisin McGrath<sup>1*</sup>, Nicole Stormon<sup>2</sup>, Matthew Hopcraft<sup>1</sup></p> <p><sup>1</sup> Melbourne Dental School, The University of Melbourne, Australia  <sup>2</sup> School of Dentistry, University of Queensland, Australia</p>
P-040	Relationship between allergic rhinitis and dental caries in Korean children	<p>Youmi Kim<sup>1</sup>, Sojung Mun<sup>2*</sup></p> <p><sup>1</sup> Dept.Rehabilitation of Spinal Cord Injury/Dept. of Dental Hygiene, National Rehabilitation Center/Yonsei University Graduate School, South Korea  <sup>2</sup> Dept. of Dental Hygiene, Yonsei University, South Korea</p>
P-041	Adjustment of dental hygiene students working posture using auxiliary equipment	<p>Ju Hui Jeong<sup>1</sup>, YeJi Kim<sup>2</sup>, Hie-jin Noh<sup>1*</sup></p> <p><sup>1</sup> Dental hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, South Korea  <sup>2</sup> Dental hygiene, Yonsei University(Graduate School), South Korea</p>
P-042	A study on retention intention of dental hygienists: focusing on the labor standards act	<p>Huijeong Kim<sup>1</sup>, Sangeun Moon<sup>2*</sup></p> <p><sup>1</sup> Oralbiome &amp; Implant Care Center, Appletree Dental Hospital, South Korea  <sup>2</sup> Department of Dental Hygiene, Gwangju Women's University, South Korea</p>
P-043	Effect of clinical practice transition shock and resilience on academic burnout of dental hygiene students	<p>Eun-Chae Kim<sup>1</sup>, Hye-Su Moon<sup>2</sup>, Min-Ji Kim<sup>3</sup>, Sang-Eun Moon<sup>4*</sup></p> <p><sup>1</sup> Department of Dental Laboratory Technology, Gwangju Health University, South Korea  <sup>2</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea  <sup>3</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea  <sup>4</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea</p>
P-044	Association between regular dental check-ups and oral frailty in community-dwelling older people: the Otassha Study	<p>Chiaki Matsubara<sup>1,2</sup>, Maki Shirobe<sup>1</sup>, Keiko Motokawa<sup>1</sup>, Ayako Edahiro<sup>1</sup>, Tatsunosuke Gomi<sup>1</sup>, Masanori Iwasaki<sup>1,3</sup>, Manami Ejiri<sup>4</sup>, Hisashi Kawai<sup>4</sup>, Hiroyuki Sasai<sup>1</sup>, Yoshinori Fujiwara<sup>5</sup>, Shuichi Obuchi<sup>4</sup>, Hirohiko Hirano<sup>1*</sup></p> <p><sup>1</sup> Research Team for Promoting Independence and Mental Health, Tokyo Metropolitan Institute for Geriatrics and Gerontology, Japan  <sup>2</sup> Department of Dental Hygiene, University of Shizuoka, Junior College, Japan  <sup>3</sup> Department of Preventive Dentistry, Faculty of Dental Medicine and Graduate School of Dental Medicine, Hokkaido University, Japan  <sup>4</sup> Research Team for Human Care, Tokyo Metropolitan Institute for Geriatrics and Gerontology, Japan  <sup>5</sup> Research Team for Social Participation and Healthy Aging, Tokyo Metropolitan Institute for Geriatrics and Gerontology, Japan</p>
P-045	Bacterial contamination level of digital panoramic dental X-ray equipment	<p>Lee-Rang Im<sup>1</sup>, Ji-Hyun Min<sup>2</sup>, Ki-Rim Kim<sup>1*</sup></p> <p><sup>1</sup> Department of Dental Hygiene, Kyungpook National University, South Korea  <sup>2</sup> Department of Dental Hygiene, College of Health and Medical Health Sciences, Cheongju University, South Korea</p>
P-046	The effect of information literacy the communication ability of dental hygienist: mediating effect of job crafting	<p>Jin Ah Park<sup>1</sup>, Seon Yeong Kim<sup>2*</sup></p> <p><sup>1</sup> Oralbiome &amp; implant care center, Appletree Dental Hospital, South Korea  <sup>2</sup> Dental hygiene, Gwangju Women's University Graduate School, South Korea</p>

Programme Code	Title	Author
P-047	Impact of dental hygienists' positive psychological capital, growth mindset, and self-leadership on retention intention	<b>Ji Yeon Lee<sup>1</sup>, Hye Eun Cho<sup>1</sup></b> <sup>1</sup> Department of Dental Hygiene, Dental Hygiene, South Korea
P-048	Xylitol inhibits preterm birth by suppressing NLRP3 inflammasome activity in <i>Fusobacterium nucleatum</i> infection	<b>Eui-jeong Noh<sup>1,2</sup>, Seo-Ye Park<sup>2</sup>, Jong-Seok Kim<sup>2</sup>, Sung Ki Lee<sup>2</sup></b> <sup>1</sup> oral biology, yonsei university, South Korea <sup>2</sup> Obstetrics and Gynecology, Konyang University, South Korea
P-049	Assessment on microbial contamination of dental prosthesis	<b>Lee Rang Im<sup>1</sup>, Ki Rim Kim<sup>1</sup></b> <sup>1</sup> Master's degree in Dental Hygiene, Kyungpook National University, South Korea
P-050	A qualitative study on the dental hygiene student experiences of clinical practice : Focus group interview	<b>LEE Bo ram<sup>1</sup>, Sang Eun Moon<sup>1</sup>, Sun Hwa Hong<sup>2</sup></b> <sup>1</sup> Dental hygienist, KWANGJU WOMEN'S UNIVERSITY, South Korea <sup>2</sup> Dental Hygiene, Chunnam Techno University, South Korea
P-051	THE SECOND LIFE"... WHEN YOU FIND OUT YOU HAVE A "SPECIAL" SON	<b>Maria Teresa Agneta<sup>1</sup>, Antonia Abbinante<sup>1</sup>, Anna Antonacci<sup>1</sup>, Marco Tatullo<sup>3</sup>, Gianfranco Favia<sup>2</sup>, Massimo Corsalini<sup>2</sup></b> <sup>1</sup> Interdisciplinary Department of Medicine, "Aldo Moro" University, AI/II, Italy <sup>2</sup> Interdisciplinary Department of Medicine, "Aldo Moro" University, U.O.C. Dentistry University, Bari, Italy <sup>3</sup> Department of Basic Medical Sciences, Neurosciences and Sense Organ, "Aldo Moro" University, Ordinary professor, Italy
P-052	Effect of prolonged hospitalization on the maintenance of oral health - a self-report survey	<b>Nurit Tinsky<sup>1</sup>, Shulamit Weiss<sup>2</sup>, Malka Ashkenazi<sup>1</sup></b> <sup>1</sup> Oral medicine unit, 1. American Academy of Pediatric Dentistry website, Dental Home Resource Center: <a href="http://www.aapd.or.il">http://www.aapd.or.il</a> , Israel <sup>2</sup> Oral medicine Unit, 1. American Academy of Pediatric Dentistry website, Dental Home Resource Center: <a href="http://www.aapd.or.il">http://www.aapd.or.il</a> , Israel <sup>3</sup> Oral medicine Unit, 1. American Academy of Pediatric Dentistry website, Dental Home Resource Center: <a href="http://www.aapd.or.il">http://www.aapd.or.il</a> , Israel
P-053	Effects of chairside stretching exercises among dental hygiene students	<b>EunBi Sim<sup>1</sup>, HyeWook Kim<sup>2</sup>, HieJin Noh<sup>1</sup></b> <sup>1</sup> Department of Dental Hygiene, Yonsei University, South Korea <sup>2</sup> Graduate School of Dental Hygiene, Yonsei University, South Korea
P-054	The Relationship Between Sedentary Behavior and Physical Activity Level, and Oral Health Factors for the Female Adolescent Students	<b>Hyewon Cheon<sup>3</sup>, Sang-Eun Moon<sup>2</sup></b> <sup>1</sup> Department of Dental hygiene, Cunnam Techno University, South Korea <sup>2</sup> Department of Dental hygiene, Kwangju Women's University, South Korea <sup>3</sup> Department of Dental hygiene, Howon University, South Korea <sup>4</sup> Department of Dental hygiene, Gwangyang Health Sciences University, South Korea
P-055	Association Between eHealth Literacy and Dental Check-up in Adults: A Cross-sectional Study in Japan	<b>Yuki Noguchi<sup>1</sup>, Mieko Fujita<sup>1</sup>, Chiaki matsubara<sup>1</sup>, Kazuki Ueda<sup>2</sup>, Naoki Yoshida<sup>1</sup></b> <sup>1</sup> Dental Hygiene, University of Shizuoka, Shizuoka Junior College, Japan <sup>2</sup> Liberal Arts, University of Shizuoka, Shizuoka Junior College, Japan
P-056	Anti-Inflammatory and Anti-Bacterial Potential of Mulberry Leaf Extract on Oral Microorganisms	<b>Kyung-hee Kang<sup>1</sup>, Dokyong Kim<sup>2</sup></b> <sup>1</sup> Department of Dental Hygiene, Konyang University, South Korea <sup>2</sup> Precision Medicine Research Center, College of Medicine, The Catholic University of Korea, South Korea
P-057	Oral function in middle-aged and older Japanese adults	<b>Maki Shirobe<sup>1</sup>, Masanori Iwasaki<sup>1,2</sup>, Kentaro Igarashi<sup>1,3</sup>, Keiko Motokawa<sup>1</sup>, Ayako Eda<sup>1</sup>, Shiho Morishita<sup>1,4</sup>, Chiaki Matsubara<sup>1,5</sup>, Tatsunosuke Gomi<sup>1</sup>, Manami Ejiri<sup>6</sup>, Hisashi Kawai<sup>6</sup>, Maki Inoue<sup>7</sup>, Shino Yamaguchi<sup>8</sup>, Ayaka Isobe<sup>8</sup>, Hisako Hikiji<sup>8</sup>, Tatsuji Nishihara<sup>7</sup>, Hiroyuki Sasai<sup>1</sup>, Yoshinori Fujiwara<sup>9</sup>, Shuichi Obuchi<sup>9</sup>, Hirohiko Hirano<sup>1</sup></b> <sup>1</sup> Research Team for Promoting Independence and Mental Health, Tokyo Metropolitan Institute for Geriatrics and Gerontology, Japan <sup>2</sup> Faculty of Dental Medicine and Graduate School of Dental Medicine, Hokkaido University, Japan <sup>3</sup> Removable Prosthodontics, School of Dentistry at Matsudo, Japan <sup>4</sup> School of Health Sciences, Meikai University, Japan <sup>5</sup> Department of Dental Hygiene, University of Shizuoka Junior College, Japan <sup>6</sup> Human Care Research Team, Tokyo Metropolitan Institute for Geriatrics and Gerontology, Japan <sup>7</sup> Dental Center for Regional Medical Survey, Kyushu Dental University, Japan <sup>8</sup> Faculty of Dentistry, Kyushu Dental University, Japan <sup>9</sup> Integrated Research Initiative for Living Well with Dementia, Tokyo Metropolitan Institute for Geriatrics and Gerontology, Japan

Programme Code	Title	Author
P-058	Navigating emotional strain: a comprehensive analysis of burnout among dental hygienists	<b>Ella Peshkova<sup>1</sup></b> <sup>1</sup> Dental hygiene, Comfort Dental - Marquee Dental Partners, USA
P-059	A Study on the Prosthetic Status of the Elderly with Limited Activity	<b>Hyun-Joo Kang<sup>1</sup></b> <sup>1</sup> Professor(Department of Dental Hygiene, Kwangju Women's University), Korean Dental Hygienists Association, South Korea
P-060	Preliminary study on the need for infection control of high speed handpiece air hose in traditional dental unit chair	<b>Jungwon Lee<sup>1</sup>, Man Yong Kim<sup>2</sup>, Bongju Kim<sup>2*</sup></b> <sup>1</sup> Patient-Centered Clinical Research Coordinating Center, National Evidence-Based Healthcare Collaborating Agency, South Korea <sup>2</sup> Dental Life Science Research Institute, Seoul National University Dental Hospital, South Korea
P-061	Factors affecting the positive psychological capital of dental hygiene students	<b>Chang-Hee Kim<sup>1</sup>, Ji-Eun Byun<sup>1</sup>, Hyeongmi Kim<sup>1</sup></b> <sup>1</sup> Dental Hygiene, CHUNGCHONG UNIVERSITY, South Korea
P-062	Pilot Study on Applicability of Quantitative Light-Induced Fluorescence-Digital (QLF-D) in Periodontitis-Induced Model	<b>Ji-Hye Kim<sup>1</sup>, Min-Seo Kim<sup>2</sup></b> <sup>1</sup> Dental Hygiene, BaekSeok University, South Korea <sup>2</sup> Oral Microbiology and Immunology, Yonsei University College of Dentistry, South Korea
P-063	Effects of Oral Health Behavior and Mental Health on Metabolic Syndrome in Korean Adults	<b>Jin Ah Jung<sup>1</sup>, Hye Won Cheon<sup>2*</sup>, Sang Eun Moon<sup>3</sup>, Sun Hwa Hong<sup>4</sup></b> <sup>1</sup> Department of Dental Hygiene, Gwangyang Health Sciences University, South Korea <sup>2</sup> Department of Dental Hygiene, Howon University, South Korea <sup>3</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea <sup>4</sup> Department of Dental Hygiene, Cunnam Techno University, South Korea
P-064	Pilot survey for developing a perioperative oral health management educational program	<b>Aiko Hoshiai<sup>1,2*</sup>, Yukiko Yamamura<sup>1</sup>, Hiromi Otsuka<sup>3</sup>, Yujeong Shin<sup>1,2</sup>, Itsuki Takazawa<sup>1,4</sup>, Yumi Ishikawa<sup>1</sup></b> <sup>1</sup> Oral Health Sciences, School of Health Sciences, Meikai University, Japan <sup>2</sup> Department of Pediatric Dentistry/Special Needs Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan <sup>3</sup> A Public Interest Incorporated Association, Tokyo Dental Hygienists' Association, Japan <sup>4</sup> Department of Oral Health Care Education, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan
P-065	Effent on learning strategies and academic self-efficacy of dental hygiene students on grit	<b>Hyeongmi Kim<sup>1</sup>, Na-yeon Kim<sup>2</sup>, Chang-Hee Kim<sup>1</sup></b> <sup>1</sup> Dental Hygiene, CHUNGCHONG UNIVERSITY, South Korea <sup>2</sup> Dental Hygiene, EULJI UNIVERSITY, South Korea
P-066	Validity of developing information content for clients of the dental hygiene students' scaling program : Based on Metaverse	<b>Yoon-ah Won<sup>1</sup>, Hie-Jin Noh<sup>1</sup></b> <sup>1</sup> Department of Dental Hygiene, Yonsei University, South Korea
P-067	Training of general nurses in stomatology hospital	<b>Jingying Hu<sup>1</sup></b> <sup>1</sup> Peking University Stomatological Hospital, China
P-068	Red biofluorescence for assessing longitudinal tooth fracture	<b>Hye-min Ku<sup>1</sup>, Baek-Il Kim<sup>2*</sup></b> <sup>1</sup> Department of conservative dentistry, Yonsei University college of dentistry, South Korea <sup>2</sup> Department of preventive dentistry, Yonsei University college of dentistry, South Korea
P-069	Effect of Playing Harmonica on Dysphagia Improvement in the Elderly : Interventional study	<b>Bo-Young Lee<sup>1</sup>, Hyeon-Sook Kwun<sup>1</sup>, Jeong-Hee Park<sup>1</sup>, Mi-Gyung Seong<sup>1</sup>, Nam-Suk Heo<sup>1</sup></b> <sup>1</sup> Dental Hygiene, Masan university, South Korea
P-070	Evaluating the Integration of Social Entrepreneurship into a 4-Year Dental Hygiene Degree Program (DHDP)	<b>Salima Alibhai<sup>1</sup>, Zul Kanji<sup>1</sup>, Susanne Sunell<sup>1</sup>, Charn Dhami<sup>1</sup></b> <sup>1</sup> Faculty of Dentistry, University of British Columbia, Canada
P-071	Comparison of Cytotoxicity and Genotoxicity in Three Types of Indirect Restorative Materials on Human Periodontal Stem Cells	<b>Soyeong Park<sup>1</sup></b> <sup>1</sup> Department of Dental Hygiene, Dongseo University, South Korea

Programme Code	Title	Author
P-072	In vitro wear behavior of materials for additive manufacturing opposing deciduous dentition	<b>Yujeong Shin<sup>1,2</sup>, Kanae WADA<sup>1</sup>, Tsutomu IWAMOTO<sup>1*</sup></b> <sup>1</sup> Pediatric Dentistry/Special Needs Dentistry, Tokyo Medical and Dental University, Japan <sup>2</sup> Oral Health Sciences, School of Health Sciences, Meikai University, Japan
P-073	Analysis of Quantitative Light-Induced Fluorescence Images for the Assessment of Bacterial Activity and Distribution of Tongue Coating	<b>Hyun Kyung Kang<sup>1*</sup>, Yu-Rin Kim<sup>1</sup></b> <sup>1</sup> College of Health and Welfare, Dental Hygiene, Silla University, South Korea
P-074	Distribution of oral microorganisms in 3-year-old children according to the degree of dental plaque deposition detected using QLF	<b>Sang-Kyeom Kim<sup>1*</sup>, Joo Young Lee<sup>1</sup>, Su Jin Han<sup>2</sup>, Boo Keun Choi<sup>3</sup>, In Young Ku<sup>4</sup>, Mi Ae Lee<sup>5</sup>, Byoung Jin Lee<sup>6</sup>, Sun Mi Lee<sup>7</sup>, Yeon Kyung Lee<sup>8</sup>, Young Ran Jung<sup>9</sup>, Yoon Seon Choi<sup>10</sup>, Ji Youn Han<sup>11</sup>, Hwa Jin Han<sup>12</sup></b> <sup>1</sup> Department of Preventive Dentistry & Public Oral Health, Yonsei University College of Dentistry, South Korea <sup>2</sup> Department of Dental Hygiene, Gachon University, South Korea <sup>3</sup> Department of Dental Hygiene, Shinsung university, South Korea <sup>4</sup> Department of Dental Hygiene, Kyungwoon University, South Korea <sup>5</sup> -, Action for prevention dental diseases, South Korea <sup>6</sup> -, 3 Beans Institute for Oral Health Research, South Korea <sup>7</sup> Department of Dental Hygiene, Kyungnam College of Information & Technology, South Korea <sup>8</sup> Department of Dental Hygiene, Songho University, South Korea <sup>9</sup> Department of Dental Hygiene, Daegu Health College, South Korea <sup>10</sup> -, Seongdong-gu Health Center, South Korea <sup>11</sup> Department of Dental Hygiene, Baekseok Culture University, South Korea <sup>12</sup> -, Kunkuk University, South Korea
P-075	Recognition of dental hygiene students about the advanced dental hygienist system for the elderly and people with disabilities	<b>Kyung-Mi Kim<sup>1</sup>, Se-Youn Ahn<sup>1</sup>, Min-Young Kim<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, Chungcheong University, South Korea <sup>2</sup> Department of Dental Hygiene, Dongnam Health University, South Korea <sup>3</sup> Department of Dental Hygiene, Howon University, South Korea
P-076	The impact of demographics factors and oral conditions on tongue pressure	<b>Mi-El Kim<sup>1</sup>, Aein Mon<sup>2</sup>, Mary Delia BONDOC<sup>2</sup>, Ho-Beom Kwon<sup>2*</sup></b> <sup>1</sup> Oral Anatomy, Seoul National University School of Dentistry, South Korea <sup>2</sup> Prosthodontics, Seoul National University School of Dentistry, South Korea
P-077	The relationship between the decline in oral function and medical and dental expenditures in the latter-stage older adult	<b>Kumiko Sahara<sup>1</sup>, Tokiko Doi<sup>1</sup>, Makoto Fukui<sup>1</sup>, Masami Yoshioka<sup>2</sup>, Yoshifumi Okamoto<sup>3</sup>, Manabu Shimomura<sup>3</sup>, Kimi Matsumoto<sup>3</sup>, Miwa Matsuyama<sup>4</sup>, Daisuke Hinode<sup>1*</sup></b> <sup>1</sup> Department of Hygiene and Oral Health Science, Tokushima University Graduate School of Biomedical Sciences, Japan <sup>2</sup> Faculty of Health and Welfare, Tokushima Bunri University, Japan <sup>3</sup> Tokushima Prefecture Dental Association, Tokushima, Japan <sup>4</sup> Department of Oral Health Care and Rehabilitation, Tokushima University Graduate School of Biomedical Sciences, Japan
P-078	In what direction should gross anatomy education in the field of dentistry go? : Perceptions of clinical dentists	<b>Da-Hye Kim<sup>1*</sup>, Jung-Hee Bae<sup>2</sup></b> <sup>1</sup> Department of Dental Hygiene, College of Bio-Health Convergence, Dongseo University, South Korea <sup>2</sup> Department of Dental Hygiene, Namseoul University, South Korea
P-079	Comparison of periodontal instruments for detection of subgingival calculus	<b>Mako Naniwa<sup>1</sup>, Masayo Nakamura<sup>1</sup>, Yoshie Usui<sup>1</sup>, Takako Yodogawa<sup>1*</sup></b> <sup>1</sup> Department of Oral Health Sciences, Kyushu University of Nursing and Social Welfare, Japan
P-080	Armed and ready for the future: dental hygienists administering vaccines	<b>Lancette Vanguilder<sup>1*</sup></b> <sup>1</sup> Owner, Hygienist for Health, USA
P-081	Choose your own adventure: an innovative final year portfolio in oral health	<b>William Carlson-Jones<sup>1</sup>, Melanie Aley<sup>1*</sup></b> <sup>1</sup> Sydney Dental School, The University of Sydney, Australia
P-082	Association between vocational expertise and comprehension dental hygiene curriculum on some dental hygienists	<b>Sae hee Cheon<sup>1*</sup>, Hye Jin Lee<sup>2</sup></b> <sup>1</sup> Dental Hygiene, Masan University, South Korea <sup>2</sup> Dental Hygiene, Korean Dental Hygienists Association, South Korea

Programme Code	Title	Author
P-083	Utilization of QLF technology in dental unit waterlines contamination assessment: Pilot Study	<b>Seong-Chan Park<sup>1</sup>, Ji-Hyun Min<sup>2</sup>, Sun-Young Han<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju 26493, South Korea <sup>2</sup> Department of Dental Hygiene, College of Health and Medical Sciences, Cheongju University, Cheongju 28503, South Korea
P-084	Noble approach to gingival health: A case study on the impact of probiotics on periodontal pathogens and chronic disease indicators	<b>Mu-Yeol Cho<sup>1</sup>, Inseong Hwang<sup>1</sup>, Young-Youn Kim<sup>1</sup>, Hye-Sung Kim<sup>1*</sup></b> <sup>1</sup> Apple Tree Institute of Biomedical Science, Apple Tree Dental Hospital, South Korea
P-085	Novel Dental Poly (Methyl Methacrylate) Containing Phytoncide for Antifungal Effect and Inhibition of Oral Multispecies Biofilm	<b>Myung-Jin Lee<sup>1*</sup></b> <sup>1</sup> Dental hygiene, Baekseok University, South Korea
P-086	Smartphone-based combined oral and whole-body exercise program aimed at improving oral functions: a randomized clinical trial	<b>Kyeong-Hee Lee<sup>1*</sup></b> <sup>1</sup> Dental Hygiene, Shinhan University, South Korea
P-087	Influence of mechanical and thermal cleaning frequency on sterilization and loss of dental handpieces	<b>Chunli Wang<sup>1*</sup></b> <sup>1</sup> Nursing Department, Peking University School of Stomatology, China
P-088	Development of Integrated Curriculum for Basic Dental Hygiene Based on Competencies	<b>Hye-young Yoon<sup>1,2,3</sup>, Sun-Jung Shin<sup>1,2,3</sup>, Bo-Mi Shin<sup>1,2,3</sup>, Hyo-Jin Lee<sup>1,2,3</sup>, Jin-Sun Choi<sup>1,2,3</sup>, Soo-Myoung Bae<sup>1,2,3*</sup></b> <sup>1</sup> Dental hygiene, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>2</sup> Research Institute of Oral Science, Gangneung-Wonju National University, South Korea <sup>3</sup> Research Institute of Dental Hygiene Science, Gangneung-Wonju National University, South Korea
P-089	Suggestion of Learning Objectives in Social Dental Hygiene -National Board Dental Hygiene Examination in Republic of Korea-	<b>Su-Kyung Park<sup>1,2</sup>, Young-Eun Jang<sup>1,3</sup>, Sang-Hee Yoo<sup>1,4</sup>, Sue-Hyang Lee<sup>1,4</sup>, Myoung-Hee Kim<sup>1,5</sup>, Hee-Kyoung Kim<sup>1,6</sup>, Da-Young Ryu<sup>1,7</sup>, Min-Ji Kim<sup>1,8</sup>, Sun-Jung Shin<sup>1,4</sup>, Nam-Hee Kim<sup>1,9</sup>, Mi-Sook Yoon<sup>1,10*</sup></b> <sup>1</sup> Social dental hygiene subcommittee, Korean Society of Dental Hygiene Science, South Korea <sup>2</sup> Dept. of Dental Hygiene, Jeonju Kijeon College, South Korea <sup>3</sup> Dept. of Dental Hygiene, Baekseok University, South Korea <sup>4</sup> Dept. of Dental Hygiene, College of Dentistry, Gangneung Wonju National University, South Korea <sup>5</sup> Dept. of Dental Hygiene, College of Health Science, Eulji University, South Korea <sup>6</sup> Dept. of Dental Hygiene, Daewon University College, South Korea <sup>7</sup> Dept. of Dental Hygiene, Hyejeon College, South Korea <sup>8</sup> Department of Dental Hygiene, Division of Health Sciences, Dongseo University, South Korea <sup>9</sup> Dept. of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, South Korea <sup>10</sup> Dept. of Dental Hygiene, Shinhan University, South Korea
P-090	P3(Project, Place, Problem)-Based Learning(P3L) activity in dental hygiene education for changing sugar consumption from 'Tanghulu' in Korean adolescents	<b>Hye-Lim Hong<sup>1</sup>, Ra-Ae Bak<sup>1</sup>, Hyung-Min Kang<sup>2</sup>, Eun-Ji Kim<sup>2</sup>, Hyun-Do Jang<sup>2</sup>, Nam-Hee Kim<sup>2*</sup></b> <sup>1</sup> Department of Dental hygiene, Yonsei university graduate school, South Korea <sup>2</sup> Department of Dental hygiene, MIRAE Campus, Yonsei university, South Korea
P-091	Assessment of the dental erosive potential of non-alcoholic beer	<b>Hye Young Mun<sup>1</sup>, Mi Gyung Cho<sup>1</sup>, Ye Bin Cho<sup>1</sup>, Seung Joo Kim<sup>1</sup>, Do Yeon Kim<sup>1</sup>, Jung Yun Kang<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, Yonsei University, South Korea
P-092	Plaque removal and gingivitis reductions evaluation using toothbrush with a thin-head, slender-neck and super-tapered bristles	<b>Hyo Jung Kim<sup>1</sup>, Joo Yeon Lee<sup>2</sup>, Eun song Lee<sup>1</sup>, Ui Won Jung<sup>2</sup>, Ryo Horikoshi<sup>3</sup>, Naho Suzuki<sup>3</sup>, Yasushi Okuda<sup>4</sup>, Jae Kook Cha<sup>2</sup>, Baek Il Kim<sup>1*</sup></b> <sup>1</sup> Department of Preventive Dentistry & Public Oral Health, BK21 FOUR Project, Yonsei University College of Dentistry, South Korea <sup>2</sup> Department of Periodontology, Research Institute for Periodontal Regeneration, Yonsei University College of Dentistry, South Korea <sup>3</sup> Research and Development Headquarters, Lion Corporation, Japan <sup>4</sup> Lion Innovation Center (Shanghai) Co., Ltd., China

Programme Code	Title	Author
P-093	Development of a washing holder and a washing brush to prevent stabbing accidents when dental instruments washing	<u>Gyu-Min Jung</u> <sup>1*</sup> , Jeong-hyeon Kim <sup>1</sup> , So-hyun Nam <sup>1</sup> , Kyeong-ran Park <sup>1</sup> , Go-eun Lee <sup>1</sup> , Han-ul Cha <sup>1</sup> , Yu-jin Cho <sup>1</sup> , Jin-gyeong Jung <sup>1</sup> , Ji-yeon Choi <sup>1</sup> , Seo-yeon Hong <sup>1</sup> <sup>1</sup> Department of Dental Hygiene, Daegu Health College, South Korea
P-094	Public health center-based itinerant oral health care pilot project: Focused on the Cheongyang , Korea	<u>Hyeran Eun</u> <sup>1</sup> , Jae-Young Lee <sup>1*</sup> <sup>1</sup> Department of Public Health Science, Graduate School of Dankook University, Cheonan, Korea, South Korea <sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, Cheonan, Korea, South Korea
P-095	The currently situation of oral health and the future perspective of dental hygienist in Taiwan	<u>Su Cheng-yih</u> <sup>*</sup> <sup>1</sup> Japan,Hiroshima University Hospital, Chinese Taipei
P-096	Living Lab Activities for Digital Transformation Problem Solving	<u>Chanyoung Park</u> <sup>1</sup> , Ra-Ae Bak <sup>1</sup> , Dong-Yun Gang <sup>2</sup> , Yu-Mi Kim <sup>2</sup> , Hyo-Jin Kim <sup>2</sup> , Se-Young Park <sup>2</sup> , Su-Wan Park <sup>2</sup> , Hyo-Lim Sun <sup>2</sup> , Min-Young Song <sup>2</sup> , Hye-In Song <sup>2</sup> , Eun-Bi Cho <sup>2</sup> , Ha-Yeon Choi <sup>2</sup> , Hae-Eun Choi <sup>2</sup> , Nam-Hee Kim <sup>2*</sup> <sup>1</sup> Department of dental hygiene, Yonsei university graduate school, South Korea <sup>2</sup> Department of dental hygiene, MIRAE Campus, Yonsei university, South Korea
P-097	Korean dental hygiene students' perceptions and attitudes toward artificial intelligence: an online survey	<u>Hui Jeong</u> <sup>1</sup> , Sang-Sun Han <sup>1</sup> , Ki-Eun Kim <sup>2</sup> , Il-Soon Park <sup>3</sup> , Youngyuhn Choi <sup>4</sup> , Kug Jin Jeon <sup>1*</sup> <sup>1</sup> Oral and Maxillofacial Radiology, Yonsei University, College of Dentistry, South Korea <sup>2</sup> Dental Hygiene, Daejeon Institute of Science and Technology, South Korea <sup>3</sup> Dental Hygiene, Kyungdong University, South Korea <sup>4</sup> Dental Hygiene, Suwon Science College, South Korea
P-098	Trends of smoking prevalence among Korean adolescents using joinpoint regression: Focusing on the Korea Youth Risk Behavior Web-based Survey(2011-2020)	<u>Mina Kim</u> <sup>1</sup> , Hiejin Noh <sup>1*</sup> <sup>1</sup> Dental Hygiene, Yonsei University Graduate School, South Korea
P-099	Changes in Dental Hygienist Behavior through the Implementation of Personalized Interdental Brush Prescriptions Utilizing Interdental Space Measurements during Oral Hygiene Education.	<u>You-jin Cho</u> <sup>1*</sup> <sup>1</sup> Dental biomaterials science, School of Dentistry, Pusan national university, South Korea
P-101	Association of oral health knowledge with oral health literacy and oral health behaviors among newly enrolled students in a Japanese medical university	<u>Hitomi Suzuki</u> <sup>1*</sup> , Kumiko Sugimoto <sup>1,2</sup> , Nana Yoshida <sup>1</sup> , Ayako Kubota-Miyazawa <sup>1,3</sup> , Itsuki Takazawa <sup>1,4</sup> , Naomi Yoshida <sup>1</sup> <sup>1</sup> Department of Oral Health Care Education, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan <sup>2</sup> Department of Preventive Oral Health Care Science, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan <sup>3</sup> Department of Oral Health Sciences, Faculty of Health Sciences, Kobe Tokiwa University, Japan <sup>4</sup> Department of Oral Health Sciences, School of Health Sciences, Meikai University, Japan
P-102	Relationship between Oral Function and Physical Fitness of Aged 75 and over in Community-dwelling	<u>Masayo Fukuda</u> <sup>1*</sup> , Hiromi Ezaki <sup>1</sup> , Yukie Hama <sup>1</sup> , Miki Nakamura <sup>1</sup> , Ayako Miyazawa <sup>1</sup> , Takako Ujihashi <sup>1</sup> , Aki Nishiyasu <sup>1</sup> , Yukie Yoshida <sup>1</sup> <sup>1</sup> Oral Health Science, Kobe Tokiwa University, Japan
P-103	Evaluating the effectiveness of in vitro testing devices using saliva through analysis of correlation with oral characteristics	<u>Na kyung Hwangbo</u> <sup>1</sup> , Sun mi lee <sup>1*</sup> <sup>1</sup> Department of Dental Hygiene, dongnam health university, South Korea
P-104	The Oral Health Sector of Korea National Health Promotion Plan: An Integrative Literature Review	<u>Eunsuk Ahn</u> <sup>1</sup> , Ji-Hyoung Han <sup>2*</sup> <sup>1</sup> Division of Climate Change and Health Protection, Korea Disease Control and Prevention Agency, South Korea <sup>2</sup> Department of Dental Hygiene, Suwon Science College, South Korea
P-105	Addressing the accessibility of oral health services for disabled individuals: utilizing the Study-Life Integration(SLI) in South Korea	<u>Yu-Rim Lee</u> <sup>1</sup> , So-Youn Lee <sup>2</sup> , Hyeon-Seon Choi <sup>2</sup> , So-Yeon Ju <sup>2</sup> , Yeon-Ji Lee <sup>2</sup> , Do-Yeon Kim <sup>2</sup> , Yu-Na Hwang <sup>2</sup> , Nam-Hee Kim <sup>2*</sup> <sup>1</sup> Department of Dental Hygiene, Yonsei University Graduate School, South Korea <sup>2</sup> Department of Dental Hygiene, MIRAE Campus, Yonsei University, South Korea

Programme Code	Title	Author
P-106	Investigation of oral care related knowledge and behavior of nursing staffs in nursing homes	<b>Xiue Li<sup>1*</sup></b> <sup>1</sup> department of nursing, Peking University School of Stomatology, China
P-107	Influence of biofilm maturity on the in vitro antibacterial efficacy of cold atmospheric plasma in oral microcosm biofilms	<b>A-Hyun Jo<sup>1</sup>, Ji-Yeon Lee<sup>1</sup>, Ji-Won Lim<sup>2</sup>, Hee-Eun Kim<sup>1,2*</sup></b> <sup>1</sup> Department of Health Science, Gachon University Graduate School of Public Health, South Korea <sup>2</sup> Department of Dental Hygiene, Gachon University College of Health Science, South Korea
P-108	Oral health support for Ukrainian refugees at dental office of university in Kobe, Japan: report and post-evaluation of dental checkups.	<b>Ayako Miyazawa<sup>1*</sup>, Yoko Mizumura<sup>1</sup>, Yukiko Takahashi<sup>1</sup>, Takakazu Yagi<sup>1</sup>, Norifumi Moritani<sup>1</sup>, Keisuke Yamashiro<sup>1</sup>, Hiromi Ezaki<sup>1</sup>, Masayo Fukuda<sup>1</sup>, Yukie Yoshida<sup>1</sup></b> <sup>1</sup> Department of Oral Health Sciences, Faculty of Health Sciences, Kobe Tokiwa University, Japan
P-109	Impact of rubber cup rotational speed on enamel surfaces with various defect	<b>A-Young Chun<sup>1</sup>, Hee-Eun Kim<sup>1,2*</sup></b> <sup>1</sup> Department of Health Science, Graduate school of Gachon University, South Korea <sup>2</sup> Department of Dental Hygiene, Gachon University College of Health Science, South Korea
P-110	Relationship between the Korean oral frailty diagnostic items and oral diadochokinesis	<b>Yun-Seon Lee<sup>1</sup>, Sun-Young Han<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju 26493, South Korea
P-111	Current state of problematic eating behavior and oral function among kindergarten children	<b>Yuka Sogawa<sup>1</sup>, Masami Yoshioka<sup>1*</sup>, Hiromi Nakae<sup>1</sup>, Harumi Sakamoto<sup>1</sup>, Chihiro Shinohara<sup>1</sup>, Daisuke Hinode<sup>2</sup></b> <sup>1</sup> Department of Oral Health Sciences, Faculty of Health and Welfare, Tokushima Bunri University, Japan <sup>2</sup> Department of Hygiene and Oral Health Sciences, Tokushima University Graduate School of Biomedical Sciences, Japan
P-112	Effect of electronic, conventional smoking and non-smoker on Periodontal stage, grade, and distribution of Periodontal diseases	<b>Alwina Ghazi<sup>1*</sup>, Ali Sadiq<sup>1</sup>, Farhan Raza Khan<sup>1</sup></b> <sup>1</sup> Dental Hygiene, Agha Khan University Hospital Karachi Pakistan, Pakistan
P-113	Oral function factors affecting low skeletal muscle index in community-dwelling older adults	<b>Joo-Young Lee<sup>1</sup>, A-Young Chun<sup>2</sup>, Ji-Won Lim<sup>1</sup>, Hee-Eun Kim<sup>1,2*</sup></b> <sup>1</sup> Department of Dental Hygiene, Gachon University College of Health Science, South Korea <sup>2</sup> Department of Health Science, Graduate School of Gachon University, South Korea
P-114	Changes in oral microbiome in the partial denture-wearing elderly based on home visit oral care intervention	<b>Hae-Soo Yoon<sup>1</sup>, Min-sook Jeong<sup>2</sup>, Hye-Jin Na<sup>1</sup>, Seul-ah Lee<sup>1</sup>, Myeong-Hwa Park<sup>1</sup>, Jong-Hwa Jang<sup>3*</sup></b> <sup>1</sup> Public health, Dankook University Graduate School of General Studies, South Korea <sup>2</sup> Dental hygiene, The Korean Academy of Primary Health Care, South Korea <sup>3</sup> Public and Health Sciences Department of Dental Hygiene, Dankook University School, South Korea
P-115	Perception of child abuse and attitudes towards mandatory reporting among dental hygienist	<b>Seon Yeong Kim<sup>1*</sup></b> <sup>1</sup> Dental hygiene, Kwangju Women's university, South Korea
P-116	Professional oral hygiene care for patients admitted to long-term care hospital: case reports	<b>Jung-Hee Kang<sup>1</sup>, Hyun-Suk Kim<sup>1</sup>, Kyoung-Mi Kang<sup>1</sup>, Eun-Ah Go<sup>1</sup>, Ye-Seul Han<sup>1*</sup></b> <sup>1</sup> R&D Planning Team, Enamel Co., Ltd., South Korea
P-117	Assessing the Impact of an AI-Based Oral Health Monitoring System for Children in Hanoi, Vietnam	<b>Ji-Na Lim<sup>1</sup>, Jae-young lee<sup>2*</sup></b> <sup>1</sup> Dental hygiene, Department of Public health Science, The Graduate School of Dankook University, South Korea <sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, South Korea
P-118	Factors Associated with Oral Health Knowledge, Oral Health Performance and Oral Health Quality of Life of Cancer Patients	<b>Kyung-Yi Chung<sup>1</sup>, Ok-Seong Han<sup>2*</sup></b> <sup>1</sup> Department of Dental Hygiene, Honam University, South Korea <sup>2</sup> Department of Dental Hygiene, Seoyeong University, South Korea
P-119	Comparison of halitosis according to herbal mouthwash containing Glycyrrhiza uralensis extract and saline mouthwash: A randomized, double-blind, placebo-controlled study	<b>Seoul-Hee Nam<sup>1</sup>, Yu-Rin Kim<sup>2*</sup></b> <sup>1</sup> Dental Hygiene, Kangwon National University, South Korea <sup>2</sup> Dental Hygiene, Silla University, South Korea

Programme Code	Title	Author
P-120	Regional disparities in utilization for dental services in South Korea: representative population study with National Health Insurance data from 2018 to 2022	<b>Sun-Jung Shin<sup>1</sup>, Nam-Hee Kim<sup>2*</sup>, Mi-Young Moon<sup>3</sup>, Hwa-Young Lee<sup>4</sup>, Jin-Young Jeong<sup>5</sup>, Hee-Jung Park<sup>6</sup></b> <sup>1</sup> Dept. of Dental Hygiene, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>2</sup> Department of Dental Hygiene, Mirae Campus, Yonsei University, South Korea <sup>3</sup> National Health Insurance Service, Seoul-Gangwon Regional Headquarters, South Korea <sup>4</sup> Graduate School of Public Health and Healthcare Management, The Catholic University, South Korea <sup>5</sup> Hallym Research Institute of Clinical Epidemiology, Hallym University, South Korea <sup>6</sup> Department of Dental Hygiene, College of Health Science, Kangwon National University, South Korea
P-121	Relationship between depressive symptoms and unmet dental treatment according to gender of the elderly in Korea: 7th National Health and Nutrition Survey	<b>Yunsook Jung<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, College of Science & Technology, Kyungpook National University, South Korea
P-122	Improvement of tongue-lip motor function after oral exercise program in Korean community-dwelling elderly people	<b>Kyung Yi Chung<sup>1*</sup>, Mi Ra Lee<sup>2</sup>, Woo Jung Noh<sup>3</sup>, Young Hee Lee<sup>4</sup>, Ok-Seong Han<sup>5</sup>, Eun Kyoung Kim<sup>6</sup>, Su Na Lee<sup>7</sup></b> <sup>1</sup> Department of Dental Hygiene, Honam University, South Korea <sup>2</sup> Department of Dental Clinic, Saevit, South Korea <sup>3</sup> Department of Dental Clinic, Metaplant, South Korea <sup>4</sup> Department of Dental Clinic, Withme, South Korea <sup>5</sup> Department of Dental Hygiene, Seoyeong University, South Korea <sup>6</sup> Department of Preventive & Public Health Dentistry, Chonnam National University, South Korea <sup>7</sup> Department of Dental Clinic, cdc children's, South Korea
P-123	A qualitative research on the needs of oral care according to the subjective oral health status of the elderly	<b>Sang-Eun Moon<sup>1</sup>, Sun-Hwa Hong<sup>2*</sup>, Bo-Ram Lee<sup>1</sup></b> <sup>1</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea <sup>2</sup> Dental Hygiene, Chunnam Techno University, South Korea
P-124	Association of tooth brushing behavior with risks of cardiovascular and related chronic diseases: A scoping review	<b>Hee-Jung Park<sup>1</sup>, Nam-Hee Kim<sup>2*</sup>, Sun-Jung Shin<sup>3</sup>, Hwa-Young Lee<sup>2,4,5</sup>, Jin-Young Jeong<sup>6</sup></b> <sup>1</sup> Department of Dental Hygiene, Kangwon National University, South Korea <sup>2</sup> Department of Dental Hygiene, Yonsei University, South Korea <sup>3</sup> Department of Dental Hygiene, Gangneung Wonju National University, South Korea <sup>4</sup> Graduate School of Public Health and Healthcare Management, The Catholic University, South Korea <sup>5</sup> Catholic Institute for Public Health and Healthcare Management, The Catholic University, South Korea <sup>6</sup> Hallym Research Institute of Clinical Epidemiology, Hallym University, South Korea
P-125	Prevalence of oral pre-frailty among middle-aged adults working in a nursing home	<b>Hiroimi Nakae<sup>1</sup>, Masami Yoshioka<sup>1*</sup>, Masanori Nakano<sup>1</sup>, Yuka Sogawa<sup>1</sup>, Chihiro Shinohara<sup>1</sup>, Keisuke Nishigawa<sup>1</sup></b> <sup>1</sup> Department of Oral Health Sciences Faculty of Health and Welfare, Tokushima Bunri University, Japan
P-126	The association between oral function and masticatory behaviors and grip strength in community-dwelling older people	<b>TAKAKO Ujihashi<sup>1,2*</sup>, Hiroimi Izuno<sup>3</sup>, Masayo Fukuda<sup>2</sup>, Misao Sawada<sup>2</sup>, Shogo Yoshimura<sup>1</sup>, Shoko Hori<sup>1</sup>, Fumiko Uehara<sup>1</sup>, Hinako Takano<sup>1</sup>, Kazuhiro Hori<sup>1</sup></b> <sup>1</sup> Division of Comprehensive Prosthodontics, Niigata University Graduate School of Medical and Dental Sciences, Japan <sup>2</sup> Department of Oral Health Sciences, Faculty of Health Sciences, Kobe Tokiwa University, Japan <sup>3</sup> Department of Oral Health Sciences Faculty of Nursing and Health Care, BAIKA Women's University, Japan
P-127	Effects of dental hygienist knowledge of dysphagia and preventive attitudes on educational needs for oral health in the elderly	<b>Woo Jung Noh<sup>1*</sup>, Seon Yeong Kim<sup>2</sup></b> <sup>1</sup> Periodont department, Department of Dental Clinic, Metaplant, South Korea <sup>2</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea
P-128	Analysis of Tooth Surface Changes after Treatment with Silver Fluoride Using Energy-Dispersive Electromagnetic Radiation Spectroscopy	<b>Subin Yu<sup>1</sup>, YuRi Choi<sup>2</sup>, SeoulHee Nam<sup>3*</sup></b> <sup>1</sup> Department of Dental Hygiene, Gimhae College, South Korea <sup>2</sup> Department of Dental Hygiene, Hallym Polytechnic University, South Korea <sup>3</sup> Department of Dental Hygiene, Kangwon National University, South Korea
P-129	Relationship between Daily Tasks and Years of Experience among Dental Hygienists Providing Home-Visit Dental Care	<b>Sanae Miyoshi<sup>1*</sup></b> <sup>1</sup> -, Hiroshima Dental Hygienists' Association, Japan

Programme Code	Title	Author
P-130	Association between physical activity and periodontitis according to depression among Korean adults	<b>Hyerim Jeon<sup>1</sup>, Hyo-Jin Lee<sup>1,2,3*</sup>, Soo-Myoung Bae<sup>1,2,3</sup></b> <sup>1</sup> Dental hygiene, College of Dentistry, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>2</sup> Research Institution of Oral Science, College of Dentistry, Gangneung-Wonju National University, South Korea <sup>3</sup> Research Institute of Dental Hygiene Science, College of Dentistry, Gangneung-Wonju National University, South Korea
P-131	Effect of coconut oil pulling and professional toothbrushing of gingivitis	<b>Mi ra Lee<sup>1*</sup>, Yun Jeong Kim<sup>2</sup></b> <sup>1</sup> Department of dental clinic, saevit, South Korea <sup>2</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea
P-132	A study on the association between chronic disease, metabolic syndrome and tooth loss using the Korean National and Nutrition Examination Survey(2016-2018)	<b>Junghui Son<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, Daewon University college, South Korea
P-133	The Influence of Maternal Educational Level on the Oral Health Behavior of Korean Adults	<b>Young-Eun Jang<sup>1</sup>, Su-kyung park<sup>2,3*</sup></b> <sup>1</sup> Department of Dental Hygiene, BaekSeok University, South Korea <sup>2</sup> Department of Dental Hygiene, Jeonju Kijeon College, South Korea <sup>3</sup> Department of Dental Hygiene, Yonsei University Graduate School, South Korea
P-135	Scoping Review: trends of intervention method for oral function management in Korean older adults	<b>Soo-Min Kim<sup>1</sup>, Hye-Jin Park<sup>1</sup>, Sun-Young Han<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju 26493, South Korea
P-137	Assessment of age-specific dysphagia, Independence of daily living, and oral frailty items among community-dwelling older adults in Korea	<b>Hye-Jin Park<sup>1</sup>, Eun-Ha Jung<sup>1</sup>, Sun-Young Han<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju 26493, South Korea
P-141	Changes in oral frailty diagnosis in Korean elderly by 5-year unit age group and gender	<b>Min-Ji Jo<sup>1</sup>, Sun-Young Han<sup>1*</sup></b> <sup>1</sup> Department of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju 26493, South Korea
P-145	Connecting the dots: Exploring the intersection of HIV and Oral Health	<b>Andrew Terry<sup>1*</sup></b> <sup>1</sup> School of Dentistry, Senior Lecturer, Australia
P-149	A case report on the effect of oral muscle function strengthening training on denture wearers among visiting oral health care intervention program	<b>Ji-Won Park<sup>1</sup>, Hye-Jin Na<sup>1</sup>, Jong-Hwa Jang<sup>1,2*</sup></b> <sup>1</sup> Department of Public Health Science, Graduate School, Dankook University, South Korea <sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, South Korea

# Competence development in dental hygienist's education. New innovative multidisciplinary learning and development environment HyMy Village.

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## Problem Statement

Societal changes and ongoing developments in health care demand new innovations in education.

There is a need for people-centered co-creation and new pedagogical approaches.

To enable high quality and efficient patient centered health care services in future, and account for public demands for oral health care, dental hygienist needs to be able to adapt to societal trends and changing treatment concepts.

## Purpose / Goals / Objective

Acquiring new professional skills.

Explore possibilities to create effective individual and flexible preventive services.

Since oral health services can be provided in different facilities, and dental hygienists work closely with different professionals, collaboration is a key factor for competence development.

Multidisciplinary enables people-centered solutions.

## Key Features

Dental hygienists' future skills and competence development are enabled in an authentic client work.

HyMy Village is located in Helsinki on the Myllypuro campus of Metropolia University of Applied Sciences. HyMy Village means well-being from Myllypuro community. Hymy also means 'a smile' in Finnish.

HyMy Village, where the most of the clinical practice takes place in dental hygienist's education, is a purposefully designed environment for competence based and workplace placed learning.

It is a multidisciplinary and people-oriented learning environment that produces private wellbeing and health services e.g dental, optometry, osteopathy and physiotherapy services.

Main partners are private and public health care, societies and organizations.

In the core values is meeting individuals and communities, supporting person's everyday life, providing health promoting services and strengthening the regional collaboration.

Under the guidance of supervising teachers and professionals, students practice the key professional practices. They provide counselling and guidance, design of new services and co-creation with customers.

## Impact

The clinical practice provided in HyMy Village is worklife based.

Learning by doing and developing in multidisciplinary environment provides new skills and competence for work life.

In addition to clinical skills students learn to observe and predict changing world and to cherish health promotion in all population groups.

Competence based education improves communication skills, cultural awareness, empathy and problem-solving skills.

Students learn from each other and everyone's expertise becomes visible.

## Conclusions

In order to educate dental hygienists to be qualified and competent, and account for public demands for dental care, we need to provide opportunities for innovative oral health care practice.

There is a need of new perspective and innovative thinking in education and Metropolia UAS has responded to challenges in health care by creating this new learning environment.

## Learning Outcomes

The learning and service concept provided in Metropolia University is unique in Finland. HyMy Village learning environment was developed to stimulate interprofessional education and learning.

The career paths for dental hygienists continues to expand. New operating models in health care are needed to educate professionals that pay attention also to cultural awareness and sustainability.



Thus, there is evidence that this new learning concept improves dental hygienist's competence. The feedback proves that students have gained sufficient and versatile training and professional skills during education.

Introduction video <https://www.youtube.com/watch?v=ntI0fGG34b4>

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# The impact of metacognition and learning flow on the problem-solving ability of dental hygiene students

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## Problem Statement

The problem-solving ability required in dental clinical practice is essential for dental hygienists to provide appropriate oral health education to maintain and prevent patients' oral health, and to provide personalized comprehensive dental hygiene care. Accordingly, we need to improve educational methods to improve problem-solving ability.

## Purpose

Our purpose is to use metacognition and learning flow to identify factors that influence the problem-solving ability of dental hygiene students.

## Methods

We conducted an online survey targeting 132 dental hygiene students. The data analysis included T-tests and ANOVA to examine differences in metacognition, learning flow, and problem-solving ability according to the general characteristics of the study subjects. Additionally, multiple regression analysis was performed to explore factors influencing the dependent variable, which is problem-solving ability. The statistical significance level was set at  $\alpha=0.05$ .

## Results

First, when comparing metacognition, learning flow, and problem-solving abilities based on the general characteristics of the study participants, statistically significant differences were observed in common factors such as major satisfaction, subjective academic performance, GPA (grade point average), and reason for major choice ( $p<0.05$ ). Second, it was found that there is a significant positive correlation between metacognition, learning flow, and problem-solving abilities in dental hygiene students ( $r\geq 0.79$ ,  $p<0.05$ ). In other words, higher levels of metacognition and learning flow were associated with better problem-solving abilities. Third, factors influencing problem-solving abilities were identified, with

both metacognition and learning flow having a statistically significant positive impact. It was also noted that metacognition had a greater influence on problem-solving abilities compared to learning flow ( $\text{adj.}R^2=0.815$ ,  $p<0.05$ ).

## Conclusions

To enhance the essential competency of problem-solving ability in dental hygienists, universities should prioritize improving students' metacognition and learning flow. To enhance metacognition and learning flow, it will be necessary to implement strategies such as goal setting, strengthening self-efficacy, managing the learning environment, selecting activities that foster engagement, practicing stress management, conducting self-assessment and feedback, and utilizing diverse learning experiences.

## Learning Outcomes

Metacognition and learning immersion have a close influence on problem-solving ability, which is a core competency that dental hygienists must have. Therefore, we would like to argue that in order to improve students' problem-solving abilities in universities, it is necessary to explore various ways to improve educational methods that improve metacognition and learning flow.

## Presenting Author Brief CV

-Ph.D. in Dental Hygiene, Namseoul University

-Adjunct Professor, Department of Dental Hygiene, Namseoul University

## a dental hygiene case study- Management of periodontal debriefing of female college students -

**HeeJa Na<sup>1\*</sup>**

<sup>1</sup> Department of Dental Hygiene, Honam university, South Korea

### Objective

This study aims to identify risk factors and stages of periodontal disease in female college students, assess the effectiveness of periodontal treatment, and analyze the impact of periodontal disease on patients' oral self-care. The findings will provide valuable insights for enhancing future oral health management of individuals with periodontal disease, both in academia and clinical settings.

### Search Strategy / Selection Criteria

Written consent was obtained, and an examination of teeth 16, 26, 36, and 46 was conducted, followed by scaling, tooth brushing training, dental plaque removal, and fluoride application.

### Data Collection and Analysis

In November 2023, a female college student in her 20s visited Y Dental Clinic in Gwangju Metropolitan City to receive periodontal treatment as part of a preventive dental program aimed at improving scaling and oral health. The study was approved by Honam University's Bioethics Research Committee under the IRB number NO1041223201912HR18. The patient presented with yellow teeth, bad breath despite regular brushing, jaw joint pain, tooth discoloration, and a history of regular check-ups within the past six months. Dental and orthodontic treatments were provided. The patient reported habits such as tooth brushing, teeth grinding, lip biting, and nail biting, with a frequency of three to four times a day after meals. Oral aids such as dental floss, interdental toothbrushes, tongue cleaners, and mouthwash were used. The patient had undergone scaling a year ago but had no prior oral health education.

### Main Results

The implementation of the oral hygiene program in this study led to significant improvements. The oral hygiene test (PHP index) decreased from 3.0 during the initial assessment to 1.83 after the oral health promotion program

was introduced. To ensure effective management, thorough brushing education was provided. In terms of the oral microbiological test, both before and after the program, the levels of inactive cocci and liver bacteria were below average. The breath test revealed that OG (in-oral gas) was 55 and EG/NG (aerobic gas) was 52, indicating a "mild smell". However, after undergoing SCALING and tooth brushing training, OG reduced to 35 and EG/NG decreased to 50, falling within the normal range.

### Conclusions

Calculus found in teeth 16, 26, 36, and 46. Tooth 26 had a 4mm periodontal cyst and bleeding during probing. Scaling, tooth brushing training, plaque removal, and fluoride application were done. Jaw joint pain and oral habits like teeth grinding, lip biting, and nail biting should be addressed at the oral department.

### Free of Bias

There is no way to assess the risk of bias in this study.

### Learning Outcomes

Calculus found in teeth 16, 26, 36, and 46. Tooth 26 had a 4mm periodontal cyst and bleeding during probing. Scaling, tooth brushing training, plaque removal, and fluoride application were done. Jaw joint pain and oral habits like teeth grinding, lip biting, and nail biting should be addressed at the oral department.

### Citation for Publication

This study has not been published before.

### Presenting Author Brief CV

I am an associate professor of dental hygiene at Honam University, a Ph.D. in health, and a member of the Gwangju Metropolitan City Regional Health and Medical Policy Review. I am an editor of the Korean Society for Preventive Dental Medicine.

## A qualitative study of multidisciplinary perceptions and practices of home-based oral healthcare for the elderly in an integrated healthcare-care support system: Focus group interviews

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<sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, South Korea

### Problem Statement

The aging population is leading to an increase in chronic health issues and oral diseases among the elderly. This is due to their declining cognitive function, mobility, and fine motor skills. Responding to this challenge, the government has introduced integrated medical and care support services for the elderly. It is crucial to provide customized and appropriate services that meet the changing needs of the elderly. Those with high dependencies require specialized knowledge from a multidisciplinary team of professionals who can make collaborative decisions.

### Purpose

In this study, we aim to investigate the perception and status of oral health management by integrated support healthcare providers for elderly medical care and to develop a tailored oral health management intervention program for the elderly based on the results obtained from this study.

### Methods

The study employed focus group interviews and a structured questionnaire for data collection. The questionnaire was initially administered to the final study group, followed by interviews using the same questionnaire. Additional questions were posed during the interviews for deeper insights. Interview transcripts were organized based on key themes and meanings, with certain keywords reorganized or merged. A word cloud technique was utilized to identify, visualize, and analyze essential vocabulary from the responses, displaying high-frequency words in larger font sizes.

### Results

1) Dental hygienists need diverse skills, including medical knowledge of systemic and geriatric diseases, understanding of aging and elderly families, communication skills like listening and rapport building, and training in enhancing oral muscle function, including swallowing and stereotypy. Empathy and emotional stability are crucial for alleviating anxiety in patients and their families.

2) Multidisciplinary experts in health and welfare provide support for functions such as mastication, digestion, medication guidance, pain management, muscle strength, and fall prevention.

3) Evaluation of oral healthcare visits by multidisciplinary experts indicated high satisfaction levels with systematic oral healthcare, use of various oral care products, effective dry mouth assessment, intervention timing adjustment, support for dental treatment, and the need for continuous management.

4) Regular meetings are essential for sharing multidisciplinary opinions and case findings, determining the required number of home oral health care visits for the target population, and identifying areas for institutional improvement

### Conclusions

The results suggest that dental hygienists should receive multidisciplinary education on systemic health so they can provide personalized home-based oral healthcare interventions. Additionally, it is recommended to develop multidisciplinary home-based oral healthcare programs that can be tailored to the elderly population's specific needs.

### Studies in Progress

A recently completed study examined the multidisciplinary perceptions and practices of home-based oral health care for the elderly based on integrated medical-care support. The findings suggest the need for multidisciplinary education and the development of targeted home-based oral health care programs.

### Learning Outcomes

The role of the dental hygienist in home-based oral health care for older adults in an integrated medical-care support system.

### Presenting Author Brief CV

Dankook University, Doctor of Public Health (Dental Hygiene)

## Antifungal susceptibility and phospholipase activity of *Candida* isolated from patients with head and neck cancer and esophageal cancer

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<sup>4</sup> Department of Public Oral Health, Program of Oral Health Sciences, Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan

<sup>5</sup> Departments of Oral Health Management, Program of Oral Health Sciences, Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan

### Problem Statement

Patients in treatment as chemoradiotherapy for head and neck cancer (HNC) and esophageal cancer (EC) frequently occur oral candidiasis. Because *Candida* invades to injured oral mucosa by virulence factor as phospholipase, and can lead to severe infection, those patients that occur oral candidiasis is need to antifungal therapy. Although *C. albicans* is main causative fungi of oral candidiasis, the detection of *C. glabrata* has been increased and those trend to be less susceptible to anti-fungal drug. Emergence of antifungal drug-resistant *Candida* is a problem. However, there is few reports that anti-fungal susceptibility and virulence of *Candida* from patients with HNC and EC.

### Purpose

To investigate current trends of antifungal resistance and virulence of *Candida* in patients with HNC and EC, we examined susceptibility of antifungal drug and phospholipase activity of *Candida* species isolated from those patients.

### Methods

Subjects were 86 patients who visited the dental department of the Hiroshima University Hospital. Oral samples were collected from tongue surface, and then, smeared directly onto Chromagar medium. After culturing for 48 hours, the strain was identified by the color and morphology of the colonies. Antifungal susceptibility was investigated using a fungal susceptibility kit, and the minimum inhibitory concentration (MIC) of antifungal drugs such as MCFG, CPFG, FLCZ, MCZ, ITCZ, VRCZ, 5-FC, and AMPH-B was measured. phospholipase activity was performed

according to the method of Price et al. Those differences of MIC and phospholipase activity between *C. albicans* and *C. glabrata* were compared.

### Results

42 strains (32 strains of *C. albicans*, 10 strains of *C. glabrata*) were isolated from 38 subjects in 86 patients. MIC of MCFG, FLCZ, MCZ, ITCZ, and VRCZ for *C. glabrata* was significantly higher than those for *C. albicans*. Each three *C. glabrata* of resistant against MCZ and ITCZ was found. Ability of phospholipase activity was difference among clinical isolates, and high ability of some isolates were observed. There was no different of those ability between *C. albicans* and *C. glabrata*.

### Conclusions

*C. glabrata* from patients was low susceptibility against anti-fungal drug as candin and azole types in compare with *C. albicans*. Some *Candida* strains have high phospholipase activity. Therefore, oral hygiene management is needed during those cancer treatments to prevent oral candidiasis, and identification of causative *Candida* and antifungal susceptibility test is important as onset of oral candidiasis.

### Learning Outcomes

Oral candidiasis is an opportunistic infection. It is one of the infectious diseases that dental hygienists frequently encounter when providing oral care to patients with the disease. In most cases, the disease is not considered dangerous because it can be relieved with oral care and antifungal drugs are effective. However, it has been reported that non-*albicans* species are on the rise due to



cancer treatment, and antifungal-resistant strains were also detected in this study. Dental hygienists need to appropriately intervene in the oral care of cancer patients and strive for prevention and early detection.

## Presenting Author Brief CV

In 2022, I entered the doctoral program in the Department of Comprehensive Health Sciences, Graduate School of Medical Sciences, Hiroshima University.

In 2019, he entered the master's program at Hiroshima University Graduate School of Medical Sciences, Department of Comprehensive Health Sciences, and received his master's degree in 2022.

I obtained the national qualification as a dental hygienist in 2004 and have been working at Hiroshima University Hospital for 19 years.

# Evaluating motivation related to the oral condition on receiving basic periodontal therapy; A case report

**Ai Sakuma<sup>1\*</sup>**

<sup>1</sup> Department of Hygiene and Oral Health Science, Tokushima University Graduate School of Biomedical Sciences, Japan

## Problem Statement

It is important to prevent the onset of periodontal disease, which has been reported to be associated with various systemic diseases, and to lead patients to good oral health, which requires behavioral change. A 14-item questionnaire concerning the patients' motivation assessment scale for periodontal treatment was used and the motivation scale score (MSS) was calculated on a scale from 1 to 5 for each item, with a maximum score of 70 points. MSS was useful in terms of reliability and validity for evaluating motivation in patients with periodontal disease (Sakuma A et al, J Dent Hlth, 2023, in press). However, there are few reports on the effective use of MSS in periodontal treatment.

## Purpose

The purpose of this study was to investigate motivation related to oral condition in a patient with periodontal disease, before and after basic periodontal therapy using MSS.

## Methods

The patient was a 50-year-old female who presented with a chief complaint of an oral examination; she had not visited a dentist for 10 years. The cause of the disease was identified and the patient's awareness of oral health was assessed using MSS prior to treatment. Basic periodontal therapy including oral health instruction and periodontal treatment was performed by a dental hygienist.

## Results

The value of MSS was 30 at the first visit in our dental clinic. Oral hygiene was poor (PCR 78.3%) and findings of gingival inflammation (BOP 73.3%, PISA 1170.5mm<sup>2</sup>) were observed at baseline. After basic periodontal therapy, the value of PCR, BOP and PISA decreased to 13.3%, 9.4% and 217.9mm<sup>2</sup>, respectively, indicating a good change in the oral environment. After using interdental cleaning tools, the value of MSS also increased to 66 after treatment.

## Conclusions

This result suggests that high motivation may lead to a good periodontal condition, and enhancing motivation may lead to good oral health behavior in patients with periodontal disease.

## Learning Outcomes

Understand the usefulness of the motivation scale score (MSS) related to the oral condition on receiving basic periodontal therapy.

## Citation for Publication

This article is a new finding based on the content of published paper (Sakuma A et al, J Dent Hlth, 2023, in press).

## Presenting Author Brief CV

2010: Bachelor's degree of Oral Health, Aichi Gakuin University Junior College

2010-current: Aso Dental Clinic (Dental Hygienist)

2021: Master's degree of Oral Health Science, Tokushima University

2021-current: Doctor's Course of Oral Health Science, Tokushima University

## Mentor-Protégé vs. Traditional Approach in Dental Hygiene Clinical Education

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### Problem Statement

Typically, dental hygiene students are given nearly limitless amounts of time to complete care on a single patient, which is not realistic when out in practice. The mentor-protégé approach in dental hygiene clinical training can increase treatment efficiency, reducing the amount of time needed for dental hygiene students to complete patient care, and therefore, improve practice readiness.

### Purpose

This study compared the person-centered approach alone and the incorporation of the mentor-protégé model on the dental hygiene students' clinical experience to assess differences in clinical skill acquisition, confidence levels, time management, anxiety/stress, and perceived value of the mentor-protégé model.

### Methods

This quasi-experimental study recruited a convenience sample of dental hygiene students at New York University during the 2022-2023 academic year. The academic performance of final-year dental hygiene students who were taught through traditional methods only (control group) and those who experienced the mentor-protégé approach (comparison group) were compared. Data was collected from participants through anonymous surveys at the beginning and end of the students' clinical year. In addition, information was gathered from the comparison group through a focus group session at the end of the academic year.

### Results

Thirteen proteges were included in the study. Participation in the mentor-protégé rotation led to a notable reduction in anxiety/stress levels for students when they were not in the rotation and during traditional clinical teaching settings. All of the students that were a part of the mentor protégé group reported improved time management during patient care. The failing rate for students who did not participate in the mentor protégé rotation was 9%, while all students who participated in the rotation passed their clinical course. These findings suggest that the mentor-protégé model

enhances clinical abilities and performance compared to traditional clinical teaching.

### Conclusions

Implementing the mentor-protégé model in dental hygiene education enhances students' clinical learning experiences and aids in preparing aspiring dental professionals' readiness to adapt to various practice environments and future career prospects.

### Studies in Progress

N/A

### Learning Outcomes

Describe the mentor-protégé model and how it is used in clinical dental hygiene education.

- Identify factors that determine the success-related elements and the challenges encountered.
- Strategize methods to increase the likelihood of success of the mentor-protege model in dental hygiene educational setting

### Presenting Author Brief CV

Dianne Sefo, RDH, MEd, FNYAM is a Clinical Associate Professor and Chair of the Department of Dental Hygiene & Dental Assisting at New York University College of Dentistry. Dianne is a fellow in the New York Academy of Medicine, an honorary fellow of NYU College of Dentistry Academy of Distinguished Educators, and inducted member of Kappa Delta Pi, an International Honor Society in Education. She is also a current member and past president of Sigma Phi Alpha - Psi Chapter, a U.S. National Dental Hygiene Honor Society. Her research concentrations have been in oral-systemic health and clinical dental education. She has been a dental hygiene pre-clinical and clinical educator for over 20 years specializing in periodontal instrumentation. In addition to her teaching, research and clinical activities, she is a reviewer and published author of peer-reviewed journals, continuing education courses, book chapters, and other publications pertaining to education and dental hygiene

# A Study on Surface Contamination Investigation of Wired and Wireless Computer Mouse Used in Dental Unit Chair.

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<sup>4</sup> Dept. of Dental Hygiene, Kangwon National University, South Korea

## Problem Statement

Analyzing the level of bacterial contamination and types of contaminating bacteria on the mouse surface of attached to dental treatment chairs in dental clinics, We would like to raise the need for a standardized surface disinfection infection control manual.

## Purpose

The purpose of this study was to provide the importance of surface management through the identification of bacteria detected on the surface of a computer mouse attached to a dental unit chair.

## Methods

After rubbing with a sterilized cotton swab in the center of the left mouse button in the range of 1 cm × 1 cm, it was immediately put into 1.5 mL of sterile saline. Colony forming units (CFUs) grown on Lysogeny broth (LB) agar plates were analyzed through Polymerase Chain Reaction (PCR).

## Results

About 8 types of bacteria, gram-negative and gram-positive, were detected on the surface of the computer mouse attached to the dental unit chair.

## Conclusions

Infection control in the dental office should be prevented through surface contamination management of computer mouse attached to dental unit chairs.

## Learning Outcomes

We would like to raise the need for a standardized surface disinfection infection control manual.

## Presenting Author Brief CV

- Hallym polytechnic University professor of department dental hygiene

## Factors associated with interprofessional competencies of dental hygienists : a multicenter cross-sectional study.

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<sup>2</sup> Department of Oral and Maxillofacial Surgery, Shimane University, Japan

<sup>3</sup> Department of Dental Hygiene, Tokyo Medical and Dental University, Japan

### Problem Statement

Interprofessional collaboration, including dental hygienists, is known to contribute to the quality of health care. However, it is not easy to establish interprofessional collaboration due to differences in professional and educational backgrounds.

Therefore, the interprofessional competency framework was developed to promote interprofessional collaboration and education. The interprofessional competency framework includes two core domains: "Patient-/Client-/Family-/Community-centered" and "Interprofessional Communication." In addition, four domains support the core domains: "Role Contribution," "Facilitation of Relationship," "Reflection," and "Understanding of others." Furthermore, the Japanese version of the Self-assessment Scale of Interprofessional Competency (JASSIC) based on the interprofessional competency framework was developed for Japanese healthcare professionals.

There are few reports on studies of interprofessional competency for dental hygienists in Japan, and the factors that influence the improvement of interprofessional competency still need to be discovered.

In addition, previous studies using competency in interprofessional education for dental hygienists have focused on Canadian dental hygiene students; therefore, it is necessary to examine Japanese dental hygienists.

### Purpose

The purpose of this study is to investigate factors related to the interprofessional competency of dental hygienists working in university hospital Dental and Oral surgery departments.

### Methods

We conducted a cross-sectional survey of dental hygienists working at a university hospital by using a questionnaire with

JASSIC. The questionnaire included JASSIC, demographic information, whether they had undertaken pre- and post-licensure interprofessional education, teaching by dental hygienists in the workplace, and interprofessional conference participation. The relationship between JASSIC scores and explanatory variables was analyzed using Spearman's rank correlation coefficient and Mann-Whitney's U test. Two-tailed p-values were calculated, and the significance level was set at  $p < 0.05$ .

### Results

A total of 48 questionnaires were analyzed. Among respondents, 47 were women (97.9%) and one was a man (2.1%). The mean age was 33.5 years (IQR:26-46), and the average work experience at the current institution was 5.0 years (IQR:1.8-16). Significant differences were found between "Interprofessional Communication" and interprofessional conference participation. ( $p < 0.05$ ). Significant differences were also found between "Understanding of Others" and the frequency of interprofessional conference participation ( $p < 0.05$ ). Finally, significant differences were found between "Patient-/Client-/Family-/Community-centered" domain and teaching by dental hygienists in the workplace ( $p < 0.05$ ).

### Conclusions

It was suggested that participation in interprofessional conferences with multiple professions and teaching by dental hygienists in the workplace may have improved interprofessional competency. In the future, JASSIC is required to be used to conduct nationwide surveys, international collaborative research, and interprofessional competency-based interprofessional education initiatives.

### Learning Outcomes



Interprofessional competencies and their relationship to  
Interprofessional collaboration of dental hygienists.

## Presenting Author Brief CV

### Education

Apr. 2022-Present Master course of Tokyo Medical and  
Dental University, Tokyo, Japan

Apr. 2018-Mar. 2022 Oral Health Care Sciences, Graduate  
School of Tokyo Medical and Dental University, Tokyo,  
Japan

### Research Experience

The author conducts the research on interprofessional  
collaboration including dental hygienists. And she  
especially focuses on the factors related to the competencies  
that indicate the ability of dental hygienists to collaborate  
with interprofessional. The author played a significant  
role in designing the research, conducting the survey and  
statistical analysis, and was instrumental in finding the  
factors.

By working in the Tokyo Medical and Dental University's  
clinic, the author understood the importance of  
interprofessional collaboration and the importance  
of dentistry in a hospital by answering requests from  
physicians and instructing nurses on oral care methods.  
These experiences inspired the design of the study.



## Providing oral hygiene care to hospitalized dependent patients: Habits, knowledge and attitudes of nurses and healthcare assistants

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<sup>2</sup> Faculdade de Medicina Dentária, RHODes, Universidade de Lisboa, Portugal

<sup>3</sup> Center for Innovative Care and Health Technology (ciTechcare), Polytechnic of Leiria, Leiria, Portugal

### Problem Statement

The rise in average lifespan has resulted in more hospitalized patients who are dependent and have severe oral health issues, impacting their overall health due to the oral-systemic link.

### Purpose

This study aimed to explore the practices, knowledge, and attitudes of the nursing team in providing dental hygiene care to these patients.

### Methods

The study was observational, cross-sectional, descriptive and analytical. An online questionnaire with 28 questions on the oral hygiene care practices of hospitalized dependent patients was used. Portuguese nurses and healthcare assistants who care for these patients were asked to participate. The data was analyzed using statistical software. The data was analyzed to check for differences between the two professional classes using the non-parametric Mann-Whitney U-test, Pearson's correlation and chi-square tests and Fisher's exact test. The significance level used was 0.05.

### Results

The study included 276 healthcare professionals, 228 nurses (82.6%) and 48 healthcare assistants (17.4%). Most rated their oral health as good or very good (63.0%), with nurses having a more positive self-perception. This influenced brushing frequency and dental visits but not patient oral care. Most professionals (94.2%) felt capable of performing oral hygiene on patients.

Oral hygiene was performed daily by 66.3% of professionals, typically in under 3 minutes (58.1%), using primarily compress/gauze or oral hygiene stick (96.0%) and mouthwash (85.5%). Oral cavity assessment was performed by 80.3% of professionals, focusing on mucosa

color (79.8%) and halitosis (68.6%).

The main obstacle to oral hygiene was the limited number of staff/work overload/limited time (55.1%), followed by lack of resources (12.7%). Most professionals found oral hygiene difficult (60.9%) and unpleasant (50.7%), and 36.2% disagreed that it is a priority. There was a significant association between professional class and tongue cleaning ( $p=0.034$ ) and lip hydration ( $p=0.019$ ), with nurses performing these activities more often.

### Conclusions

Nurses were more aware of the impact of oral health on overall health, which is related to their prior training. Self-perception did not affect the prioritization or adequacy of care. Attitudes towards oral hygiene procedures were negative, and it was not seen as a priority. The products and procedures used in oral hygiene and observation were insufficient and inadequate for patient needs. The main barrier mentioned was limited staff/time. The need for an oral health professional was recognized to address existing limitations and deficits

### Learning Outcomes

1. Understanding the Oral-Systemic Health Link in Dependent, Hospitalized Patients: Attendees will gain a comprehensive understanding of how poor oral health in dependent, hospitalized patients can impact their overall health.
2. Knowledge and Skills in Oral Hygiene Practices for Hospitalized Patients: Participants will learn about the current practices, knowledge, and attitudes of nursing teams in providing dental hygiene care to dependent, hospitalized patients.
3. Critical Analysis of Oral Health Care Challenges in Healthcare Settings: Attendees will be equipped to critically analyze the barriers to effective oral health care in hospital

settings, such as staff limitations, time constraints, and resource scarcity.

4. Strategies for Improvement and Advocacy in Oral Health Care: Participants will be able to identify strategies to improve oral health care in healthcare settings, emphasizing the need for dedicated oral health professionals and better training for existing healthcare staff.

### Presenting Author Brief CV

Dental Hygienist degree from the Faculdade de Medicina Dentária, University of Lisbon, in 1990. Graduated in Health Sciences from the University of Washington, USA, in 1992. Master's Degree in Statistics, Faculdade de Ciências, University of Lisbon, 2004. PhD in Oral Health Sciences, Faculdade de Medicina Dentária, University of Lisbon, 2011. Associate Professor of Oral Hygiene at the Faculty of Dental Medicine, University of Lisbon. Private practice since 1990. Author of several publications in national and international journals with scientific arbitration, and communications at scientific events. ORCID: 0000-0002-1092-7825

# Survey on the perceptions of dental hygiene and dental laboratory technology students after interprofessional education on dental prosthodontic treatment

**Ae-ri Shin<sup>1</sup>, Gum-ju Sun<sup>2</sup>, Hyung-Soon Shim<sup>1</sup>, Eun-mi Kim<sup>1</sup>, Myung-ok Ha<sup>1\*</sup>**

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<sup>2</sup> Dental Laboratory Technology, Gwangju Health University, South Korea

## Problem Statement

Although collaboration between dental hygienists and dental technicians is important for the success of dental prosthetic treatment during dental treatment, students enrolled in the Department of Dental Hygiene and Department of Dental laboratory technology are only learning parts of each specialized field.

## Purpose

Inter-professional education(IPE) is a program that allows experts to cooperate and interact with each other to increase understanding between occupations and improve the quality of patient-centered medical care. In this study, we attempted to raise awareness of the need for mutual collaboration between dental hygienists and dental technicians for dental prosthetic treatment through Inter-professional education.

## Methods

The IPE program conducted in this study was conducted for a total of 4 times (10 hours) from November 7 to November 16, 2023 for a total of 20 students, 10 dental hygiene students and 10 dental laboratory technology students attending ○○ University. One professor from the Department of Dental Hygiene and one professor from the Department of Dental laboratory technology conducted theoretical lectures and practical training on each area of the Department of Dental Hygiene and Department of Dental laboratory technology for the clinical process of dental prosthetic treatment using a team teaching method. Training participants took the program through the team medical practice method. The questionnaire for this study was completed after taking IPE program. There were 10 multiple-choice questions and 1 subjective question. The contents of the multiple-choice questions were personal characteristics, overall appropriateness of education, instructor satisfaction, training time, and satisfaction with education, and the

subjective questions were good points or improvements about the education. Multiple-choice questions excluding personal characteristics were interpreted on a 5-point Likert scale, with higher scores indicating a more positive attitude toward IPE education, and the average was calculated and analyzed.

## Results

All participating students responded positively to the program with an average score of 5 points for the overall appropriateness of education, instructor satisfaction, and education satisfaction for the IPE program, and the score for education time was 4.97 points.

By implementing IPE program to ensure successful and smooth collaboration between dental hygienists and dental technicians in the dental prosthetic treatment process, understanding of other majors improved and positive results in relational communication were confirmed.

## Conclusions

In order to improve the completeness of the treatment of the patient during dental treatment, Interprofessional education on various dental treatment processes between departments in dentistry-related fields that have a direct impact will be necessary.

## Learning Outcomes

In order to improve the completeness of the treatment of the patient during dental treatment, Interprofessional education on various dental treatment processes between departments in dentistry-related fields that have a direct impact will be necessary.

## Presenting Author Brief CV

Assistant Professor, Department of Dental Hygiene, Gwangju Health University

# Are there any differences in dental caries prevalence between hypertensive persons with or without long-term experience of PAP-treated obstructive sleep apnea?

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## Problem Statement

Oral dryness (i.e., xerostomia and hypersalivation) is associated with an increased risk for development and progression of dental caries. Obstructive sleep apnea [OSA] with or without positive airway pressure [PAP] treatment can through OSA symptoms and PAP-related side-effects (i.e., xerostomia), together with well-known risk factors, such as older age and medication usage (e.g., polypharmacy for hypertension) increase the risk for oral dryness and therefore dental caries. Hypothetically, untreated OSA and PAP treated OSA could therefore both be additive risk factors for the development or progression of dental caries among elderly persons with hypertension.

## Purpose

To describe and compare the prevalence of dental caries among hypertensive persons with and without PAP-treated OSA. Secondly, this study aimed to describe the prevalence of xerostomia, and oral health habits among hypertensive persons with or without PAP-treated OSA.

## Methods

This cross-sectional study used a descriptive and comparative design. Data was derived from 121 hypertensive adults with or without long-term (>10 years) experience of PAP-treated OSA. Data was collected by a questionnaire focusing on sleep and oral health, and an oral clinical examination including radiographs. At the examination, decayed, missing, filled teeth [DMFT], decayed surfaces [DS], and presence of dental plaque and

gingivitis was recorded.

Data was analysed using descriptive statistical analyses and by one-way ANOVA and Kruskal-Wallis tests to compare groups.

## Results

The participants (mean age  $69.5 \pm 5.8$  years, 52% females) were categorised into groups based on OSA status; non-OSA (n=49), non-PAP-treated OSA (n=38), and PAP-treated OSA (n=34). Among groups, no statistically significant differences in prevalence of dental caries based on DMFT, DS, plaque or gingival index were found. When comparing dental caries prevalence among groups based on site level, only occlusal sites showed statistically significant differences where the PAP-treated OSA group had a higher mean compared to the non-OSA group ( $p=0.033$ ). The highest prevalence of xerostomia was found in the non-PAP-treated group (31.6%), but most participants did not report xerostomia.

## Conclusions

PAP treatment might not contribute to a higher prevalence of dental caries except on occlusal sites. However, in the presence of oral dryness, OSA (with or without PAP treatment) might be an additional risk factor for development/progression of dental caries. This needs to be investigated in longitudinal studies along studies on identifying and differentiate between xerostomia and hyposalivation within a healthcare context. Increased ability to differentiate between xerostomia and hyposalivation in a



healthcare context can lead to increased interprofessional collaborations and thus improve person-centred care.

## Studies in Progress

This manuscript has been submitted.

## Learning Outcomes

I would like the attendees to acknowledge the importance of identifying potential risk factors and how they might interact with each other but also that having several risk factors can contribute to a cumulative effect. Combinations of potential risk factors are essential to identify and record. For this particular group of people, it is essential to identify presence of oral dryness and to distinguish between xerostomia and hyposalivation. By working together with PAP professionals, we can identify oral dryness in both healthcare and oral health care settings and by that we can optimize our recommendations for specific patient needs in both settings.

## Citation for Publication

Not previously published but has been submitted.

## Presenting Author Brief CV

Personal information

Date of Birth: 1983

Current employment

2022- Assistant professor at the Dental Hygienist Program at School of Health and Welfare, Jönköping University, Sweden.

Work experience

2017–2022 PhD candidate, Research School of Health and Welfare, School of Health and Welfare, Jönköping University

2012 – 2022 Lecturer at the Dental Hygienist Program at School of Health and Welfare, Jönköping University, Sweden.

2006–2011 Dental hygienist (clinical) within the private dentistry sector.

Education (relevant selection)

2017-2022 Doctor of Philosophy in Health and Care Science, School of Health and Welfare, Jönköping University, Sweden.

2011-2013 Master of Science, Oral Health Science, School of Health and Welfare, Jönköping University, Sweden.

2006 Bachelor of Science, Oral Health Sciences.

2003-2005 Diploma in Dental Hygiene.

Number of peer-reviewed international publications: 6 (+ 2 submitted)

# A Study on the relationship between oral health factors and mental health factors in Korean adolescents

**Min Hee Hong<sup>1\*</sup>**

<sup>1</sup> Dept. of Dental Hygiene, Division of Health Science, Baekseok University, South Korea

## Problem Statement

Since oral problems during adolescence can continue into adulthood, multifaceted research on the psychological factors that affect the experience of each oral symptom is considered to be of great significance. Accordingly, this study used data from the 17th Youth Health Behavior Survey (2021) conducted by the Korea Disease Control and Prevention Agency, a national data representative of Korean youth, to identify the relationship between oral symptoms and mental health factors among Korean youth. And we analyzed whether mental health factors act as risk factors for experiencing oral symptoms.

## Purpose

This study aimed to investigate the effects of mental health factors on oral symptoms and the relationship between the two in Korean adolescents.

## Methods

Raw data of 54,948 Korean adolescents among the participants of the 17th Korean Youth Health Behavior Survey conducted in 2021 by the Korea Disease Control and Prevention Agency were analyzed in this study.

## Results

Mental health factors evaluated in this study included sadness and despair, suicidal thoughts, suicide attempt, loneliness, stress, depression, and anxiety. Our findings showed that all mental health factors were associated with oral symptoms. Particularly, factors affecting dental pain were suicidal thoughts, stress, anxiety, loneliness, depression, sadness, and despair. Factors affecting tooth fracture were sadness and despair, suicide attempt, loneliness, anxiety. Factors affecting gingival bleeding were sadness and despair, suicidal thoughts, loneliness, depression, stress, anxiety.

## Conclusions

In conclusion, the findings in this study are expected to contribute to the development of programs for the intervention of key mental health factors affecting oral symptoms to improve overall health in Korean adolescents.

## Learning Outcomes

No.

## Presenting Author Brief CV

Working at Baekseok University (2012~present)

# Impact of oral care education on the nutritional status of young adults

**Eun-Ha Jung<sup>1\*</sup>**

<sup>1</sup> Department of dental hygiene, Yonsei University, South Korea

## Problem Statement

For adults in their 20s, the nutritional imbalance is higher than that of other age groups for various reasons. In addition, while frequent consumption of snacks or sugar-containing drinks increases, oral care is often neglected, so educating people about eating habits and practicing oral care to prevent oral diseases is necessary. Previous studies have proven the relationship between an individual's health level and oral health. Nevertheless, awareness of the need for dietary education and consideration of educational content is still lacking.

## Purpose

This study aimed to assess the necessity of dietary education during oral care education for adults in their 20s and to suggest the direction of the composition of dietary education content.

## Methods

This study was conducted on 200 adults in their 20s. A structured questionnaire was used to collect information on their experience of oral care education and dietary education. The nutritional status survey used the adult nutrition quotient (NQ) questionnaire proposed by the Korean Nutrition Society. The 18 checklist items comprised three factors: nutrition balance, moderation for the amount of food intake, and dietary behavior. After completing the survey, participants were divided into two groups based on whether they had dietary education. The nutritional status of the dietary education experience (DE) and no dietary education experience (NDE) was analyzed and compared.

## Results

Among the participants in the study, 97 (48.5%) responded that they had received oral care education; among them, 30 (30.9%) answered that they had received dietary education within the past year. In the DE group, 46.7% were confirmed to be eating a balanced diet, while 17.1% of the NDE group ate a balanced diet ( $p < 0.001$ ). However, in food moderation, 86.7% showed low food moderation even though they had received dietary education ( $p < 0.01$ ). 60.0% of the DE group showed appropriate dietary behavior, whereas 41.7% of the

NDE group showed adequate dietary behavior ( $p = 0.108$ ). In addition, 23.3% of the DE group showed a good NQ, while 19.4% of the NDE group showed a good NQ ( $p = 0.198$ ).

## Conclusions

The results of this study confirmed the possibility of good nutritional status in the group that received dietary education. However, considering the low proportion of subjects who have received dietary education, dental hygienists must recognize the importance and include diet-related content during oral care education.

## Studies in Progress

All data for this study has been collected, and the article will be submitted based on the analyzed results in the journal.

## Learning Outcomes

Dental hygienists should provide dietary education as a part of oral care education to promote healthy dietary behavior and appropriate diet.

## Citation for Publication

None

## Presenting Author Brief CV

2013. 03 – 2018. 02: Ph.D., Dept. of Applied Life Science, Yonsei University

2013. 03 – 2018. 02: Teaching assistant, Dept. of Preventive Dentistry and Public Oral Health, Yonsei University

2018. 03 – 2019. 02 / 2021. 03.– 2022. 04: Dental Hygienist, E-sarang dental clinic

2019. 03 – 2021. 02.: Research fellow, Dept. of Dental Hygiene, Yonsei University

2022. 04 – 2023. 08.: Assistant Professor, Dept. of Dental Hygiene, Catholic Kwandong University

2023. 09 – present: Part-time lecturer, Dept. of Dental Hygiene, Yonsei University

2023. 09 – present: Dental Hygienist, Saebyeok Dental Clinic

## Improving the oral health education in university curriculums in Trøndelag county, Norway

**Line Cathrine Nymoen<sup>1\*</sup>, Cecilie Y. Robertsen<sup>2</sup>, Lars Martin Berg<sup>1,2</sup>, Andrea S. Aspås<sup>3</sup>**

<sup>1</sup>Research, Center for Oral Health Services and Research (TkMidt), Norway

<sup>2</sup>Public dental health services, Trøndelag County, Norway

<sup>3</sup>Department of oral and maxillofacial surgery, St.Olavs Hospital, Norway

### Problem Statement

Our project is a collaboration between different institutions that care for and have an interest in oral health in Trøndelag County, Norway. The Center for Oral Health Services and Research (TkMidt), St. Olavs Hospital, NTNU the Norwegian University of Science and Technology, and the public dental health services in Trøndelag County have established a clinical academic group(CAG) for oral health. The oral health CAG represents a regional team of researchers and clinicians with specialized interdisciplinary expertise in oral health. Our ambition is "Oral health in a holistic health and disease perspective". A key CAG-activity is to educate health practitioners in oral health, as part of their basic or continuing education.

In Norway, most university curriculums for health personnel are lacking or have only minimal education regarding oral health. Doctors, nurses, and other healthcare personnel are all, in some way, responsible for taking care of all patients dental and oral health. Hence, this is an important part of their day-to-day care of the patients, especially for nurses and health care personnel in home-based care and institutions. By increasing their knowledge, they will be more confident and skilled to take care of their patients oral health.

### Purpose / Goals / Objective

We aim to incorporate oral health into the university health curriculums for health workers. This will strengthen their knowledge about oral health and include theoretical and practical training.

### Key Features

We aim to create a standard educational program, that can be used by all dental personnel to educate health professionals in oral health. This will give them the tools needed to take care of their patients oral health, and to

incorporate oral health into their education.

### Impact

This project has developed a standardized program to provide health professionals with the oral health care knowledge they need through their university education. It has also emphasized the critical importance of maintaining patients' good oral health, impacting dental well-being and overall health, social interactions, and quality of life.

### Conclusions

By implementing more standardized and complete content on oral health in our educational system, the different education institutions may provide oral health lessons and training that improves health personnel's knowledge and understanding of oral health. Oral health matters!

### Learning Outcomes

Improving oral health education in universities.

### Presenting Author Brief CV

Research coordinator at TkMidt

Education:

Dental hygienist, bachelor degree

Master in health informatics (from feb 2024)

Additional education in health promotion and dental health

# Meeting a Dental Hygienist at an Oral Care Center for a 50-Year-Old Patient with Low Oral Health Beliefs and Periodontitis! : A Case Report on Continued Oral Care Led by a Dental Hygienist

**Geumchae Youn<sup>1\*</sup>**

<sup>1</sup> Dental hygienist, 275 dental clinic, South Korea

## Problem Statement

In Korea, dental hygienists often collaborate with dentists, leading to a high percentage of them focusing on the treatment zone. Consequently, despite cases where individuals require motivation and counseling for oral health management, as illustrated in the following example, there are many instances where the introduction of dental hygienists' preventive care tasks has not occurred, resulting in the recurrence of diseases.

## Purpose / Goals / Objective

Leading individuals with low oral health literacy throughout their lifetime in oral health management, guided by dental hygienists at an oral care center.

## Key Features

A Comprehensive Dental Hygiene Care Process Utilizing Airflow for Ongoing Oral Care.

## Impact

Enhancing awareness of proper dental self-care, improving the O'Leary Index, reducing periodontal pockets, overall improvement in gingival swelling, regular follow-up every three months, ongoing expert management, and collaborative work between the patient, dental hygienist, and dentist.

## Conclusions

Since 2021, I have been receiving ongoing care every three months from the dental hygienist at the oral care center, based on a comprehensive dental hygiene management program. This continuous management has been beneficial for preventing periodontitis and dental caries.

## Learning Outcomes

To improve patient oral health and contribute to the smooth operation of dental clinics, it is crucial to establish

dental hygienist-led preventive dental hygiene programs in primary dental clinics. This will make it easier for patients to prevent oral diseases.

## Presenting Author Brief CV

275 Dental Oral Care Center Director

# Evaluation of Pediatric Oral Care Program with a Focus on AIRFLOWING

**GaHye Seo<sup>1\*</sup>**

<sup>1</sup> Dental hygiene, Erumi dental clinic, South Korea

## Problem Statement

A pediatric oral care initiative rooted in Comprehensive Dental Hygiene Care ought to foster active engagement in oral care practices among children and adolescents.

## Purpose

This report assesses the effectiveness of a pediatric oral care program centered around Comprehensive Dental Hygiene Care, specifically emphasizing the utilization of AIRFLOWING technology. The primary goal is to evaluate an oral care intervention administered by a skilled dental hygienist, utilizing a comprehensive dental hygiene management approach through a case study design targeting pediatric and adolescent patients.

## Methods

Patients were educated on the importance of self-care, and professional biofilm control on tooth surfaces was implemented using AIRFLOWING technology (AIRFLOW, EMS, Geneva, Switzerland), finished with fluoride varnish. The procedure was conducted by a dental hygienist skilled at using air-powder equipment, aiming to enhance overall oral health.

## Results

Following instruction on proper tooth brushing assisted by disclosed biofilm, patients exhibited heightened motivation to engage in the oral care program. This increased participation resulted in reduced dental treatment-related anxiety and positive behavioral changes. Parents expressed satisfaction with the pediatric oral care, and patients developed a comfort level with dental clinics, leading to consistent adherence to regular recalls and improved self-care comprehension.

## Conclusions

The study affirms the efficacy of an oral care program for children and adolescents based on a comprehensive dental hygiene management process. Positive outcomes

underscore the importance of promoting oral health within the targeted population and highlight the crucial professional role played by dental hygienists in fostering optimal oral care practices.

## Learning Outcomes

Pediatric oral care! Applying new technology!

## Presenting Author Brief CV

To sincerely touch upon health and joy.  
Clinician.  
Dental Hygienist.

## Survey of dental infection control in some countries in Southeast Asia: Based on the dental infection control checklist of the U.S. Centers for Disease Control and Prevention (CDC)

Youmi Kim<sup>1</sup>, Sojung Mun<sup>2\*</sup>, Seo Young Jeong<sup>2</sup>, Da Jeong LEE<sup>2</sup>

<sup>1</sup>Dept.Rehabilitation of Spinal Cord Injury/Dept. of Dental Hygiene, National Rehabilitation Center/Yonsei University Graduate School, South Korea

<sup>2</sup> Department of Dental Hygiene, Yonsei University Graduate School, South Korea

### Problem Statement

With the spread of COVID-19, infection control in dental clinic is emerging as a more important issue, and sensitivity to infection control is increasing. Accordingly, reports on the status of dental infection control and research on dedicated personnel are being conducted. However, there has been no monitoring of the status of dental infection control in Southeast Asian countries, and there is a shortage of infection control personnel. Therefore, there is a need to investigate whether dental infection control is being implemented appropriately.

### Purpose

- 1) Investigate the status of dental infection control in Southeast Asian countries to raise the importance of dental infection control
- 2) Providing basic data for developing and implementing educational programs tailored to each country's circumstances

### Methods

This study conducted a convenience sampling of 7 dental hospitals and clinics in 5 countries in Southeast Asia. Using the U.S. Centers for Disease Control and Prevention (CDC) dental infection control checklist, a total of 125 questions were surveyed regarding general characteristics, infection control administrative support, and infection control performance by item. The survey was conducted using Google. A frequency analysis was conducted on the infection control status for each question and item.

### Results

In Southeast Asian countries, most infection control practices are performed by dental assistants. In some countries, infection prevention education and training is not

provided, and education on sterilization and disinfection of instruments and items is very low. Additionally, the frequency of use of personal protective equipment (PPE) was low.

### Conclusions

The most vulnerable aspect of dental infection control in some countries in Southeast Asia is the lack of education on sterilization and disinfection of instruments and items. Dental infection control training courses tailored to the circumstances of each country are needed. In addition, there is a need to introduce a system for professional occupations such as dental hygienists.

### Studies in Progress

Survey completed

### Learning Outcomes

Through this study, we will understand the current status of dental infections in Southeast Asian countries and collaborate in developing infection control programs tailored to the national situation.

### Presenting Author Brief CV

Master's course in Dental Hygiene, Yonsei University

## Periodontal disease, systemic pathologies and psychological impact in patients with colorectal carcinoma.

**Antonia Abbinante<sup>1</sup>, Anna Antonacci<sup>2\*</sup>, Cinzia Bizzoca<sup>2</sup>, Leonardo Vincenti<sup>2</sup>, Valeria Andriola<sup>2</sup>, Germano Orrù<sup>3</sup>, Nicola Bartolomeo<sup>2</sup>, Valeria Lorusso<sup>2</sup>, Maria Teresa Agneta<sup>2</sup>, Massimo Corsalini<sup>2</sup>**

<sup>1</sup> Interdisciplinary Department of Medicine, University of Bari "Aldo Moro", contract professor, Italy

<sup>2</sup> Interdisciplinary Department of Medicine, University of Bari "Aldo Moro", other, Italy

<sup>3</sup> Surgical Sciences Department, University of Cagliari, ordinary professor, Italy

### Problem Statement

The colorectal cancer (CRC) is the third most common cancer globally and the fourth leading cause of cancer-related mortality. Growing scientific evidence links periodontal disease to both systemic inflammatory conditions and malignant neoplasms like CRC. Periodontitis has been associated with an increased risk of developing CRC and higher mortality related to it. The mechanisms underlying these correlations seem to be related to both increased inflammation mediators and carcinogenic factors, as well as the direct and indirect effects of virulence factors from periodontal pathogens. Chronic stress can also influence the onset and progression of periodontal disease, just as periodontal disease causes significant stress for the patient.

### Purpose

The aim of this research is to verify the presence of periodontal disease in patients with CRC, with/without systemic diseases, while investigating the perceived stress levels.

### Methods

Methodology (design, sampling and intervention) is outlined and appropriate for the study.

A sample of 143 patients from the General Hospital Surgery Department of the University Hospital Consortium Policlinico of Bari was divided into 2 groups:

Test Group A: Patients diagnosed with CRC;

Control Group B: Patients without a diagnosis of CRC.

The sample underwent a dental examination, collection of clinical and instrumental indices to identify the presence of periodontal disease, and tests to investigate psychological status using the Perceived Stress Scale.

### Results

From the evaluations on the samples, it was found that 98.5% of CRC patients examined suffer from periodontitis (more frequently at stages 3 and 4). In contrast, only 50% of the control group showed periodontal issues, more frequently at stages 1 and 2. Systemic pathologies that were more frequently observed included diabetes, obesity, heart

diseases and dyslipidemia, at a higher percentage in CRC patients.

Regarding psychological condition, CRC patients showed a moderate level of perceived stress, a known factor negatively impacting physical and mental health. In the control group, the average stress level was mild to nonexistent, and well managed.

### Conclusions

Should a correlation between psychological alterations, periodontal disease, and CRC be established, it would advocate for a multidisciplinary and interprofessional approach focusing on the comprehensive assessment of individual needs to promote dignity, quality of life, and health.

### Learning Outcomes

multidisciplinary and interprofessional approach that focuses on the global assessment of the person's needs, to promote dignity, quality of life and health.

### Presenting Author Brief CV

Graduated Dental Hygienist with honors from the University of Bari and graduated with honors in Dental Hygiene from La Sapienza University in Rome. She obtained a Master's degree in Sciences of the Health Professions, Technical Organizational Assistance with honors at the University of Bari. She has attended postgraduate courses in Dental Prevention. Already a contract professor in the D.U. for Dental Hygienists of the University of Bari and a lecturer in training courses for chair assistants. Cultist of the subject, Lecturer and Director of Professionalizing Teaching Activities in the Degree Course in Dental Hygiene of the University of Bari. Author of updating texts and publications in national and international scientific journals. Exercises free professional activity in Bari, at Dr. Nisio's dental practice. AIDI affiliate (Association of Italian Dental Hygienists) since 1992. National President A.I.D.I. since 2015, President of the Bari-Taranto- Bat Dental Hygienists Register Commission of

# An investigation exploring the education of dental hygienists (DHs) and dental therapists (DTs) employed in Oral Maxillofacial Surgery Departments (OMFS) in the United Kingdom.

**Jocelyn Harding<sup>1</sup>, Kenneth Eaton<sup>2\*</sup>**

<sup>1</sup> Clinical Ambassador, Mouth Cancer Foundation, United Kingdom

<sup>2</sup> Global and Lifelong Learning (GLL), University of Kent, United Kingdom

## Problem Statement

Head and neck cancer (HANC) patients attending appointments with DHs and DTs can present with facial and dental deformities quite different to patients attending routine appointments in general dental practice.

The researcher sought to determine how the enhancement of DHs' and DTs' curriculum, especially for those starting work in OMFS Departments, could be improved.

## Purpose

- The study purpose is clearly defined with objectives. This study's aim was to gain an understanding and insight into DHs' and DTs' current undergraduate and postgraduate education in preparation for treating HANC patients in OMFS departments in the UK.
- To review literature exploring the curricula of DHs' and DTs' training courses in the UK.
- To gather DHs' and DTs' undergraduate and postgraduate experiences related to HANC knowledge.
- To analyse the data to identify common trends and themes.
- To discuss how DHs' and DTs' care of HANC patients conforms to available guidance, highlighting gaps.
- To make recommendations regarding opportunities for enhancing DHs' and DTs' training curricula.

## Methods

A quantitative study was undertaken, with a post-positivist epistemological approach, to investigate participant's education, knowledge and practice when treating HANC patients. After ethics (IRB) approval had been obtained, a specially designed online questionnaire was piloted and used. The participants were DHs and DTs who were employed or previously employed in OMFS departments in the UK.

## Results

Fifty-five respondents, (a response rate of 88%) completed

the questionnaire. Fifty-four respondents were female, and one was male. Thirty-one respondents (56%) had not undertaken any HANC training. However, on starting in OMFS, nine respondents (16%) reported being provided training, with three (5%) of these respondents receiving formal HANC training in Wales. Psychology ranked top of six topics considered for inclusion in the future education of OMFS' DHs and DTs.

## Conclusions

The results suggest that the UK needs to standardize the DH and DT HANC curriculum. It is recommended to enhance the DH and DT curriculum at both undergraduate and postgraduate levels by including psychology training. The results suggest that DHs and DTs will feel supported in their role in OMFS departments by improved education.

## Learning Outcomes

1. Recognise the need for standardising DHs' and DTs' current undergraduate and postgraduate education in preparation for treating HANC patients in the UK.
2. Define topics which could improve the HANC education and training of DHs and DTs on commencing employment in OMFS departments in the UK.
3. Discuss the importance of identifying the location of OMFS departments providing HANC surgery in the UK.

## Citation for Publication

n/a

## Presenting Author Brief CV

Jocelyn started her dental career in the Royal Navy in 1987 and qualified as a dental hygienist in 1992. Jocelyn represented the BSDHT, updating the 2021 GOV.UK DBOH guidelines in the prevention and early detection of mouth cancer.

Being a part of the United Kingdom Oral Management in



Cancer care group (UKOMIC) demonstrates her dedication to oral health in cancer care. Since 2016 Jocelyn has contributed to medical and dental publications nationally and internationally sharing knowledge and expertise with the broader professional community.

In 2023 Jocelyn became President-Elect of the Mouth Cancer Foundation, completed her MSc in Advanced and Specialist Healthcare at Kent University and offered a College of General Dentistry Fellowship.

Jocelyn edited a peer-reviewed textbook published by Wiley, "Care of Head and Neck Cancer Patients for dental hygienists and dental therapists".



## Integration of Dental Hygiene Care for pediatric oncology patients, experience at a tertiary care hospital in LMIC. A quality care improvement initiative.

**Shazia Taimoor<sup>1\*</sup>, Dr. Naureen Mushtaq<sup>2</sup>, Dr. Asim Belgaumi<sup>2</sup>, Dr. Zehra Fadoo<sup>2</sup>, Dr. Sadaf Altaf<sup>2</sup>, Salima Alibhai<sup>1</sup>**

<sup>1</sup> Surgery, Aga Khan University Hospital Pakistan, Pakistan

<sup>2</sup> Oncology, Aga Khan University, Pakistan

### Problem Statement

Cancer therapy leads to oral complications which when left untreated can affect the patient's quality of life. Oral infections can also lead to serious systemic infections that can complicate cancer treatment. These patients face unique oral health challenges which are further exacerbated by the demanding nature of their treatment. Early comprehensive oral care measures by a trained dental hygienist can be helpful minimize the risk of these oral and associated systemic complications.

### Purpose

The purpose of this project was to initiate early oral care measures as an integrated dental-pediatric oncology model at a pediatric oncology unit in LMIC.

### Methods

From January 2021 to February 2022, a dental hygienist visited and examined all patients for cancer-related oral complications including mucositis. The World Health Organization (WHO) Mucositis scale is used to assess the grade of mucositis. After initial consultation with the primary oncologist and screening of the oral condition, the dental hygienist provided an oral care regimen. The dental hygiene interventions included the use of a combination of mouthwashes (anesthetic, analgesic, anti-microbial) and oral gels. The patient and caregivers were also educated on the routine of the prescribed oral care regimen to maintain oral hygiene. The key to the effectiveness of care was early and continuous education about oral complications and precautionary oral care measures to improve the patient's quality of life.

### Results

A total of 197 pediatric patients were examined by the dental hygienist. This included 126 (64%) males and 71 (36%)

females with an age range of 9 months to 20 years. Almost half of the patients had leukemia 93 (48%) followed by 22 (12%) lymphomas and 16 (8%) sarcomas. The less common forms include Neuroblastoma 5 (2.5%), Medulloblastoma 7 (3.5%), Thalassemia Major 8 (4%), Wilm's tumor 4 (2%), and Others 39 (20%). Out of 197 patients, 99 (50.25%) had mucositis with Grade I (17%), Grade II (51%), Grade III (25%), and Grade IV (7%) respectively. Grade II and IV mucositis were common in leukemia patients while Grade III was common in sarcoma patients with an almost equal representation of all four grades of mucositis in lymphoma patients. Continuous monitoring, interventions and oral hygiene education provided by a dental hygienist resulted in improved oral feeding, compliance with oral medications, and early discharge.

### Conclusions

Early oral care measures can significantly decrease cancer related oral complications, thus leading to early recovery and better treatment outcomes.

### Studies in Progress

Not Applicable

### Learning Outcomes

Understand oral health challenges faced by pediatric oncology patients  
Evaluate the effectiveness of oral health interventions on the oral health of oncology patients  
Compare the response of pediatric oncology patients in LMIC to oral care interventions  
Understand the role of dental hygienists in improving the quality of life of oncology patients  
Recognize the importance of collaboration among healthcare teams for improving the quality of provided care



## Citation for Publication

Presented the abstract of this study in September 2022 at the 54th Congress of International Society of Pediatric Oncology in Barcelona

## Presenting Author Brief CV

Shazia Taimoor is a dedicated dental hygienist at the Aga Khan University Hospital Dental Clinic and has been affiliated with the Associate of Science in Dental Hygiene Academic program for the last 5 years. She has vast experience as a clinician working in dental clinics as well as in collaboration with palliative care and pediatric oncology departments to fulfill the oral health needs of the population. Furthermore, she is directly involved in student teaching and training at the university. This multi-dimensional exposure to multiple settings has equipped her with all the necessary skills as a leader in the healthcare profession. She is committed to promoting optimal oral health through prevention and comprehensive patient care, especially in underserved populations in the country. Based on her keen interest in research and evidence-based practice, this is one of her endeavors to represent the dental hygiene program at international platforms.



## The experience of dental hygiene students related to the elderly relevance to geriatricism

**Young Sun Kim<sup>1</sup>, Jung Hwa Lee<sup>1\*</sup>**

<sup>1</sup> Dental Hygiene, Daegu Health College, South Korea

### Problem Statement

It is thought to be significant that by studying the perceptions, attitudes, and discrimination of dental hygiene students toward the elderly, we discussed how to set directions and practice them in university education to improve the quality of dental services for the rapidly increasing number of elderly patients ahead of a super-aged society.

### Purpose

The elderly population aged 65 or older in Korea is expected to continue to increase to 18.4% in 2023, and to enter a super-aged society at 20.6% in 2025. In clinical practice, the elderly discrimination of dental hygienists may experience difficulties during dental hygiene treatment due to an increase in the number of elderly patients due to aging, which can lead to maladjustment to work and turnover, so education on the understanding of the elderly is essential for students in the Department of Dentistry, who are prospective dental hygienists. Accordingly, a study was conducted to prepare for a super-aged society by studying the relationship between elderly discrimination and the knowledge and attitudes of the elderly, and to change the curriculum of universities and develop programs related to the elderly.

### Methods

204 students enrolled in the Department of Dentistry in D area were analyzed using the SPSS/WIN 25.0 program. The subject's elderly discrimination and attitude toward the elderly were calculated as the mean and standard deviation. The t-test and one-way ANOVA were performed to verify the difference in elderly discrimination according to the general characteristics of the subject, and Scheffe' test was performed for post-verification. Correlation analysis was conducted on the subject's elderly discrimination and attitude toward the elderly.

### Results

Elder discrimination was  $2.03 \pm 0.36$  points out of 4. The attitude toward the elderly was  $3.86 \pm 0.27$ . The attitude toward the elderly according to the general characteristics of the study subjects was at age ( $p=0.009$ ). Senior discrimination showed significant differences in gender ( $p=0.040$ ), age ( $p=0.026$ ), and life experience with grandparents ( $p=0.001$ ). Elderly discrimination of the study subjects showed a negative correlation with attitudes toward the elderly, and among elderly discrimination, it showed a high positive correlation with emotional avoidance ( $r=.892$ ,  $p<0.001$ ).

### Conclusions

College students are the leading players in caring for the elderly and are directly affected by aging social problems. Therefore, it is considered necessary to apply various programs in the state, society, and educational institutions to avoid negative prejudices that lead to positive thinking and discrimination against the elderly.

### Learning Outcomes

It is expected to play a role as an oral health expert through a change in the correct attitude of dental hygienists toward the elderly.

### Presenting Author Brief CV

Professor of dental hygiene at Daegu Health college

## Expected results when using high concentration fluoride containing toothpaste fluoride exposure assessment

Narae Oh<sup>1</sup>, Haekyoung Kim<sup>1\*</sup>

<sup>1</sup> Dept. of Dental Hygiene, Daegu health college, South Korea

### Problem Statement

In Korea, the Ministry of Food and Drug Safety has allowed the marketing of toothpaste with a fluoride content of 1,500 ppm or more starting in 2020.

### Purpose

A prediction model is needed for the level of fluoride exposure in the human body due to the use of high-concentration toothpaste.

### Methods

In order to investigate the characteristics of children's use of high-concentration fluoride toothpaste, existing previous studies were referred to.

The variables in tooth brushing behavior were calculated: the number of times a day, the amount of detergent used per toothbrushing, and the number of times you rinse your mouth after tooth brushing.

The exposure prediction model used ConsExpo 4.1, which is the most commonly used model developed in Europe to predict household chemical products.

The default value of 0.08g for children is given as the amount orally exposed during one tooth brushing, and was selected as a variable based on this.

### Results

As a result of this study, when a child uses 1000ppm toothpaste, the External event dose is estimated to be  $4.8 \times 10^{-2}$  mg/kg, and the External dose on day of exposure is estimated to be  $9.7 \times 10^{-2}$  mg/kg/day. When 1500ppm is used, External event dose was estimated at  $1.5 \times 10^{-2}$  mg/kg, and external dose on day of exposure was estimated at  $7.3 \times 10^{-2}$  mg/kg/day.

### Conclusions

Previous studies have shown that fluoride-containing detergents are 15 to 30 percent effective in preventing dental caries. The use of fluoride toothpaste is the easiest way to increase the number of fluoride contacts with

teeth at home without visiting the dentist. Since fluoride exposure in the human body is small, it can be considered effective in preventing dental caries. Based on the results of this study, it is believed that promotion and policy for high-concentration fluoride-containing toothpastes are necessary when planning oral health projects, and stability prediction research on fluoride-containing detergents should be actively conducted.

### Learning Outcomes

The world's population must continue to face the emergence of new infectious diseases.

In these times, due to the emergence of infectious diseases, you may be exposed to difficulties in visiting dental medical institutions and receiving face-to-face treatment.

I would like to suggest implications in suggesting easy ways to prevent oral diseases due to changes in an individual's correct oral health behavior.

### Presenting Author Brief CV

Prof. Ph.D /Dept. of Dental Hygiene/Daegu health college/ South Korea

## Validity Assessment for Competency Development in Clinical Dental Hygiene Based on Dental hygiene process of care

**Jin-Sun Choi<sup>1,2,3</sup>, Sun-Jung Shin<sup>1,2,3</sup>, Bo-Mi Shin<sup>1,2,3</sup>, Hyo-Jin Lee<sup>1,2,3</sup>, Hye-Young Yoon<sup>1,2,3</sup>,  
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<sup>2</sup> Research Institute of Oral Science, College of Dentistry, Gangneung-Wonju National University, South Korea

<sup>3</sup> Research Institute of Dental Hygiene Science, College of Dentistry, Gangneung-Wonju National University, South Korea

### Problem Statement

To ensure the legal responsibilities and societal role of dental hygienists are safeguarded and their professional identity is established, it is essential to strengthen competency-based education in dental hygiene curriculum. This necessitates the development of specific competencies rooted in dental hygiene process.

### Purpose

To implement competency-based clinical dental hygiene curriculum, competency development as an educational goal must be preceded. Therefore, this study aimed to develop the competency of clinical dental hygiene with secured validity using Delphi survey method.

### Methods

The competencies of clinical dental hygiene were classified into stages of dental hygiene process, and questions were composed. Additionally In addition, a Delphi survey was carried out conducted on 10 experts who met the criteria for selecting subjects, and the final item was derived based on the review opinions.

### Results

Because of the expert Delphi survey, all items showed Content validity index(CVI) values of 0.80 or more and Content validity ratio(CVR) values of 0.60 or more. Moreover, Coefficient of variation(CV) coefficient of variation of all items was confirmed to be 0.5 or less; therefore, all items met the stability criteria. A total of 42 items were derived.

### Conclusions

It is believed that Clinical dental hygiene can contribute to the development of specialized dental hygienists if these competencies derived from this study are well applied to the standardized curriculum and operated.

### Learning Outcomes

If these competencies are effectively applied to a standardized curriculum, continuous efforts in training dental hygienists can contribute to the development of more specialized and professional dental hygienists.

### Presenting Author Brief CV

Professor of Dental Hygiene Department, College of Dentistry, Gangneung-Wonju National University.

Research Areas: Dental Hygiene, Oral Health Science, Preventive Dentistry, etc

# Association between depressive mood and chronic periodontitis among senior residents using the National Health Insurance Service-Senior Cohort Database

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<sup>3</sup> Dental Hygiene, Silla University, South Korea

## Problem Statement

Bacteria involved in chronic periodontal disease induce inflammatory cytokines. These cytokines can enter the brain through systemic circulation and cause depression.

## Purpose

We investigated the association between depressed mood and chronic periodontitis in older adults in Korea.

## Methods

This study used data from the Life-changing Period Health Checkup (2007–2008), performed only at 66 years of age, which is available from the National Health Insurance Service-Senior Cohort Database. The depressed mood status was evaluated by three questions in the mental health examination. The definition of chronic periodontitis was determined based on the diagnosis and treatment codes for chronic periodontitis. Based on the three questions, we investigated the association between depressive mood and chronic periodontal disease by dividing the study population into 9622 depressed mood subjects (DMS) and 9091 non-depressed mood subjects (NDMS). Multivariable-adjusted logistic regression analysis was performed, and odds ratios (ORs) with 95% confidence intervals (95% CIs) were presented.

## Results

Among the NDMS, 5390 patients with chronic periodontitis were identified, and among the DMS, 5964 patients with chronic periodontitis were identified. The crude OR (95% CI) for chronic periodontitis in DMS compared to NDMS was 1.12 (1.06–1.19). The adjusted OR (95% CI) for chronic periodontitis was 1.12 (1.06–1.19). As a result of confirming the effect of sex and comorbidity on the association between depressed mood and chronic periodontitis, a significant association was observed for women at 1.15 (1.07–1.25). In

addition, the adjusted OR(95% CI) for depressive mood and chronic periodontitis was 1.15 (1.07–1.25) for patients with hypertension, 1.13 (1.03–1.25) for patients with diabetes, 1.12 (1.02–1.22) for patients with dyslipidemia, and 1.18 (1.04–1.34) for patients with heart disease.

## Conclusions

This study confirmed the relationship between depressed mood and chronic periodontitis in older adults. Therefore, education to strengthen the emotional management of older adults, especially with respect to depression, would play an auxiliary role in preventing and treating periodontitis.

## Learning Outcomes

This study confirmed a significant association between depressed mood and chronic periodontitis, and education to strengthen the emotional management of depressed moods in older adults can play an auxiliary role in preventing and treating periodontal disease. Management of depressive emotions in terms of preventing their occurrence should be evaluated and considered. It is suggested that periodontitis can be managed more efficiently through policy development that links oral and mental health improvement programs.

## Citation for Publication

Kim YR, Son M, Nam SH. Association between depressive mood and chronic periodontitis among senior residents using the National Health Insurance Service-Senior Cohort Database. J Periodontol. 2023 Jun;94(6):742-750. doi: 10.1002/JPER.22-0460. Epub 2023 Jan 10. PMID: 36566362.

## Presenting Author Brief CV

department of dental hygiene, Silla university, Republic of Korea.



# Analysis of the types of perceptions of dental hygienists and home care workers on visiting oral health services: Using the Q methodology

**Sue-Hyang Lee<sup>1</sup>, Sun-Jung Shin<sup>1,2,3\*</sup>, Soo-Myoung Bae<sup>1,2,3</sup>, Bo-Mi Shin<sup>1,2,3</sup>**

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<sup>3</sup> Research Institute of Oral Science, Gangneung-Wonju National University, South Korea

## Problem Statement

Recently, as population aging has emerged as a global issue, discussions are taking place within community care policies about the entities, institutions, and management systems in charge of oral health care for the elderly in the community. Dental hygienists are experts who perform preventive tasks with scientific and professional knowledge and mastery skills to improve the oral health of the people. In particular, it is time to expand the role of dental hygienists who can improve the oral health status of the elderly and reduce requests for dental treatment by delivering customized prevention-oriented oral health management services to the elderly. In general, in order for national policies or projects to achieve their objectives, it is important to review and reflect various perceptions of stakeholders. Therefore, it is very important to find service items applicable to the field and the role of dental hygienists so that the provider's perception of the visiting oral health care service for the elderly can be grasped and the visiting oral health care service can be applied within the community care policy.

## Purpose

This study attempted to explore the social role of visiting oral health care service items and dental care workers by identifying the types and characteristics of providers (dental hygienists and home care workers) of visiting oral health care services using the Q methodology.

## Methods

Thirty-two Q samples of oral health care services for the elderly were classified into 16 dental hygienists and nursing care workers, respectively, and the data were analyzed by the PC-QUANL Program.

## Results

Five types of four-factor structures were derived, which were found to account for 50.92% of the total variance. It was found that there is a difference in perception of the subject who provides visiting oral health care services to

the elderly and the contents of the service. However, they all agreed that dental hygienists accurately check the needs of the elderly for oral health care and provide the necessary oral health care services.

## Conclusions

In order to promote the oral health of the elderly in the future, it is necessary to discuss ways to strengthen the work capabilities of dental hygienists who can accurately identify and manage the needs of the elderly. In the long run, it is necessary to establish a social institutional system and health care system for the operation and settlement of oral health care services for the elderly.

## Studies in Progress

Not applicable

## Learning Outcomes

To understand the necessity of strengthening the work capabilities of dental hygienists and cooperation with other professionals for the promotion of oral health care of the elderly.

To understand the necessity of preparing a social institutional system for the operation of oral health care services for the elderly.

## Citation for Publication

Not applicable

## Presenting Author Brief CV

Dental Hygiene Department, Gangneung-Wonju National University, Ph.D.

Research Professor, Liberal Arts & General Education of Gangneung-Wonju National University

Lecturer, Department of Dental Hygiene, Gangneung-Wonju University (since September 2018)

Committee Member, Social Dental Hygiene Subcommittee, Korean Society of Dental Hygiene Science

# The impact of clinical dental hygienists' compassion competence on job satisfaction

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<sup>2</sup> Dental Hygiene, Jeonju Vision University, South Korea

## Problem Statement

The job satisfaction of clinical dental hygienists not only affects their own satisfaction but also has a significant impact on patients. Moreover, it is emerging as a crucial factor in patient interaction and communication in the clinic, based on kind and bright impressions and sincere understanding. Therefore, the job satisfaction of dental hygienists is an important factor influencing the intention of dental hygienists to continue their employment.

## Purpose

This study aimed to identify the factors influencing the impact of dental hygienists' empathic abilities on job satisfaction, providing foundational data to establish efficient management of dental hygienist organizations and to develop strategies to enhance job satisfaction among dental hygienists.

## Methods

This study analyzed clinical dental hygienists in Jeollabuk-do who consented after explaining research ethics from June to August 2022. The correlation between compassion competence and job satisfaction of dental hygienists was examined using Pearson's correlation. Step wise multiple regression analysis was conducted to identify factors influencing job satisfaction of dental hygienists.

## Results

1. The compassion competence of dental hygienists showed a significantly positive correlation with job satisfaction, indicating that higher levels of compassion competence were associated with significantly higher job satisfaction.
2. Among the factors related to job satisfaction of dental hygienists, the sub-factor of communication skills ( $\beta=.495$ ) within compassion competence exhibited the greatest influence. Additionally, there were significant associations observed with final education level (graduate or higher),

compassion competence, and sub-factors such as communication skills, sensitivity, and insight.

## Conclusions

It is believed that this study serves as foundational data confirming the need for developing and utilizing various continuing education programs to enhance the compassion competence of clinical dental hygienists and exploring avenues to improve job satisfaction in the future.

## Learning Outcomes

yes

## Citation for Publication

Published in the Journal of Korean Society of Oral Health Science, Volume 11, Issue 4, in 2023

## Presenting Author Brief CV

I am a professor of emergency medical services at Jeonju Vision University.

## Motivations for and outcomes of graduate education among dental hygienists: A pan-Canadian study

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### Problem Statement

Motivations and career outcomes of dental hygienists with baccalaureate degrees have been extensively reported over the past decade; however, few studies have explored Canadian dental hygienists pursuing graduate education. There is limited evidence about career outcomes and motivating factors for advanced education, limiting knowledge of how professional outcomes have evolved alongside advancements in graduate program offerings for dental hygienists.

### Purpose

This study investigated the motivating influences to pursuing graduate education and professional outcomes of dental hygienists with graduate degrees.

### Methods

This nested online anonymous survey was conducted with dental hygienists who graduated from one of four Canadian baccalaureate dental hygiene degree programs (Dalhousie University, University of Alberta, University of British Columbia, or University of Manitoba) and had further indicated that they were pursuing or had obtained additional graduate-level education (n = 60). Participants were asked to report on any advanced graduate level education. Open-ended questions on graduate degree education were analyzed through thematic analysis.

### Results

Motivations for pursuing graduate degrees were influenced by personal and professional preferences. Master's degree recipients (n = 50) cited expanded career opportunities, desire to strengthen their critical thinking and research abilities, convenience of program offerings, and a dissatisfaction with clinical practice as primary motivators. Doctoral degree holding dental hygienists (n = 10) identified expanded/alternate career opportunities as major motivation but also cited program convenience as an influencing factor. The availability of distance and flexible

programming is a novel finding positively influencing the pursuit of advanced education. A larger proportion of dental hygienists from this survey with graduate level education reported working in non-clinical settings (namely educational institutions and public health settings) compared to those dental hygienists who responded to the Canadian Dental Hygienists' Association job market and employment survey (49% vs 9%, respectively,  $p < 0.001$ ).

### Conclusions

Dental hygienists are pursuing graduate education to expand their scope of knowledge and create new career opportunities. Graduate degree programs that accommodate work-life balance through flexible and online offerings are appealing to dental hygienists.

### Studies in Progress

N/A

### Learning Outcomes

To explore motivating influences to pursuing graduate education for Canadian dental hygienists

To identify professional practice outcomes of Canadian dental hygienists with graduate degrees.

### Citation for Publication

Rock L, MacDonald LK, Compton S, MacDonald LL, Kanji Z. Motivations for and outcomes of graduate education amongst dental hygienists: A pan-Canadian study. International Journal of Dental Hygiene. Aug 2023. <https://doi.org/10.1111/idh.12726>

### Presenting Author Brief CV

Dr. Zul Kanji is an Associate Professor and Director of Admissions & Student Affairs in the Faculty of Dentistry at the University of British Columbia, Canada. His research areas are graduate outcomes, program evaluations, teaching & learning, and student support & wellbeing.

## Six Steps of Oral Personal Training for Dental Hygienists: A Case Report

**Seonmi Park<sup>1\*</sup>**

<sup>1</sup> Lifetime oral care center, Yeonseiwooil dental hospital, South Korea

### Problem Statement

Participants' increased awareness of the significance of oral health management was established during the course of this study.

### Purpose

The primary objective of this investigation is to assess the efficacy of delivering tailored non-surgical periodontal treatment to individuals with a negative predisposition stemming from past unfavorable experiences. This is achieved by enhancing patient compliance through the utilization of AIRFLOW Prophylaxis Master (AIRFLOW, EMS, Geneva, Switzerland) and by emphasizing the pivotal role of a dental hygienist in non-surgical periodontal interventions.

### Methods

The non-surgical periodontal treatment targeted individuals with periodontal compromise, implementing the 6R system.

### Results

- 1) Risk Assessment: Initial radiographic evidence confirmed bone loss, and clinical examination revealed significant calculus accumulation and bleeding, indicating the presence of periodontal disease.
- 2) Re-appointment: A painless scaling technique, validated by extensive clinical research, was employed using PIEZON® PS. Patients who perceived a noticeable difference from conventional treatment exhibited heightened motivation, transitioning from a one-time treatment mindset to a commitment to follow-up appointments.
- 3) Removal of Deposits: A full-mouth debridement, distributed across four quadrants over a 4-week period, was performed. Oral hygiene instructions and guidance on the appropriate use of oral care products were provided at each stage.
- 4) Re-evaluation: After 4 weeks, a reassessment was conducted to evaluate the healing of the gingivae.

5) Referral: Unresolved deep periodontal pockets were referred to a dentist, where surgical intervention was initiated.

6) Re-call: Recognizing the necessity for routine plaque removal and professional prophylaxis by a dental hygienist, a recall interval of 3 months was implemented.

### Conclusions

This case underscores the imperative that a dental hygienist be regarded as an expert in executing non-surgical periodontal treatments. It emphasizes a dental hygienist's essential role in managing periodontal health. Ultimately, the expanded responsibilities of a dental hygienist are believed to contribute significantly to the advancement of treatment efficacy within the hospital setting.

### Learning Outcomes

The fulfillment of the role of oral health manager by dental hygienists benefits both patients and the hospital.

### Presenting Author Brief CV

23-year experienced dental hygienist, Clinician.

## Current employment characteristics and career intentions of Lithuanian dental hygienists

**Gitana Rederiene<sup>1\*</sup>, Yvonne Buunk-Werkhoven<sup>2</sup>, Alina Puriene<sup>1</sup>**

<sup>1</sup> Institute of odontology, Vilnius University, Lithuania

<sup>2</sup> SPOH ARTS - International Optimizing Health Psychology, SPOH ARTS, Netherlands

### Problem Statement

Due to the high number of newly graduating dental hygienists in Lithuania, there is a problem finding a job as a hygienist, so it is observed that many of them work as dental assistants instead.

### Purpose

To examine employment characteristics to determine why and to what extent dental hygienists are employed in positions other than preventive oral health care, and their intentions to leave their profession.

### Methods

In November 2018, a questionnaire was sent by e-mail up to three times at two-week intervals to 1109 hygienists registered in the Lithuanian mandatory register of dental hygienists.

### Results

Five hundred and seventy-eight participants were examined response rate 52.1%. Most participants were women, and 2.4% were men. Their mean age was 31.5 years [SD = 6.9; (21–54)] and the mean years of experience was 8.11. [SD = 5.8; ranging from 1 to 26 years. The majority of hygienists were college educated, 454 (78.5%), 103 (17.8%) had a bachelor's degree from a university, 18 (3.1%) had a master's degree, and 3 (0.5%) had a PhD.

Almost three-quarters (73.5%) of dental hygienists worked in one of the five major cities, and the most common place of work was a private institution (78.4%). 279 of the respondents reported working purely as dental hygienists. The remaining 51.7% (n=299) held other jobs, with most dental hygienists indicating they were primarily working as dental assistants. 47.1% (n=272) of the surveyed dental hygienists worked full time, i.e., 40 hours per week, one-third worked parttime; 12.5% (n=72) worked 30 hours per week, and 21.5% (n=124) worked 20 hours or less. 19% (n=110) of the participants worked 50 hours or more per week.

4 out of 5 participants (82.6%, n=428) indicated they wanted

to work purely as a dental hygienist. More than half (57.1%, n=330) did not intend to change professions, while 14.2% (n=82) of hygienists indicated they wanted to change professions. More than a quarter (28.7%, n=166) did not yet know the answer, and 13.7% (n=79) of the participants indicated their intention to emigrate.

### Conclusions

In Lithuania, work opportunities for dental hygienists are so unfavourable that more than half of the participants cannot practice their profession and work mainly as dental assistants. However, almost half of the surveyed dental hygienists have no intention of wanting to leave their profession. Although 13.7% (n=79) of hygienists' plan to want to emigrate, 37.7% do not know the answer to this question.

### Learning Outcomes

The correct planning of students and possible working places to consider.

### Presenting Author Brief CV

Dr. Gitana Rederiene completed her Dental Hygiene and Public Health studies at Lithuanian Health Science University in Kaunas and defended her doctoral thesis at Vilnius University Medical Faculty. Her main research topic is the empowerment of the professional group of dental hygienists and clarifying their role in shaping the oral health policy. Gitana has presented numerous poster presentations at various international conferences and is an author of scientific and popular articles. She is a practising dental hygienist at the University clinic as well as regularly holds courses and lectures for continuing education on various topics nationally and internationally. She is a member of the European Association of Dental Public Health, as well as a member of the Advisory Board at the European Forum for Primary Care. She is a board member of the Odontology faculty of Lithuanian Health Science University and a consultant for a few dental hygiene programs.

# Survey on Oral Frailty of Hospitalised Older Patients in Acute Medical Hospitals – Perspectives Review from Severity and Evaluators of Medical/Nursing Needs.

**Yumi Ishikawa<sup>1\*</sup>, Aiko Hoshiai<sup>1,3</sup>, Yukiko Yamamura<sup>1</sup>, Yujeong Shin<sup>1,3</sup>, Itsuski Takazawa<sup>1,4</sup>, Seiko Toraya<sup>1</sup>, Yasuyuki Tanahashi<sup>2</sup>**

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<sup>2</sup> Nursing, Kanagawa Dental University Junior College, Japan

<sup>3</sup> Pediatric Dentistry/Special Needs Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

<sup>4</sup> Oral Health Care Education, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

## Problem Statement

It is important to maintain oral function during hospitalization because older people are highly prevalent the loss of mass (sarcopenia) due to limited physical activity, decline in physical function, and malnutritional status resulting from dietary restrictions.

## Purpose / Goals / Objective

The purpose of this study was to investigate to assess oral frailty in hospitalized patients and identify the status of interventions for patients by nurses working in acute medical hospitals, conducted a questionnaire survey.

## Key Features

The targeted subjects of this survey were nurses who were evaluators of “severity and Medical/Nursing needs” at four acute medical hospitals. A questionnaire survey was conducted to assess the status of “oral hygiene” in the “severity and Medical/Nursing needs”, the oral condition categorized requiring “oral care”, the assessment status, and interventions for patients with oral function decline.

## Impact

The patients were assessed with “oral hygiene” in the “severity and Medical/Nursing needs” assessment, the most common symptoms and conditions “observed” were “non-oral feeding”, “food residue”, “oral dryness”, “problems with oral function” and “bad breath”. Patients who were assessed to requiring assistance with “oral hygiene” were considered to have poor oral hygiene according to problems with oral function. Regarding the understanding of terms “sarcopenia”, “frailty”, and “oral frailty” was responded by 31%, 26%, and 17%, respectively. This study suggests the needs for education for nurses to early detection and intervention to oral frailty in

hospitalised older patients at an early stage. It can be inferred that nurses may modify the diet as a first choice when patients in the hospital are found to be in a state of oral functional decline.

## Conclusions

This study showed that hospitalized older patients have problems related to oral function and oral hygiene. Therefore, nurses are required to detect oral frailty at early stage and appropriate interventions to prevent for hospitalised patients.

## Learning Outcomes

In the elderly, the oral function declines not only aging but also various factors such as disease and disability. Therefore, it is important for nurses and dental hygienists to assess the oral hygiene and oral function for older patients during hospitalization and need to manage interventions according to the patient's condition.

Oral management by nurses and dental hygienists during hospitalization contributes to the prevention of oral frailty and recovery of general health early stage.

## Presenting Author Brief CV

1994.4 : Clinical experience (dental clinics, hospital dental surgeries, and corporate practices) (-2007.3)  
2007.4: Assistant Professor at Tokushima University, Institute of Health Biosciences (-2014.8)  
2014.9 : Associate Professor at Kanagawa Dental University Junior College (-2021.3)  
2021.4 : Associate Professor at Osaka Dental University (-2023.3)  
2023.4 : Professor at Meikai University, Department of Oral Health Sciences



## Non-surgical periodontal treatment and maintenance in smokers with systemic disease(hypertension/diabetes) (Clinical case report of ‘J dental clinic’)

**Jinju Yang<sup>1,2\*</sup>, Sangeun Moon<sup>1</sup>, Yunjeong Kim<sup>1</sup>, Seonyoung Kim<sup>1</sup>, Hyeun Cho<sup>1</sup>, Hyunjoo Kang<sup>1</sup>**

<sup>1</sup> Dental hygiene, Kwangju Womens University, South Korea

<sup>2</sup> Dental hygienist, J Dental clinic, South Korea

### Problem Statement

This case aims to check the oral care status of periodontal patients with systemic diseases (hypertension, diabetes) and smoking, and to perform non-surgical periodontal treatment by applying the CDHC (Comprehensive Dental Hygiene Care) process to maintain efficient oral health care and healthy periodontal tissues.

### Purpose

Cardiovascular disease and periodontal disease are linked by the fact that toxins from bacteria or gram-negative bacteria in periodontal pockets can pass through the ulcerated periodontal pocket epithelium and enter the bloodstream, providing a pathway for infection, and mediators of inflammation in metastasized periodontal tissue can become a source of inflammatory mediators that cause cardiovascular disease, allowing (IL)-1, IL-6, and (TNF)- $\alpha$  to enter the bloodstream and cause a systemic inflammatory response. Diabetes is a metabolic disease characterized by elevated levels of glucose in the blood, which is a direct result of impaired insulin action and insulin deficiency. Periodontal disease is the sixth complication of diabetes, and if left untreated, it can lead to increased insulin resistance, which can lead to further complications.

### Methods

Two smoking patients, a man in his 40s (case 1) and a man in his 30s (case 2), with a common chief complaint of “bad breath and dry mouth,” were checked for systemic and dental history through the CDHC examination process. For hypertensive patients, we checked blood pressure levels, medications taken before the visit, and whether aspirin was included, and for diabetic patients, we checked blood glucose levels, glycated hemoglobin levels, medications taken before the visit, and diet. The CDHC

process was carried out over eight appointments, based on periapical examinations, periodontal examinations, tooth surface attachment tests, and oral radiographs. After the periodontal treatment was completed, a re-evaluation was performed after 4 weeks to check the healing status.

### Results

After performing non-surgical periodontal treatment with CDHC in this patient and comparing the results before and after the course with professional management and patient self-management, it was found that BOP (Bleeding on Probing), BOE (Bleeding on Exploring) decreased and periodontal tissue improved.

### Conclusions

It is expected that non-surgical periodontal treatment using the CDHC (Comprehensive Dental Hygiene Care) process, which is a process customized for patients according to their systemic diseases and oral health status, rather than a one-size-fits-all education method for periodontal patients, can not only improve patients’ chronic periodontitis, but also prevent and reduce oral complications that may occur in patients with systemic diseases, and help establish the professionalism of dental hygienists’ work.

### Studies in Progress

Not applicable

### Learning Outcomes

In the above case report, non-surgical periodontal treatment and efficient oral healthcare education performed by applying the CDHC (Comprehensive Dental Hygiene Care) process to a smoking patient with systemic diseases (hypertension, diabetes) and generalized periodontitis was effective in relieving periodontitis and meeting the patient’s oral healthcare need.



## Citation for Publication

Korean Society of Dental Hygiene Presenting a poster(2023)

## Presenting Author Brief CV

- Bachelor of Science in Dental Hygiene, Kwangju Women's University
- Master of Science in Dental Hygiene, Kwangju Women's University
- Doctor of Dental Medicine, Chonnam National University (in registration)
- Adjunct Professor, Department of Dental Hygiene, Gwangju Women's University
- Clinical Dental Hygienist



## The effectiveness of using the perioscope as an adjunct to non-surgical periodontal therapy: Clinical and radiographic results

**Meloshini Naicker<sup>1\*</sup>**

<sup>1</sup> Specialist Perio Practice, The Perio Centre, Australia

### Problem Statement

It is well known that following root surface debridement (RSD) residual deposits remain. Periodontal endoscopy has provided a method of directly visualizing root surfaces during periodontal debridement in an intact pocket without the need for surgical incision.

### Purpose / Goals / Objective

The aim of this study was to determine if periodontal debridement using endoscopic visualization was more effective in improving clinical and radiographic parameters as compared to Root Surface Debridement (RSD).

### Key Features

Thirty-eight subjects were randomized into RSD with perioscope (n = 19) or RSD only (n = 19) groups. A full-mouth evaluation included probing pocket depths (PPDs), clinical attachment levels (CAL), bleeding on probing (BOP) and plaque scores (PI) recorded at baseline, 3 and 12 months and compared among groups. Standardised radiographs were taken at sites with deepest pockets at baseline and 12-month and the change in radiographic bone levels (RBL) compared.

### Impact

The adjunctive use of the perioscope significantly improved PPDs 7-9 mm at three and twelve months. The mean PPD at twelve months was significantly lower in the test group as compared to the control group. Less change in gingival recession was observed using the endoscope. The test group had significantly lower BOP% and PI% at twelve months. The significantly higher mean RBL observed in the test group as compared to the control group is suggestive of more radiographic bone gain in this group. This outcome was also observed for multi-rooted teeth in the test group.

### Conclusions

An option to treat periodontal disease in a less invasive way may be advantageous

compared with a surgical approach. Larger, prospective and controlled studies are recommended to test the efficacy of this technology.

### Learning Outcomes

To understand the different non-surgical treatment options available to manage patients with moderate to advanced periodontitis.

To explore the use of direct visualization techniques in daily practice.

To encourage more research into direct visualization techniques and the associated clinical outcomes.

### Citation for Publication

Naicker M, Ngo LH, Rosenberg AJ, Darby IB. The effectiveness of using the perioscope as an adjunct to non-surgical periodontal therapy: Clinical and radiographic results. J Periodontol. 2022 Jan;93(1):20-30. doi: 10.1002/JPER.20-0871. Epub 2021 May 15. PMID: 33909914.

### Presenting Author Brief CV

Melosh completed her Bachelor's Degree in Oral Health at the University of Durban Westville, South Africa in 1991. She immigrated to Australia in March 2007. She has been working in periodontics with Dr Adam Rosenberg since 2008. Melosh also demonstrates and lectures to Bachelor of Oral Health Therapy students at University of Melbourne Dental School. Her interests are non-surgical periodontal surgery including perioscopy and supportive periodontal maintenance for implant supported prosthesis. Melosh graduated with her Masters of Public Health Degree from the University of Queensland in 2012. She completed her PhD at the University of Melbourne in June 2020. The title of her research was "To evaluate the effectiveness of using an endoscope with scaling and root planing as compared to scaling and root planing only using clinical, microbiological and radiographic parameters" which was published in the Journal of Periodontology (May 2021).

# Effectiveness of Curriculum for Professional Oral Hygiene Management of Inpatients in ICU

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## Problem Statement

It has been confirmed that professional oral hygiene management performed by dental hygienists is effective in reducing the incidence of ventilator-related pneumonia, but professional personnel in charge of oral care are not properly in place. Therefore, prior training is required to take oral care of patients admitted to intensive care units, which requires a separate training program that is not performed on real patients.

## Purpose / Goals / Objective

The purpose of this study is to establish a curriculum for professional oral hygiene management on patients admitted to intensive care units, and evaluate its effectiveness.

## Key Features

The research method was a single-group pretest-posttest design, and the performance competency was defined by referring to previous papers, and a curriculum was established. General characteristics were analyzed by descriptive statistics; changes in performance competency, critical thinking tendency, and learning satisfaction were analyzed by paired t-test; and performance confidence was analyzed by RM ANOVA.

## Impact

Performance competency (70 points) averaged 48.7 points after skill practice and 54.3 points after simulation; and performance confidence (85 points) significantly increased to 60.8, 71.8, and 77.1 points after theory, skill, and simulation. There was a significant difference in critical thinking tendency (135 points), with 100.6 points after skill practice and 104.7 points after simulation.

## Conclusions

The effect of improving learners' competencies has been confirmed, and it is necessary to establish a professional

oral hygiene management curriculum as well as a qualification system.

## Learning Outcomes

a curriculum for professional oral hygiene management

## Citation for Publication

No

## Presenting Author Brief CV

- Graduated from Kyungbok University Department of Dental Hygiene
- Graduated from Hanyang University with a Master's degree in Public Health
- In the course of a Ph.D. in the Department of Dental Hygiene at Yonsei University
- 5 years of clinical experience
- 'Apple tree' Dental Hospital
- 'Hanyang University' Hospital
- 'Good Plus' Dental Clinic

## Association of sleep duration with swallowing difficulty in adults

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### Problem Statement

Sleep disturbance and dysphagia have a significant impact on the health of older adults. Our study results showed that sleep duration was associated with swallowing difficulty in Japanese adults.

### Purpose

Sleep disturbance and dysphagia have a significant impact on the health of older adults. However, the relationship between sleeping habits and swallowing difficulty in younger adults is unclear. In this study, we evaluated the association between sleep duration and swallowing difficulty in Japanese adults.

### Methods

We analyzed the baseline data of 9856 Japanese dentists (mean  $\pm$  SD age, 52  $\pm$  12 years) who participated in the Longitudinal Evaluation of Multi-phasic, Odontological, and Nutritional Associations in Dentists cohort study. Data regarding sleep duration, lifestyle factors, and other health conditions were obtained from participants using a self-administered questionnaire. Swallowing difficulty and sleep duration were self-reported; sleep duration was categorized as  $\leq$  5 h, 6 h, 7 h, 8 h, and  $\geq$  9 h. Adjusted multivariate logistic regression was performed to assess the association of sleep duration with swallowing difficulty in the participants.

### Results

Participants with sleep durations of  $\leq$  5 h, 6 h, 7 h, 8 h, and  $\geq$  9 h constituted 5%, 31%, 42%, 18%, and 4%, respectively, of the study population. Of the participants, 5% reported

swallowing difficulty, and the proportion increased with age—from 0% among participants in their 20s to 14% among participants in their 80s. Multivariate analysis with adjustment for covariates showed that, compared with a sleep duration of 7 h (reference), the odds ratios (95% confidence intervals) for swallowing difficulty were 1.4 (0.9–2.0) for a sleep duration of  $\leq$  5 h, 1.0 (0.8–1.2) for 6 h, 1.2 (0.9–1.6) for 8 h, and 1.5 (1.0–2.3) for  $\geq$  9 h. Participants with a sleep duration of  $\geq$  9 h had a higher risk of swallowing difficulty than participants with a sleep duration of 7 h.

### Conclusions

Sleep duration was associated with swallowing difficulty in Japanese adults. A moderate sleep duration may ameliorate dysphagia.

### Learning Outcomes

We want the attendees to learn and recognize the importance of proper lifestyle habits in maintaining lifelong oral health from our poster.

### Presenting Author Brief CV

She is an undergraduate student in the program of Oral Health Sciences (a course for dental hygienists) at Hiroshima University.

## Development and evaluation of the artificial calculus composition using spent coffee grounds(SCG)

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<sup>2</sup> Department of Dental Hygiene, Yonsei University, South Korea

### Problem Statement

Calculus is formed on teeth surface by depositing biofilm created in the oral cavity. As calculus accumulates, it can cause various oral diseases such as dental caries, gingivitis, and periodontitis. Because calculus is hardened and difficult to remove on one's own, removed by a dentist or dental hygienist is required. Scaling education mainly uses typodont combined with rubber gingiva for dental and dental hygiene students. If artificial calculus is placed in the supra and sub-gingival positions of typodont teeth, students will be more realistic and have higher achievement levels. There are artificial tartars currently on the market, but they are relatively expensive and have limitations in that it is difficult to implement various shapes, textures, and attachment levels of actual calculus. Nail polish and magic, which are used as substitutes for artificial calculus, are also difficult to implement as artificial calculus, and the safety of students is not guaranteed. Coffee is the food that people around the world drink the most after water, and the annual coffee consumption per person in the world is 132 cups. Worldwide, approximately 7.5 million tons of spent coffee grounds(SCG) are discarded, and the amount of SCG generated continues to increase. In order to preserve the environment, recycling of SCG continues to be developed, and its fields are diverse.

### Purpose

The purpose of this study is to develop an SCG artificial calculus for dental and dental hygiene students.

### Methods

Using Donald E. Knapp's initial requirements for artificial calculus as a guide, seven items were rated on a 5-point likerts scale. The average score of the four researchers was used as a guide(mean±SD).

### Results

To develop artificial calculus using SCG, we have categorized

them into three types. Materials were classified into types based on their volume ratio. Artificial calculus using SCG was dried for at least 24 hours before use. The artificial calculus used in this study has been patented by the Korean Intellectual Property Office(application number: 10-2021-0160567).

### Conclusions

The evaluation of SCG artificial calculus was various results for seven items of Donald E. Knapp's initial requirements. In particular, SCG played a good role in the grainy feeling as an artificial calculus. Also, environmental benefits can be expected by recycling SCG. Additional research should be needed for SCG artificial calculus commercialization.

### Learning Outcomes

Not only does the developed artificial calculus have similar performance to commercially available artificial calculus, but it is also environmentally friendly by spent coffee grounds.

### Presenting Author Brief CV

HyeWook Kim, RDH, MS, has been working as a dental hygienist in private practice for the past 5 years and is licensed in South Korea. Currently a student in the Doctor of Dental Hygiene Program at Yonsei University.

## Validation of Korean version of Oral Hygiene relative Self-efficacy

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<sup>2</sup> Dental Hygiene, Chungcheong University, South Korea

### Problem Statement

Self-efficacy is a key factor in predicting latent abilities for self-management of chronic diseases, serving not only as a motivating factor for chronic disease management but also exerting a significant influence on the maintenance and execution of self-management behaviors.

Stewart et al. have highlighted the correlation between self-efficacy and oral hygiene practices such as tooth brushing, flossing, and dental visits. They suggest that self-efficacy in oral hygiene is a factor influencing oral hygiene behaviors and possesses the potential to predict patients' oral hygiene outcomes.

In order to achieve this, a validated measurement tool assessing self-efficacy based on oral hygiene management is essential. However, many preceding studies conducted in Korea are the self-efficacy measures employed in these tools have often been modified to suit the particular research needs, lacking proper validation of reliability and validity.

### Purpose

This study aimed to translate the Oral Hygiene relative Self-Efficacy scale (OHSE) developed by Syrjälä et al. into Korean, and through this process, validate its reliability and validity. Subsequently, we plan to develop a Korean version of the Oral Hygiene-related Self-efficacy (KOHSE).

### Methods

The translated items in Korean were categorized into three sub-factors—Tooth brushing Self-efficacy, Interdental hygiene Self-efficacy, and Dental visit Self-efficacy—through exploratory factor analysis. Based on these sub-factors, the final set of items was developed. To validate the reliability, correlation analyses were conducted with factors such as oral health awareness, oral health behaviors, and unmet dental treatment needs.

### Results

The results showed no significant difference in the correlation between KOHSE and the need for dental treatment. However, high validity was observed in the correlations between oral health management awareness, oral health management behaviors, and unmet dental treatment needs.

The reliability analysis showed that Cronbach's  $\alpha$  values for the sub-factors of KOHSE ranged from 0.816 to 0.891, and the overall KOHSE had a value of 0.891. The internal consistency analysis showed that the ICC (intraclass correlation coefficient) for the three sub-factors ranged from 0.544 to 0.553, while the ICC for the overall KOHSE was 0.654, indicating high scores.

### Conclusions

This study has confirmed that KOHSE is a scale with high reliability and validity. It is anticipated that in the future, by utilizing KOHSE, various parameters related to oral hygiene self-efficacy can be measured for the evaluation of periodontal disease and dental caries risk, establishment of dental treatment plans for each individual person, and motivation of patients in KOREA.

### Learning Outcomes

In this study, it was observed that higher scores on Korean version of Oral Hygiene relative Self-efficacy (KOHSE) were associated with increased awareness of oral health management, better oral health management behaviors, and unmet dental treatment needs. This indicates that the Oral Hygiene-related Self-efficacy scale plays a crucial role as a significant factor in dental treatment completion and behavioral changes in oral hygiene management. Therefore, given the high reliability and validity of KOHSE, it is expected that it can be utilized as a diverse parameter in the assessment of the risk of periodontal disease and dental caries, development of dental treatment plans, and

specific motivation approaches for patients in future dental treatments.

## Citation for Publication

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## Presenting Author Brief CV

I am a clinician also dental hygienist. I will dedicate to promoting lifelong oral health management for patients.

## What is the effect of 2 compared to 1 minute brushing time on plaque removal

**Marion Seuntjens<sup>1\*</sup>**

<sup>1</sup>Dental Hygiene/Department of Periodontology, HAN/ACTA, Netherlands

### Objective

Based on studies using single brushing exercises, what is the difference in plaque scores between 1 and 2 minutes of brushing

### Search Strategy / Selection Criteria

A structured search strategy was designed to retrieve all relevant published scientific studies from peer reviewed sources that evaluated single brushing exercises to compare the results of 1 and 2 minutes of brushing durations. The National Library of Medicine Washington, D.C. (MEDLINE-PubMed), the Cochrane Central Register of Controlled Trials (CENTRAL) were searched from their inception to September 2022 and the 5 pages of Google Scholar until September 2022 for appropriate papers that answered the focused question. The reference lists of the included studies were also hand searched to identify additional potentially relevant studies.

### Data Collection and Analysis

A descriptive data presentation was used for all studies comparing the plaque score reduction from 1 minute and 2 minutes of brushing time. When feasible, a meta-analysis was performed on the outcome plaque index scores. Based on methodological heterogeneity, it was decided a priori that MTB and PTB were to be evaluated separately as groups.

### Main Results

Based on the selection criteria, the search identified 6 unique eligible publications providing 16 comparisons. For manual (MTB) and powered (PTB) toothbrushes, 2 minutes of brushing caused a significant plaque score reduction. The effect of using MTB (SMD)= 0.69 {95%CI:0.06;1.33} can be interpreted as medium and for PTB (SMD)=0.20 {95%CI:0.13;0.28} as small.

### Conclusions

Based on single brushing exercises, there is moderate certainty that 2 minutes of brushing should be

recommended over 1 minute for improved plaque removal

### Free of Bias

The methodological quality of the included studies was scored using the Cochrane risk of bias tool (Higgins et al., 2017). The scoring was based on seven domains and could be scored as: unclear, low risk of bias or high risk of bias. The evaluated items included random sequence generation, allocation concealment, the blinding of participants and personnel, the blinding of the outcome assessment, incomplete outcome data and selective reporting, and 'others'.

### Learning Outcomes

The attendees gain knowledge about the effect of 2 compared to 1 minute brushing time on plaque removal. The attendees gain knowledge about the outcome being statistical significant and/or clinical relevant

### Presenting Author Brief CV

In 1987 I was graduated as Dental Hygienist. My working experience is in different disciplines; I worked in practises, hospitals and institutions, I was a formal boarding member of Dutch Society of Periodontology (NVvP, 2007-2012), From 2013 until present I am a boarding member of Register Prevention Assistants. Development, education and teaching Prevention Assistants for 25 years, Master in Evidence Based Practice at University of Amsterdam, graduated in 2022, Education and teaching Dental Hygiene students. In addition I work in my one practise since 1993.

## Exploring mental health issues amongst oral health practitioners in Australia

**Roisin Mcgrath<sup>1\*</sup>, Nicole Stormon<sup>2</sup>, Matthew Hopcraft<sup>1</sup>**

<sup>1</sup> Melbourne Dental School, The University of Melbourne, Australia

<sup>2</sup> School of Dentistry, University of Queensland, Australia

### Problem Statement

Evidence suggests that health professionals are at increased risk of mental health problems and experience significant psychological distress and burnout. While research has demonstrated this is also the case for dentists, the mental health profile of oral health practitioners (OHPs), including dental hygienists (DHs), dental therapists (DTs) and oral health therapists (OHTs), is less well understood.

### Purpose

The purpose of this anonymous cross-sectional survey was to explore self-reported mental health issues amongst Australian dental practitioners. The survey was open to all registered dental practitioners; however, this study focuses specifically on data from dental hygienists (DHs), dental therapists (DTs), and oral health therapists (OHTs).

### Methods

Participants were asked about psychological distress (Kessler Psychological Distress Scale and the General Health Questionnaire) and mental illness diagnoses (depression and anxiety disorders), burnout (Sydney Burnout Measure), suicidal ideation and suicide attempts, and risk behaviours (alcohol consumption and illicit drug use). Data were analysed using SPSS. Descriptive statistics (Chi-square tests and ANOVA) were used to assess associations between outcome measures and differences between OHP groups.

### Results

Of the 267 OHPs (55 DHs, 46 DTs and 166 OHTs) who completed the survey, 37% were experiencing moderate or severe psychological distress and over a quarter (25.8%) were likely burned out. A third had ever been diagnosed with depression (34.8%) or anxiety (32.2%). Almost a third (31.1%) had ever had suicidal thoughts, 17.6% had suicidal thoughts in the past year, and 9% had previously attempted suicide. 1-in-10 (19.1%) OHPs had potentially harmful alcohol consumption and 16.1% had used illicit drugs in the last six-months. DTs were found to have significantly lower psychological distress ( $p < 0.001$ ) and lower burnout ( $p < 0.05$ ) than other OHPs.

### Conclusions

This study found high levels of mental health-related issues in OHPs, which raises concern about the wellbeing of those in the oral health professions. The findings from this study have prompted the development of a national alliance to develop strategies and interventions to promote mental health and wellbeing in Australian OHPs and the dental team more broadly. To this end, in late 2023 the 'Mindful Smiles' hub was launched.

### Learning Outcomes

1. Learn about the profile of mental health issues in oral health practitioners
2. Learn about the factors that contribute to burnout in the dental setting
3. Learn about strategies to manage work-related stress

### Citation for Publication

MS Hopcraft, R McGrath, N Stormon, G Parker (2023), Mental health, psychological distress and burnout in Australian dental practitioners, Australian Dental Journal, Volume 68, Issue 3, p 160-170, <https://doi.org/10.1111/adj.12961>

### Presenting Author Brief CV

Dr Roisin McGrath DipDH DipDT GC-INTLHL GCertUniTeach MPH PhD

Roisin has worked for over 30 years in the field of oral health and is a qualified dental assistant, dental hygienist and dental therapist. She has worked extensively in private and public dental settings, and is experienced in learning and teaching, research, oral health promotion, dental public health, program management, workforce development and training, supporting organizational change, and implementing new models of care.

Roisin is the Director of the Bachelor of Oral Health Program at the University of Melbourne and Population Oral Health Consultant at Dental Health Services Victoria. She is also a licenced Mental Health First Aid instructor and delivers MHFA training to people in the oral health sector.

## Relationship between allergic rhinitis and dental caries in Korean children

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<sup>2</sup> Dept. of Dental Hygiene, Yonsei University, South Korea

### Problem Statement

There is a bidirectional relationship between allergic rhinitis and oral disease, and a significant relationship between rhinitis and dental caries in children. Allergic rhinitis affects 10 to 15% of the world's population, and its prevalence has been increasing for decades, with a sharp increase following COVID-19. However, there is a lack of research on the relationship between allergic rhinitis and dental caries in Korean children.

### Purpose

- 1) Identify the relationship between allergic rhinitis and dental caries in children
- 2) Confirmation of changes in the number of patients diagnosed with allergic rhinitis in Korean children before and after COVID-19
- 3) Providing basic data to promote oral health in childhood

### Methods

This study used data from the Korean Children's Panel Study conducted by the Childcare Policy Research Institute. The Korean Children's Panel Study is a cohort study constructed through stratified, multi-stage sampling and has been conducted annually since 2008. This study analyzed a total of 387,882 people using data from Waves 10 to 14. The survey questions consisted of questions related to general characteristics, rhinitis, and dental caries. Cross-analysis was performed to analyze the prevalence of dental caries according to general characteristics, and logistic regression analysis was performed to confirm the relationship between allergic rhinitis and dental caries.

### Results

Children with allergic rhinitis had a 1.179 times higher risk of dental caries than children without allergic rhinitis. Additionally, allergic rhinitis in children showed a

decreasing trend from 17,215 in 2017 to 14,534 in 2020 but increased to 17,144 after the COVID-19 pandemic.

### Conclusions

The relationship between allergic rhinitis and the occurrence of dental caries in Korean children was confirmed. Education on oral health care methods for allergic rhinitis patients and their guardians is necessary.

### Learning Outcomes

There is a significant relationship between allergic rhinitis and dental caries in Korean children.

### Presenting Author Brief CV

Department of Dental Hygiene, Yonsei University

# Adjustment of dental hygiene students working posture using auxiliary equipment

**Ju Hui Jeong<sup>1</sup>, YeJi Kim<sup>2</sup>, Hie-jin Noh<sup>1\*</sup>**

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<sup>2</sup> Dental hygiene, Yonsei University(Graduate School), South Korea

## Problem Statement

The working posture auxiliary equipment helps in selecting an appropriate work position and improves working postures among dental operators.

## Purpose

The aim of this study was to compare the differences in working posture among dental hygiene students during periodontal instrumentation training based on a working posture auxiliary equipment by using three working posture assessment tools.

## Methods

The study involved 31 fourth-year dental hygiene students at U University from September 9, 2021, to October 8, 2021. The working posture of the students was video-recorded, as they worked in a self-position(S-P) and position using auxiliary equipment(P-AE), and the working posture was assessed using RULA, REBA, and M-DOPAI. After excluding three participants who withdrew from the study, 28 were included in the final analysis.

## Results

The total RULA, REBA, and M-DOPAI scores improved for all clock positions ( $p < 0.05$ ). The RULA score changed from  $6.66 \pm 0.61$  to  $4.00 \pm 1.13$  for 7-8 o'clock position,  $6.34 \pm 0.90$  to  $4.79 \pm 0.82$  for the 10-11 o'clock position, and  $6.13 \pm 0.83$  to  $4.68 \pm 1.05$  for the 12 o'clock position ( $p < 0.05$ ). The REBA score changed from  $8.20 \pm 1.33$ ,  $8.05 \pm 1.34$ , and  $7.80 \pm 1.31$  to  $4.90 \pm 1.27$ ,  $6.32 \pm 1.24$ , and  $5.98 \pm 1.33$ , respectively ( $p < 0.05$ ), while the M-DOPAI score changed from  $17.82 \pm 1.55$ ,  $18.63 \pm 1.71$ , and  $18.43 \pm 1.57$  to  $14.79 \pm 1.03$ ,  $15.73 \pm 0.70$ , and  $16.14 \pm 0.88$ , respectively ( $p < 0.05$ ).

## Conclusions

The working posture auxiliary equipment positively affects dental hygiene students' instrumentation training and It

could help establish desirable working postures and reduce discomfort in various body parts from dental hygiene work.

## Studies in Progress

The data were analyzed using the Wilcoxon signed-rank test with statistical significance set at 0.05.

The RULA, REBA, and M-DOPAI scores after using the auxiliary equipment showed improved working posture across all clock position.

## Learning Outcomes

It is important for dental hygiene students to establish correct working posture. This working posture auxiliary equipment has a definite effect in helping dental hygiene students maintain correct working posture during dental hygiene work.

## Citation for Publication

None

## Presenting Author Brief CV

In August 2023, he received a doctorate in clinical dental hygiene from the Department of Dental Hygiene, Yonsei University Graduate School, Seoul, Korea.

## A study on retention intention of dental hygienists: focusing on the labor standards act

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<sup>1</sup>Oralbiome & Implant Care Center, Appletreedental Hospital, South Korea

<sup>2</sup> Department of Dental Hygiene, Gwangju Women's University, South Korea

### Problem Statement

This study aims to understand the working conditions of dental hygienists, focusing on the Labor Standards Act, and confirm the relationship between the level of rights awareness, working environment, job satisfaction, and intention to remain employed.

### Purpose

The objectives of this study were to find the influential factors of dental hygienists' work environment and level of perception of rights on their retention intention, and to provide basic data for protecting their rights and interests and improving their employment rate.

### Methods

From June 6 to July 24, 2021, a questionnaire survey was conducted among 214 dental hygienists via an online link. After questionnaire collection, IBM SPSS program (ver. 21.0; IBM Corp., Armonk, NY, USA) was used to conduct frequency analysis, t-test, one-way ANOVA and multiple regression analysis.

### Results

The results of an analysis of the influence of the work environment and level of awareness of rights of dental hygienists working in dental clinics on their intention to stay in the workplace, with a focus on the Labor Standards Act, are as follows.

1. In terms of intention to stay based on job-related characteristics, the higher the age ( $p<0.01$ ), the more appropriate the working hours ( $p<0.001$ ), the more experience of leaving the job ( $p<0.05$ ), and the higher the average monthly salary ( $p<0.001$ ), the more rights were guaranteed, the more significant the difference appeared ( $p<0.001$ ).

2. The significant and positive influential factors of dental

hygienists' retention intention were married individuals ( $p=0.022$ ), fewer working hours ( $p<0.001$ ,  $p=0.007$ ), good work environment ( $p=0.002$ ), higher wages ( $p<0.001$ ,  $p<0.001$ ), higher education ( $p=0.032$ ), and perception of rights in a mid-level ( $p=0.038$ ).

Based on the results of the above research, it is expected to be used as basic data to improve the working environment of dental hygienists and raise the level of recognition of dental hygienists' rights.

### Conclusions

It is necessary to consider wages and welfare equivalent to dental hygienists' work intensity and workload. By educating them regularly to increase their perception of rights, expanding an opportunity of participation, and improving their work environment, it will be possible to increase their retention intention and thereby to establish manpower of dental clinics efficiently.

### Studies in Progress

Not applicable

### Learning Outcomes

As a way to increase the intention of dental hygienists engaged in clinical practice to remain employed, a systematic plan is needed to improve the working environment, improve the level of rights awareness, and ensure rights.

### Citation for Publication

J Korean Soc Dent Hyg 2022;22(3):199-207

### Presenting Author Brief CV

Clinical dental hygienist

# Effect of clinical practice transition shock and resilience on academic burnout of dental hygiene students

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## Problem Statement

This study provides data to change the dental hygiene education field and establish a systematic clinical practice management program by analyzing the degree of clinical practice transition shock, resilience, and academic burnout of dental hygiene major college students and the factors affecting academic burnout.

## Purpose

This study was conducted to confirm the impact of clinical practice transition shock, resilience, and academic burnout of dental hygiene major college students, and to analyze the factors that affect academic burnout. Through this, it is necessary to prepare a learning strategy to prevent the impact of clinical practice transition shock and academic burnout of dental hygiene major college students, to change the educational field, and to establish a systematic clinical practice management program.

## Methods

The subjects of this study were 3rd and 4th graders of the Department of Dentistry who experienced clinical practice for more than 4 weeks at 4-year interdisciplinary universities in Chungcheongnam-do, Jeollabuk-do, and Gwangju. The questionnaire was collected from September 1, 2022 to September 20, 2022 both online and offline. SPSS Statistics 22 was used for the collected data, and the significance level for statistical significance verification was set as  $\alpha=0.05$ . The average and standard deviation of the subjects' conversion shock, resilience, and academic exhaustion were calculated. Differences in conversion shock, resilience, and academic exhaustion according to general characteristics were analyzed using independent sample t-test and one-way variance analysis, and post-analysis was performed by Scheffé test. Pearson's correlation analysis was conducted to see the correlation between the transition shock, resilience, and academic exhaustion factors of dentistry students, and the effects of transition shock and resilience on academic exhaustion

were confirmed using multiple regression analysis.

## Results

The transition shock and resilience showed a significantly negative correlation ( $r=-0.211$ ), transition shock and academic burnout showed a significantly positive correlation ( $r=0.484$ ), and resilience and academic burnout showed a significantly negative correlation ( $r=-0.568$ ). Regarding factors affecting academic burnout, academic burnout increased when the transition shock was greater ( $\beta=0.263$ ,  $p<0.001$ ), major satisfaction after clinical practice was lower ( $\beta=0.180$ ,  $p<0.05$ ), and the average grades were lower ( $\beta=0.169$ ,  $p<0.01$ ). Academic burnout decreased when resilience was greater ( $\beta=-0.435$ ,  $p<0.001$ ).

## Conclusions

To prevent clinical practice transition shock and academic burnout, and to increase the resilience of dental hygiene students, it would be necessary to establish learning strategies, change the educational environment, and establish a systematic clinical practice management program.

## Studies in Progress

Not applicable

## Learning Outcomes

The position of dental hygiene education field and the need to establish clinical practice management.

## Citation for Publication

J Korean Soc Dent Hyg 2022;22(6):543-52  
<https://doi.org/10.13065/jksdh.20220061>

## Presenting Author Brief CV

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- Lovely-line orthodontic Clinic

## Association between regular dental check-ups and oral frailty in community-dwelling older people: the Otassha Study

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<sup>3</sup> Department of Preventive Dentistry, Faculty of Dental Medicine and Graduate School of Dental Medicine, Hokkaido University, Japan

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### Problem Statement

In recent years, oral frailty (OF) has been promoted and the awareness of the public in the community regarding oral function has increased. In Japan, since the percentage of dental visits in people aged  $\geq 70$  years declines, the prevalence of mastication difficulties increases. Although increasing numbers of teeth are retained in older Japanese, those with physical and cognitive decline, and fewer remaining teeth tend not to see dentists regularly or only seek treatment when there are oral issues. Regular dental attendance from the viewpoint of adequate functioning of the remaining morphologies is a key for geriatric oral health promotion.

### Purpose

To investigate the association between regular dental check-ups and OF in community-dwelling older people.

### Methods

This cross-sectional study analyzed data from the 2022 Otassha Study. OF was assessed using the Oral Frailty 5-item Checklist (OF-5), which evaluates (i) fewer teeth, (ii) difficulty in chewing, (iii) difficulty in swallowing, (iv) dry mouth and (v) low articulatory oral motor skills; those with  $\geq 2$  items are classified as OF. We assessed the status of regular dental check-ups, oral information (number of teeth, needs for dental treatment) and other basic characteristics. Comparisons in study population characteristics between groups with and without regular dental check-ups were performed using Mann-Whitney U test and chi-square test. Logistic regression analysis was performed to assess the association regular dental check-

ups and other variables (gender, age, systemic disease, physical and cognitive function) with OF. Odds ratio (OR) to be categorized as OF was estimated.

### Results

Overall, 537 participants (200 males and 337 females, mean age  $73.9 \pm 6.7$  years) were included. Percentages of regular dental check-ups and OF were 62.0% and 33.9%, respectively. Participants who regularly receive dental check-ups had a significantly lower prevalence of OF and dental treatment needs, the larger number of remaining teeth, and higher TMIG-IC values. Logistic regression analysis found that regular dental check-ups was significantly associated with OF (OR, 0.56; 95% confidence interval, 0.38-0.83).

### Conclusions

Regular dental check-ups was associated with good oral health indicated by lower OF prevalence. Therefore, assessing the oral function of older people through OF promotion is believed to encourage regular dental check-ups and contribute to improvement of geriatric oral health status.

### Studies in Progress

This study has been completed.

### Learning Outcomes

This study was conducted with community-dwelling older people. As a dental hygienist, I hope it would provide new insights into the association between community-based indicators of oral frailty and dental visiting behaviour.



## Presenting Author Brief CV

PhD in Dentistry

Gerodontology and Oral Rehabilitation, Department of Gerontology and Gerodontology, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University

Research; Effect of oral health intervention on cognitive decline in community-dwelling older adults: A randomised controlled trial

MA in Oral Health Science

Department of Oral Health Sciences for Community Welfare, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan.

Research: Cross-sectional study of age-specific differences in salivary occult blood test results in older adults

BA in dental hygiene

Faculty of Dentistry consists of the Course for Oral Health Care Sciences

Tokyo Medical and Dental University, Tokyo, Japan.



## Bacterial contamination level of digital panoramic dental X-ray equipment

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<sup>2</sup> Department of Dental Hygiene, College of Health and Medical Health Sciences, Cheongju University, South Korea

### Problem Statement

Infection control is especially important in dental institutions because patients' saliva and blood are present in aerosol form, increasing the risk of cross-infection. Many studies are being conducted on bacterial contamination and infection in devices and equipment surrounding dental unit chairs that treat patients, and infection control is well implemented. Digital panoramic dental X-ray equipment (PDX) is frequently used by patients and dental workers for diagnosis and examination, so there is a high risk of cross-infection. However, because PDX is located in the radiography room, awareness of the importance of infection control is relatively low compared to treatment rooms with unit chairs, and related research is lacking.

### Purpose

We aimed to systematically review the potential risk of cross-infection in the dental environment by investigating the contamination level of general aerobic bacteria and *Staphylococcus aureus* (*S. aureus*), which are important in hospital infections, in PDX areas that people mainly contact.

### Methods

This study was conducted from March to May 2023 and covered one general hospital, three dental hospitals, and nine dental clinics equipped with PDX. Bacteria samples were collected from the left-handle, right-handle, forehead support, and head side support as the patient's contact areas, as well as the X-ray exposure switch and left-click mouse button as the dental hygienist's contact areas of the PDX. The collected bacterial suspension was spread on 3M Petrifilm for general aerobic bacteria and *S. aureus*. and cultured in  $35 \pm 1^\circ\text{C}$  incubator for 48 hours. The CFU/ml of red and red-violet colonies formed in general aerobic bacteria and *S. aureus* were counted, respectively.

### Results

General aerobic bacteria and *S. aureus* were detected in all areas investigated. Significant differences in bacterial counts between different regions of the PDX were observed in both groups ( $p < 0.001$ ). The detection rates of general aerobic bacteria ( $p < 0.001$ ) and *S. aureus* ( $p < 0.001$ ) were significantly higher in the contact areas of patients than those of dental hygienists. A positive correlation was observed between the forehead and the temple region in terms of general aerobic bacteria and *S. aureus* detection ( $r=1$ ) ( $p < 0.01$ ).

### Conclusions

Taken together, the presence of many bacteria, including *S. aureus*, detected in PDX indicates that PDX has a potential cross-infection risk. Our results therefore highlight the need for the development of appropriate disinfection protocols for reusable medical devices such as PDX and periodic infection prevention training for hospital-related workers, including dental hygienists.

### Learning Outcomes

Importance of infection control in dental X-ray equipment

### Citation for Publication

Journal of Dental Hygiene Science Vol. 23, No. 4, 2023

### Presenting Author Brief CV

Mar 2014 - present : Professor / Kyungpook National University

Mar 2021 - Dec 2021 : Visiting Scholar / School of Dental Medicine, University of Pennsylvania

Mar 2013 - Feb 2014 : Post-Doctoral Fellow / Cancer Research Institute, Yonsei University College of Dentistry

Sep 2008 - Aug 2012 : Ph.D. in Dental science / Graduate School of Yonsei University

# The effect of information literacy the communication ability of dental hygienist: mediating effect of job crafting

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<sup>2</sup> Dental hygiene, Gwangju Women's University Graduate School, South Korea

## Problem Statement

we sought to determine the impact of dental hygienists' information utilization capabilities on their communication skills and the mediating effect of job crafting.

## Purpose

This study aimed to establish the basic data for the performance of patient-centered care, perception of core competencies, and self-development of dental hygienists by verifying the effects of information literacy on the communication ability of dental hygienists, and the mediating effects of job crafting.

## Methods

Collected and analyzed data by conducting a survey targeting total 222 dental hygienists working for dental hospitals/clinics located in Seoul and Gyeonggi region. Verify the mediating effects of job crafting on the effects of information literacy on the communication ability, this study conducted the correlation analysis and simple regression analysis and multiple regression analysis.

## Results

The impact of job crafting on communication skills as a mediator of information literacy skills

Looking at dentistry, it is as follows. 1. The major minor relationships between information utilization competency are communication ability ( $r=0.378$ ,  $p<0.01$ ), cognitive processing ( $r=0.387$ ,  $p<0.01$ ), relationship processing ( $r=0.388$ ,  $p<0.01$ ), and task processing ( $r=0.388$ ,  $p<0.01$ ). It was confirmed that all showed a positive relationship ( $r=0.348$ ,  $p<0.01$ ). 2. The information utilization role of dental hygienists was found to be significant in interpretation processing ( $\beta=0.387$ ,  $p<0.001$ ), relationship processing ( $\beta=0.388$ ,  $p<0.001$ ), and task processing ( $\beta=0.348$ ,  $p<0.001$ ). 3. As a result, information literacy has as much influence on communication ability as dental hygiene's

information literacy ( $\beta=0.378$ ,  $p<0.001$ ), excluding positive (+) influence on communication ability. 4. Partially specific effects were found for both semantic processing ( $\beta=0.209$ ,  $p<0.001$ ) and relational processing ( $\beta=0.318$ ,  $p<0.001$ ), which affect dental hygienists' information utilization and communication skills; The Sobel test values were confirmed to be statistically explained as  $Z=2.820$  ( $p<0.01$ ) and  $Z=3.905$  ( $p<0.001$ ). Based on the above research, in order to provide dental hygiene residential emergency medical services, we will recognize the scope of information literacy and job crafting, push various training programs, and develop core competencies to measure and strengthen.

## Conclusions

In order to increase the educational accessibility for dental hygienists to perceive the importance of information literacy and communication ability, to improve the expertise as healthcare personnel who perform the patient-centered care by developing it, and also to develop the information literacy and job crafting, it would be necessary to develop various educational programs and contents.

## Studies in Progress

Not applicable

## Learning Outcomes

A systematic plan to improve dental hygienists' information utilization capabilities and job crafting is needed. Raise awareness of rights and guarantee rights.

## Citation for Publication

J Korean Soc Dent Hyg 2022;22(3):217-24

## Presenting Author Brief CV

- Graduated from Yeosu University Department of Dental Hygiene
- Korea National Open University Department of Media and





## Film

- Gwangju Women's University Department of Dental Hygiene, Master's Graduate School, Co-authored the latest
- Co-author of Dental Manual book 119
- Many preventive dentistry seminars/special lectures/consulting
- Many personal branding seminars/special lectures
- Yours dental clinic Oral Manipulation Therapy training
- Current, Director of Apple Tree Dental Hospital Oral Biome & Implant Care Center
- Current, Dental hygiene session Instructor of GCKOREA
- Current, Public Relations Committee Member, Korean Dental Hygienist Association

# Impact of dental hygienists' positive psychological capital, growth mindset, and self-leadership on retention intention

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## Problem Statement

This study was conducted to analyze the factors influencing the positive psychological capital, growth mindset, and self-leadership of dental hygienists in the Seoul and Gyeonggi regions with regard to their retention intention. The findings would serve as basic data for improving the retention intention.

## Purpose

This study was conducted to analyze the factors influencing the positive psychological capital, growth mindset, and self-leadership of dental hygienists in the Seoul and Gyeonggi regions with regard to their retention intention. The findings would serve as basic data for improving the retention intention.

## Methods

The methods espoused for analysis comprised independent sample t-test and ANOVA for group comparisons, Pearson's correlation analysis for examining the correlation between variables, and multiple regression analysis for identifying factors affecting retention intention.

## Results

Positive psychological capital was higher among those under the age of 27 and working at a dental clinic, growth mindset was higher among those with less than 3 years of work experience and those working in a clinic, self-leadership was higher among those between the ages of 28 and 31, and retention intention was higher among those under the age of 27 and with less than 3 years of work experience ( $p < 0.05$ ). There was a correlation between positive psychological capital and self-leadership ( $r = 0.760$ ), self-leadership and retention intention ( $r = 0.514$ ), positive psychological capital and retention intention ( $r = 0.505$ ), positive psychological capital and growth mindset ( $r = 0.337$ ), growth mindset and self-leadership ( $r = 0.245$ ) ( $p < 0.001$ ). Factors influencing

intention to stay at work were self-leadership ( $\beta = 0.309$ ) and positive psychological capital ( $\beta = 0.242$ ) ( $p < 0.05$ ).

## Conclusions

In order to improve dental hygienists' intention to retention intention, it is necessary to find ways to improve positive psychological capital and self-leadership.

## Learning Outcomes

In order to improve dental hygienists' intention to retention intention, it is necessary to find ways to improve positive psychological capital and self-leadership.

## Citation for Publication

In order to improve dental hygienists' intention to retention intention, it is necessary to find ways to improve positive psychological capital and self-leadership.

## Presenting Author Brief CV

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Graduated from Gwangju Women's University, Department of Dental Hygiene, Master's degree

## Xylitol inhibits preterm birth by suppressing NLRP3 inflammasome activity in *Fusobacterium nucleatum* infection

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<sup>1</sup> oral biology, yonsei university, South Korea

<sup>2</sup> Obstetrics and Gynecology, Konyang University, South Korea

### Problem Statement

*Fusobacterium nucleatum* (*F. nucleatum*) is a bacterium commonly found in patients with periodontitis. This bacterium has been implicated in inducing preterm birth by activating the NLRP3 inflammasome and increasing IL-1 $\beta$  production. Despite the well-known antibacterial properties of xylitol, its effects on *F. nucleatum* have been little studied. Hence, our study aimed to investigate whether *F. nucleatum* triggers preterm birth via NLRP3 inflammasome activation and if xylitol can prevent such complications.

### Purpose

In our study, we induced preterm birth in pregnant mice by intravascular injection of *F. nucleatum*.

### Methods

Pregnant mice were orally administered xylitol (0–10%/200  $\mu$ L) daily for 0.5–15.5 dpc and then injected into the tail vein with each concentration (0 - 5  $\times 10^8$ /200  $\mu$ L) of *F. nucleatum* on 16.5 dpc. The tissue samples were studied by ELISA, western blotting, or PCR.

### Results

This resulted in increased production of IL-6, CXCL1, and CCL2 in the uterus and placenta, along with heightened IL-1 $\beta$  levels due to NLRP3 inflammasome activation. Administering xylitol to pregnant mice effectively mitigated *F. nucleatum*-induced inflammation and prevented preterm birth. Xylitol also exhibited antibacterial effects in the uterine and placental tissues, inhibiting NLRP3 inflammasome activity. Specifically, xylitol significantly reduced the elevated expression of IL-1 $\beta$  caused by *F. nucleatum* in the placental labyrinth zone of pregnant mice.

### Conclusions

Furthermore, we investigated the mechanism by which xylitol regulates NLRP3 inflammasome activity (signal-1 and -2) induced by *F. nucleatum* infection using the human monocyte cell line, THP-1. Xylitol demonstrated inhibition of both signal-1 and -2 pathways of NLRP3 inflammasome

activity in *F. nucleatum*-infected THP-1 cells.

### Learning Outcomes

These findings strongly suggest that xylitol holds promise in preventing preterm birth by effectively inhibiting NLRP3 inflammasome activity associated with *F. nucleatum* infection.

### Presenting Author Brief CV

#### Degree

2014 Konyang University (Bachelor's degree, Department of Dental Hygiene)

2016 Konyang University (Master of Medicine, Immunology)

2020 Konyang University (Doctor of medicine, Reproductive Immunology)

#### Career

2020-2023 Konyang University (Post-doctoral researcher)

2021-2022 Daegu Science University (Department of Dental Hygiene, part-time instructor)

2023-2023 Chonnam National University (Post-doctoral researcher)

2023-Currently Yonsei University (Post-doctoral researcher)

#### National project

2020-2022 National Research Foundation (Postdoctoral training in Korea)

2022-2025 National Research Foundation (Creative Challenge)

#### Representative paper

2019. *Frontiers in Immunology*, Ureaplasma urealyticum Infection Contributes to the Development of Pelvic Endometriosis Through Toll-Like Receptor 2

2021. *American Journal of Reproductive Immunology*, Receptor-interacting protein kinase 2 contributes to host innate immune responses against *Fusobacterium nucleatum* in macrophages and decidual stromal cells

2022. *Journal of Medicinal Food*, Salicornia herbacea Aqueous Extracts Regulate NLRP3 Inflammasome Activation in Macrophages and Trophoblasts

## Assessment on microbial contamination of dental prosthesis

**Lee Rang Im<sup>1</sup>, Ki Rim Kim<sup>1\*</sup>**

<sup>1</sup> Master's degree in Dental Hygiene, Kyungpook National University, South Korea

### Problem Statement

Various dental prosthetics that restore damaged or missing teeth, such as crowns and dentures, are manufactured in dental laboratories and applied directly to the patient's mouth at dental institutions. However, through previous research results, it is known that many dental workers rarely disinfect dental prostheses before applying them to the patient's mouth. Infection control of dental prosthesis is important because infected dental prosthesis can cause cross-infection in patients, but research confirming the degree of microbial contamination of dental prosthesis is insufficient.

### Purpose

In this study, we investigated the contamination levels of general aerobic bacteria, including *Staphylococcus aureus* (*S. aureus*), which is important in hospital infections, on various dental prostheses. Through this, we aim to confirm the risk of cross-infection caused by dental prosthetics and emphasize the importance of infection control in prosthetics.

### Methods

A total of 23 dental prostheses, including 6 gold crowns, 7 zirconia crowns, 4 porcelain-fused-to-metal crowns, and 6 dentures, were investigated at two dental laboratories, one general hospital, and one dental clinic in Gyeongsangbuk-do, Korea. Bacteria collected from dental prosthesis were inoculated onto 3M Petrifilm for general aerobic bacteria and *S. aureus*, respectively, and cultured in an incubator at  $35 \pm 1^\circ\text{C}$ . After 48 hours, colonies formed on each Petrifilm were counted.

### Results

General aerobic bacteria and *S. aureus* were detected in most dental prosthesis, and a statistically significant difference was found among all types. In particular, both bacteria were highest on dentures ( $p=0.003$ ). Both general aerobic bacteria and *S. aureus* did not show statistically

significant differences between dental institutions and dental laboratories. A positive correlation was observed between the denture and the denture in terms of general aerobic bacteria and *S. aureus* detection ( $r=0.829$ ) ( $p<0.05$ ).

### Conclusions

As a result, not only general bacteria but also *S. aureus* were detected in most dental prosthesis, showing that infection control for dental prosthesis is rarely carried out. Therefore, all dental workers, including dental hygienists, dental technicians, and dentists, should be aware of the risk of cross-infection through dental prosthesis, and specific guidelines for infection control of dental prosthesis need to be established.

### Learning Outcomes

Importance of infection control in dental prosthesis

### Presenting Author Brief CV

As a dental hygienist with 10 years of experience in infection control in both dental clinics and general hospitals, I will present the current status of infection control for dental prostheses.

## A qualitative study on the dental hygiene student experiences of clinical practice : Focus group interview

**LEE Bo ram<sup>1</sup>, Sang Eun Moon<sup>1</sup>, Sun Hwa Hong<sup>2\*</sup>**

<sup>1</sup> Dental hygienist, KWANGJU WOMEN`S UNIVERSITY, South Korea

<sup>2</sup> Dental Hygiene, Chunnam Techno University, South Korea

### Problem Statement

The study conducted the phenomenological analysis of dental hygienists' roles and work execution in the field from the perspectives and language of dental hygiene students who have experienced clinical practice, and thereby provided foundational data for the correct performance of dental hygienists' roles and the establishment of the identity of prospective dental hygienists.

### Purpose

This study aimed to analyze deeply dental hygienists' roles and actual duties in clinical settings through the perspectives and language of students in dental hygiene by applying a phenomenological approach, and thereby to provide fundamental data for laying the foundation for establishing the correct execution of dental hygienists' roles and the identity of prospective dental hygienists.

### Methods

From November 20, 2019, to January 20, 2020, interviews were conducted with a total of 11 participants. Semi-structured open-ended questionnaires were distributed in advance, and a focus group interview was conducted during approximately 1 hour. A focus group was asked questions in the following order: starting questions, introductory questions, transition questions, main questions, and concluding questions. In reference to Giorgi's research tool, the recorded data were analyzed. As a result, main categories of four stages were extracted: 'the stage of grasping the whole,' 'the stage of distinguishing units of meaning,' 'the stage of transforming everyday expressions of a subject,' and 'the stage of integrating the structure of all transformed units of meaning.'

### Results

A total of 94 meaningful words were extracted. Based on them, 11 subcategories were drawn. Ultimately, these were categorized into four central themes: various learning opportunities, the path of hardship and growth,

performance of tolerated tasks, and blind spots in welfare.

The following results were drawn:

1. The study participants had a variety of learning opportunities.
2. The study participants had the burden of having to self-learn without a sense of belonging.
3. The study participants performed their tasks beyond the legal scope of duties.
4. They had the experience of not being recognized for the competence of dental hygienists as professionals.

### Conclusions

By enhancing the critical thinking skills of prospective dental hygienists, it is necessary to come up with strategies for providing practical simulation education to address various issues encountered in the field, helping prospective dental hygienists perceive dental hygienists rightly, and establishing the identity of prospective dental hygienists.

### Studies in Progress

Not applicable

### Learning Outcomes

It is necessary to establish the exact scope of work of dental hygienists and the identity of students.

### Citation for Publication

J Korean Soc Dent Hyg 2020;20(4):409-19  
<https://doi.org/10.13065/jksdh.20200038>

### Presenting Author Brief CV

Adjunct Professor, Gwangju Women's University

## THE SECOND LIFE”... WHEN YOU FIND OUT YOU HAVE A “SPECIAL” SON

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<sup>2</sup> Interdisciplinary Department of Medicine, “Aldo Moro” University, U.O.C. Dentistry University, Bari, Italy

<sup>3</sup> Department of Basic Medical Sciences, Neurosciences and Sense Organ, “Aldo Moro” University, Ordinary professor, Italy

### Problem Statement

Narrative medicine is a clinical assistance intervention methodology based on a specific communicative competence. Storytelling is the fundamental tool for acquiring, understanding and integrating the different points of view of those involved in the disease and in the treatment process. The idea of a Narrative Medicine project applied to autism was born from the observation during dental clinical practice of the relationship between caregivers/parents of autistic children/adolescents and professionals. It is important to trying understand what the parents’ thoughts, emotions and knowledge are in order to improve both the approach and the welfare aspect, at the same time, it is also necessary to give a voice to the professionals who care for children with autism.

### Purpose

The main objective of the project is to focus on the human, emotional and relational dimension of the parents autistic children and young autistic people, their need to listen, their way of experiencing their child’s autism through the use of narratives.

Specific objectives:

- Develop a narrative component in the field of oral health.
- Promote the application of narratives in the dental care path in the dental field
- Gather the experiences of the parents of autistic children and teenagers, to transform them into dedicated therapeutic actions
- Understand the needs of parents
- Identify stressful situations
- Promote the training of professionals

### Methods

In the preparation phase, the project set out to collect 20 stories on a voluntary basis, from both parents of children

with autism and health professionals involved in taking charge of these patients (3-4 stories).

The project took place in the period June-August 2022 and was divided into various phases. Two narrative tools were developed in this survey in order to collect narratives from patients:

- o the semi-structured narrative track
- o the semi-structured narrative interview

### Results

A qualitative-quantitative analysis was carried out by evaluating the stories of both parents and professionals in their entirety, in order to classify them according to Narrative Medicine and try to obtain from this result of data, critical issues or points in common between the stories of the mothers, from the comparison with the narrations of the fathers from the comparison with the stories of the professionals.

### Conclusions

it is essential to create paths that see parents and professionals, within narrative laboratories, to discuss and work together for a common goal

### Learning Outcomes

The work also highlighted how different the way of speaking of professionals, the way of “feeling”, compared to parents.

### Presenting Author Brief CV

Degree in Dental Hygiene, La Sapienza University of Rome.  
Specialist Degree in Sciences of Health Professions, Organizational and Assistance Techniques, University of Bari.

Master’s course in Bibliotherapy, University of Verona

Master in Applied Narrative Medicine at ISTUD Sanità e



Salute XII edition 2022

Master in Medical Humanities, Department of Education and Human Sciences of the University of MODENA and REGGIO EMILIA. A.A 2020/21

University Specialization Course "Narrative Medicine"

Department of Education and Human Sciences of the University of MODENA and REGGIO EMILIA. A.A 2019/2020

Coordination Master 1st level University Master

"Management for the Coordination functions of Health Professions" Catholic University of the Sacred Heart - "San Carlo" Regional Hospital of Potenza

Specialization Course in Narrative Medicine University of Modena and Reggio Emilia

CLID Teacher, Dental Clinic, University of Bari.

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Employee of the DENTAL CLINIC UNIT of the Bari Polyclinic University Hospital

## Effect of prolonged hospitalization on the maintenance of oral health - a self-report survey

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<sup>3</sup> Oral medicine Unit, 1. American Academy of Pediatric Dentistry website, Dental Home Resource Center: <http://www.aapd.or>, Israel

### Problem Statement

Previous nursing studies have often overlooked the impact of prolonged hospitalization on dental health in adult patients. Inpatients may face challenges maintaining oral health, due to mobility issues and consider it a lower priority.

### Purpose

To evaluate the effect of prolonged hospitalization on the maintenance of dental health and to assess the nursing staff's approach to address these concerns.

### Methods

A survey questionnaire explored changes in patients' dental care routines, and nursing staff involvement in this responsibility, was anonymously answered by patients hospitalized for over a month.

### Results

Fifty adult patients aged 18-89 years (mean age  $62.4 \pm 20.54$  years), 27 (54%) males, answered the survey. During hospitalization (mean  $58.59 \pm 38.63$  days) 26% and 18%, respectively increased consumption of sweets and sugary beverages, between meals, as >90% were unaware of the deterioration effect of this behavior. , Moreover, 26% and 20%, respectively decreased toothbrushing frequency in the morning or the evening, as 83.7%, and 95.9% respectively were never reminded or offered assistance in toothbrushing,. The decreased frequency of morning toothbrushing was significantly correlated with a lack of nurses' assistance ( $p=0.004$ ). In contrast, 62.6% reported they were reminded every day to shower. Patients in the rehabilitation and geriatrics departments reported a greater need for a brush/toothpaste ( $p<0.0001$ ) and assistance in toothbrushing ( $p<0.0001$ ).

### Conclusions

Prolonged hospitalization leads to significant deterioration

in inpatients' dental health maintenance. Raising awareness among nurses regarding their inpatient oral health maintenance is warranted. Providing patients with toothbrushes, toothpaste, and educational materials upon hospitalization is recommended.

### Learning Outcomes

Prolonged hospitalization often leads to significant deterioration in dental health maintenance among patients, with nursing staff failing to address these issues. As a result, patients are at an increased risk of developing oral, dental, and systemic diseases. Increasing nursing staff awareness of the importance of regular toothbrushing and limiting consumption of fermentable carbohydrates through periodic seminars and providing patients with toothbrushes, toothpaste, and educational materials upon hospitalization is recommended. Additionally, dentists should conduct detailed interviews regarding changes in oral health habits during prolonged hospital stays and take appropriate diagnostic and preventive measures to address the deterioration of patients' oral health.

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## Presenting Author Brief CV

1995-1997 - Hadassah-Hebrew Faculty of Dental Medicine, Hebrew University, Jerusalem, Israel. RDH degree.  
1997-2020 - Dental hygienist in private practice  
2000-2024 - Dental hygienist at Sheba Medical Center, Israel

# Effects of chairside stretching exercises among dental hygiene students

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## Problem Statement

Studies have documented the high risk and prevalence of Musculoskeletal disease(MSD) in the dental workforce, and they are at high risk for MSDs because they spend many hours each day performing tasks that involve bending the neck, sitting in a fixed position, lifting the shoulders, and exerting force with the hands and arms[1, 2]. And these MSD pain experiences were similar among dental hygiene students[3, 4]. Korea's Ministry of Employment and Labor's Occupational Accident Prevention and Safety and Health Service recommends that workers make it a habit to stretch before, during, and after work to prevent musculoskeletal disorders[5, 6].

## Purpose

This study aims to confirm the effectiveness of dental hygiene students by measuring changes in working posture and finger strength according to stretching period before or after periodontal instrumentation practice.

## Methods

Before or after performing chair-side stretching exercises, we observed work posture changes for dental hygiene students after periodontal instrumentation practices. We used REBA(Rapid Entire Body Assessment), RULA(Rapid Upper Limb Assessment), M-DOPAI(Modified-Dental Operator Posture Assessment Instrument), and pinch strength to investigate students' posture changes.

## Results

Pinch strength has not meaningful changed over time. But the results of pinch strength increased from 14.17 at baseline to 14.34 after 6 weeks. The REBA score decreased from 18 to 9 for "high" when the stretching exercises were performed. REBA score was mainly in the "high" level at baseline but changed to the "medium" level after 6 weeks. The RULA score decreased from 9 to 0 for "change immediately" when the stretching exercises were performed. RULA score was

in the "change immediately" level at baseline but changed to the "change necessary soon" level after 6 weeks. The M-DOPAI score decreased also decreased over the study period. This indicated that stretching exercises have a positive effect on working posture.

## Conclusions

Stretching before or after periodontal instrumentation practice may affect working posture and finger pinch strength.

## Learning Outcomes

Positively impact the posture and finger strength of dental hygienists and dental students.

## Presenting Author Brief CV

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# The Relationship Between Sedentary Behavior and Physical Activity Level, and Oral Health Factors for the Female Adolescent Students

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## Problem Statement

It is determined that there is a need for a plan to increase the practice rate of sedentary behavior along with the usual health management of female students through correct dietary behavior and appropriate physical activities.

## Purpose

In this study female adolescent students were to determine as to whether the oral health related factors and physical activity levels affect sedentary behavior other than the learning purpose.

## Methods

This study was conducted by modifying and supplementing the raw data of the 17th Youth Health Behavior Online Survey in 2021 (Korea Centers for Disease Control and Prevention, 2021) (Approval No. 117058). Of the 54,848 middle and high school students who participated in the survey at 796 schools, 26,447 female students were the final subjects of the study

## Results

As a result of the study, the group who did not practice sedentary behavior other than learning during the week had low academic performance (lower, 1.245 times) and, depending on their dietary behavior, as they had the experience of consuming instant foods such as soda (1.255 times) and fast food (1.264 times), the number turned out to be higher ( $p<0.001$ ). As for the group that did not practice sedentary behavior other than study during the weekend, academic performance was 'medium' (1.101 times,  $p<0.001$ ), stress (1.303 times,  $p<0.001$ ), and fatigue recovery after bedtime were inadequate (1.154 times,  $p<0.001$ ). 0.001) turned out to be higher in the group that did physical

activity for more than 60 minutes (1.155 times,  $p<0.01$ ).

## Conclusions

As a result of this study, there were no significant differences in terms of the number of tooth brushing and oral symptoms as the oral health related factors of female adolescent students belonging to the non-practice group, but it was found to be related to differences according to the dietary behavior and physical activity experience.

## Studies in Progress

Not applicable

## Learning Outcomes

It would be necessary to prepare specific measures to improve the mental and physical health by actively encouraging the correct dietary behavior and appropriate physical activity and limiting the time spent for the sedentary behavior.

## Citation for Publication

The Journal of Transdisciplinary Studies, 7(1): 103-116, 2023  
<https://doi.org/10.22685/JTS.2023.7.1.103>

## Presenting Author Brief CV

Professor. Dept. Dental Hygiene, Howon University

## Association Between eHealth Literacy and Dental Check-up in Adults: A Cross-sectional Study in Japan

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### Problem Statement

The methods of oral health information gathering have changed due to the spread of the internet. Nowadays, approximately 90 percent of the general population in Japan uses the internet and many of them look for health-related information.

### Purpose

We set out to explore associations between eHealth literacy and Dental check-up among adults in Japan.

### Methods

A cross-sectional survey was carried out in 2022. The 391 subjects were aged 20 to 59 and living in Shizuoka, Japan. The subjects completed a self-administered questionnaire regarding gender, marital status, education, household income, eHealth literacy and dental check-up. The interval of dental check-ups visits was stratified into two groups based on 'Once per year' or more visits of Dental check-ups as the regular group, 'Once per 2 or 3 years' or fewer visits as the irregular group. Chi-square tests, and variable selection in logistic regression models and analyses were then conducted for two groups.

### Results

Chi-square tests performed on the data showed that in low eHealth literacy and the irregular group among adult people ( $p < 0.05$ ). Logistic regression analysis revealed that low eHealth literacy was significantly more likely with the irregular group (OR=1.67, 95%CI: 1.08 to 2.59). It was therefore shown that use eHealth literacy is associated with dental check-up.

### Conclusions

Our findings suggest that low eHealth literacy was at an increased risk of irregular dental check-up group. It is important to collect health-related information of internet to help adults for oral health.

### Learning Outcomes

It is important to collect health-related information of internet to help adults for oral health.

### Presenting Author Brief CV

Yuki Noguchi is a professor in Department of Dental Hygiene, University of Shizuoka Junior College, Japan. Her received her received her PhD from Tohoku University Graduate School of Dentistry. Her work focuses specifically on oral health literacy (OHL) and oral health.

# Anti-Inflammatory and Anti-Bacterial Potential of Mulberry Leaf Extract on Oral Microorganisms

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## Problem Statement

Mulberry leaves extract (Morus alba extracts; MAE) is known to have therapeutic potentials for numerous human diseases, including diabetes, neurological disorders, cardiovascular diseases, and cancers. However, there has not been sufficient research proving therapeutic effects on oral disease and its related oral risk factors.

## Purpose

We investigated whether MAE has any antiinflammatory and anti-bacterial effects on risk factors causing oral infectious diseases.

## Methods

To examine the anti-inflammatory response and bacterial inhibition of MAE, we measured intracellular reactive oxygen species (ROS) generation, production of pro-inflammatory cytokines, and the bacterial growth rate.

## Results

Our study showed that MAE has anti-inflammatory activities, which inhibit the ROS generation and suppressed the production of pro-inflammatory cytokines (TNF- $\alpha$  and IL-6) in human monocyte THP-1 cells by stimulating lipopolysaccharide (LPS) and/or F. nucleatum, which are the virulent factors in periodontal diseases. Furthermore, MAE inhibited the bacterial growth on oral microorganisms (F. nucleatum and S. mutans) infected THP-1 cells.

## Conclusions

We demonstrated that MAE has anti-inflammatory effects, which can inhibit ROS generation and suppress production of pro-inflammatory cytokines in human monocyte THP-1 cells by stimulating LPS and/or F. nucleatum. Furthermore, MAE can inhibit the bacterial growth in oral microbes F. nucleatum and S. mutans.

## Learning Outcomes

These findings suggested that MAE could be a potential natural source for prophylactic and therapeutic agents in oral infectious disease.

## Citation for Publication

This study was published in the International Journal of Environmental Research and Public Health in 2022, volume 19.

## Presenting Author Brief CV

Professor at the Department of Dental Hygiene, Konyang University, from 2008 to present

## Oral function in middle-aged and older Japanese adults

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### Problem Statement

The evaluation and management of oral hypofunction have been covered by Japan's health insurance system since 2018. In 2022, the insurance coverage was changed from  $\geq 65$  to  $\geq 50$  years of age. For the smooth implementation of oral function management in middle-aged and older adults, studies on oral function that include a wider age range are necessary.

### Purpose

To describe oral function in middle-aged and older Japanese adults.

### Methods

This cross-sectional study analyzed data from two studies in 2023: the Otassha Study, an ongoing community-based cohort study, and the Occupational Health Study, a study of people who work in city offices in Fukuoka. Those who were between 40 and 89 years of age and had no missing data were included in the analysis. Survey items included sex, age, tongue coating index (TCI), oral moisture, occlusal force, oral diadochokinesis (ODK), tongue pressure, masticatory function, swallowing function (EAT-10), and the prevalence of oral hypofunction. Participants' oral functions were described and compared in 10-year age groups. The linear trends in the prevalence of oral hypofunction and the associated 7 clinical signs (sub-symptoms) were also evaluated across the age groups.

### Results

The analysis included 677 adults (290 males and 387 females). The number of participants was 51 in their 40s, 66 in their 50s, 168 in their 60s, 271 in their 70s, and 121 in their 80s. The prevalence of oral hypofunction was 5.9% in the 40s, 10.6% in the 50s, 16.7% in the 60s, 26.2% in the 70s, and 47.9% in the 80s, showing an increasing trend with age ( $p$  for linear trend  $< 0.001$ ). TCI and EAT-10 values increased with age, while occlusal force, ODK (/pa/, /ta/, /ka/), tongue pressure, and masticatory function decreased with age ( $p$  for linear trend  $< 0.001$ ). In particular, participants in their 80s exhibited significantly lower occlusal force, ODK (/ta/ and /ka/), tongue pressure, and masticatory function than other age groups ( $p < 0.001$ ).

### Conclusions

The prevalence of oral hypofunction increases with age, but the association between aging and the sub-symptoms of oral hypofunction was not uniform. Aging-related oral hypofunction should be managed based on the actual state of decline in each oral function at different ages. To further investigate the age-related decline in oral function, longitudinal studies that include larger samples of middle-aged adults are necessary in the future.

### Studies in Progress

Data collection has been completed for this study and analysis has been completed by the time this abstract is submitted.



## Learning Outcomes

Oral function in older adults is a focus of attention. We believe that understanding the state of oral function in middle age can help us to consider how we can provide interventions for older adults more early on.

## Presenting Author Brief CV

I graduated from Tokyo Medical and Dental University in 2013 and obtained a dental hygiene licence. I then went on to a master's programme and obtained PhD at Tokyo Medical and Dental University in 2022.

I have been working as a researcher at the Tokyo Metropolitan Institute for Geriatrics and Gerontology since 2015. My field of expertise is geriatric dentistry.

# Navigating emotional strain: a comprehensive analysis of burnout among dental hygienists

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## Problem Statement

Dental hygiene, an essential aspect of overall health, demands meticulous care, precision, and tireless dedication. However, within the realms of dental hygiene lies a prevalent and concerning issue - burnout. The demands placed on dental hygienists often pave the way for physical, emotional, and mental exhaustion, leading to burnout.

## Purpose

A survey to find out about burn out of dental hygienists in Florida, USA

## Methods

Participants: 23 dental hygienists. The burnout syndrome assessment questionnaire contains 9 statements:

1. I feel very nervous and anxious
2. I feel emotionally drained at the end of the workday
3. I find it difficult to relieve the emotional stress that arises after a working day
4. My job has a bad influence on my health
5. After a day of work, I have no energy left for anything
6. I have trouble sleeping because of work related worries
7. The emotional stress of work is too much for me
8. After a day of work, I can lash out at my loved ones
9. I feel overwhelmed by other people's/ patients' problems

The respondent can choose one of the answers for each question:

- Never
- Sometimes
- Often
- Almost every day

## Results

The prevalence of nervousness and anxiety among dental hygienists is notable, with a substantial portion of respondents indicating: often (26%) and daily (22%) experiences of these emotions. 9 % of participants do not feel any anxiety.

A significant number of respondents reported often feeling emotionally drained at the end of the working day (often-48%, almost every day -13 %), Only 4 % of participants do

not feel emotional drainage after work.

The struggle to relieve emotional stress after a working day is a recurring theme, affecting 26% of respondents. 39% noticed periodical difficulty to relieve working stress.

The data indicates a varied perception of how the job influences health, with a notable portion of respondents expressing concerns (35%).

Significant percent of respondents often or almost every day do not have energy to do anything after work (61%).

In general, hygienists have emotional stress at work: 52% - sometimes; 13% - every day.

22% hygienists often cannot control their emotions and lash out at their family.

## Conclusions

Analyzing the data, we can conclude that dental hygienists have a significant level of anxiety, emphasizing the need for targeted interventions and support systems to address the root causes of these emotions and foster a healthier work environment.

## Learning Outcomes

To raise on awareness of emotional burn out of dental hygienists.

## Presenting Author Brief CV

Peshkova Ella, PhD, CRDH

- Doctor of Medicine in Dentistry (D.M.D)- Belgorod State National Research University, Belgorod, Russia.

- Dissertation was defended and Ph.D. obtained from First Moscow State Medical University, Moscow, Russia.

- Associate of Science Degree in Dental Hygiene – Pensacola State College (PSC), Florida, USA

Clinical instructor at Dental Hygiene Program, Pensacola State College.

Dental hygienist at Comfort Dental of Pensacola.

Speaker and trainer at variety of dental conferences in USA, Europe and Russia.

An educator for Durr Dental, Germany

# A Study on the Prosthetic Status of the Elderly with Limited Activity

**Hyun-Joo Kang<sup>1\*</sup>**

<sup>1</sup> Professor(Department of Dental Hygiene, Kwangju Women's University), Korean Dental Hygienists Association, South Korea

## Problem Statement

The purpose of this study was to analyze the factors related to the prosthetic condition of 226 elderly people aged 65 years or older who had limited activities using the data of the 8th and 3rd year of the National Health and Nutrition Survey.

## Purpose

We aim to identify factors that affect the condition of prosthetics in elderly people with limited activity.

## Methods

Using data from the "National Health and Nutrition Examination Survey, 8th 3rd Year", 'Seniors aged 65 or older with limitations in activity'

We aimed to analyze influencing factors related to the condition of prosthesis in 226 people.

## Results

Factors affecting maxillary and mandibular fixation and need for removable dentures in elderly people with limited activity include gender.

Star, age, personal income, household income, marital status, residence, education level, maxillary prosthesis status, mandibular prosthesis status, dentistry this was the reason for non-treatment.

## Conclusions

The significance of this study is to reduce unmet dental care in elderly people with limited activity. Through this, we aim to increase the use and accessibility of dental healthcare and use it as basic data to help improve the oral health management system.

## Studies in Progress

Not applicable

## Learning Outcomes

Through this thesis, we can help increase the use and accessibility of dental care and improve the oral health care system. We plan to use it as basic data.

## Citation for Publication

The Society of Korean Culture and Convergence  
2023;45(12):701-709

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## Presenting Author Brief CV

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# Preliminary study on the need for infection control of high speed handpiece air hose in traditional dental unit chair

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## Problem Statement

Dental treatment procedures are performed using aerosol-generating equipment, such as high-speed handpieces, ultrasonic scalers, and 3-way syringes [1]. A dental clinic uses sanitizer to clean unit chair waterline to prevent cross-infection [2]. However, cross-infection can also occur through contaminated air hoses on handpieces, and air hoses are difficult to control with sanitizers.

## Purpose

This study aims to investigate the need for regular infection control measures for air hoses through bacterial culture tests on high-speed handpiece air hoses in traditional dental unit chairs.

## Methods

Bacteria collected from the high-speed air hole of traditional dental unit chairs in 10 dental clinics were incubated for 24 hours and compared in four experimental groups. Group I was a pure culture condition where nothing was collected, while group II was collected and cultured in sterilized triple distilled water using an autoclave. Group III was collected and cultured in a large air hole at high speed (Fig. 1 A) and group IV was collected and cultured in a small air hole at high speed (Fig. 1 B).

The following steps were conducted:

1. Microorganisms were detected inside the pipe using a sterilized triple distilled water in a high-speed air hose.
2. 3 ml of sterilized distilled water was injected into A and B of Fig. 1.
3. Injected sterilized distilled water was collected into a cryotube.
4. Microorganisms were cultivated in liquid medium for 24 hours.
5. The cultured microorganisms were placed in a Petri dish and were observed.

## Results

The results of the bacterial culture are shown in Fig 2.

No bacteria were detected in groups I and II in all 10 dental clinics. Bacteria were detected in groups III and IV in nine dental clinics, except for dental clinic H. For dental clinic H, there is no group III due to the nature of the high-speed handpiece used in dentistry, which does not have large holes. Since the older handpiece is a 3-hole type. No bacteria were detected in groups I and II, but bacteria were present in group IV.

## Conclusions

This preliminary study revealed that air hose sanitation management in standard dental unit chairs is necessary in order to prevent cross-infection, caused by aerosols, to dental staff and patients.

## Learning Outcomes

Need for Infection Control Measures for High-Speed Handpiece Air Hoses in traditional dental unit chairs

## Presenting Author Brief CV

Master of Dental Biomaterials, Seoul National University School of Dentistry.

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# Factors affecting the positive psychological capital of dental hygiene students

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## Problem Statement

Positive PsyCap is defined as an individual's positive psychological development state and is characterized by the parameters of self-efficacy, hope, ego resilience, and optimism. It is a major factor in achieving high performance in an organization. As dental hygiene students are exposed to various mental health problems, improving their positive PsyCap is necessary. However, empirical research on the factors affecting the positive PsyCap of dental hygiene students is lacking.

## Purpose

To improve the level of positive PsyCap in dental hygiene students, we explored the social, demographic, environmental, and emotional factors that affect positive PsyCap.

## Methods

Totally, 310 students from dental hygiene departments at junior colleges in Gyeonggi-do and Chungcheong-do participated in the study. A survey, including questions on positive PsyCap (self-efficacy, hope, optimism, and resilience), social support (social-related support, emotional support-related problems, daily life-related emotional support, daily life, and instrumental support-related problems), emotion regulation ability (self-emotion regulation and regulating the emotions of others), and social and demographic factors (sex, age, grade, residence type, financial support from parents, relationship with professors, and peer relationships), was conducted from November 9 to December 15, 2022. There were 70 survey questions; however, as high levels of construct validity and reliability were obtained, only 56 were finally included. Statistical analyses, including frequency analysis, independent sample t-test, one-way analysis of variance (Duncan's post-hoc test), correlation analysis, and multiple regression analysis, were performed using PASW Statistics (version 18.0; SPSS Inc., Chicago, IL, USA), with a significance level of .05.

## Results

Factors showing differences in the level of positive PsyCap were "grades," "relationship with professors," and "peer relationships." When grades were high and relationships with professors and peers were perceived as positive, the level of positive PsyCap was also higher.

Factors highly correlated with positive PsyCap were "self-emotion regulation" in the emotion regulation ability parameter and "emotional support related to daily life" and "social-related support" in the social support parameter.

Factors that affected positive PsyCap included "self-emotion regulation" in the emotion regulation ability parameter; "relationship with professor," "emotional support related to daily life," and "social-related support" in the social support parameter; and "grades" in the social and demographic factors parameter.

## Conclusions

Social support and emotion regulation ability improve the level of positive PsyCap among dental hygiene students. As the influencing factors differ for each subfactor, it is necessary to consider each factor carefully and find ways to improve the positive PsyCap of dental hygiene students.

## Learning Outcomes

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## Presenting Author Brief CV

# Pilot Study on Applicability of Quantitative Light-Induced Fluorescence-Digital (QLF-D) in Periodontitis-Induced Model

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<sup>2</sup> Oral Microbiology and Immunology, Yonsei University College of Dentistry, South Korea

## Problem Statement

Periodontitis, known as the most common oral disease, is caused by bacterial accumulation, leading to chronic inflammation, damage to gingival tissues, and bone resorption. Several animal models of periodontitis have been developed to study its mechanisms, leveraging the rich background information available about their immune systems. However, the evaluation of dental plaque formation in animals is limited, resulting in insufficient related research. Quantitative Light-Induced Fluorescence-Digital (QLF-D) is a useful tool for plaque quantification by detecting red fluorescence, reflecting bacterial activity.

## Purpose

This experiment aimed to confirm plaque presence using QLF-D in periodontitis-induced animal models and establish foundational diagnostic evaluation standards for these models.

## Methods

Periodontitis was induced by ligature ligation on the mandibular first molars of SD rats. Eighteen days after ligation, plaque images on the ligature were obtained using QLF-D (AIOBIO, Seoul, Korea). QLF-D was performed under two separate conditions (intraoral before sacrifice and extraoral after sacrifice), and the red fluorescent plaque area was analyzed using image analysis software. To confirm the induction of periodontitis, the infiltration of inflammatory cells and alveolar bone loss in ligatured molars were analyzed histologically.

## Results

After 18 days of ligature placement, ligated molars exhibited high levels of red fluorescence. Alveolar bone loss occurred concurrently with tissue degradation and infiltration of inflammatory cells around the ligated first molars. Images captured inside the oral cavity before sacrifice were limited in obtaining a reliable standard image due to the blue fluorescence from the rat's fur and variations in shooting

angles. However, lingual side images taken after extraction were reproducible and clear, and they were used for assessment.

## Conclusions

In the ligature ligation-induced periodontitis model, plaque formation could be evaluated using QLF-D, a method that proved challenging to diagnose through visual inspection alone.

## Learning Outcomes

In the ligature ligation-induced periodontitis model, plaque formation could be assessed using QLF-D.

## Presenting Author Brief CV

Assistant Professor, Dept. of Dental Hygiene, BaekSeok University

Academic affairs, Korean Society of Infection Control and Prevention in Dental Hygiene

## Effects of Oral Health Behavior and Mental Health on Metabolic Syndrome in Korean Adults

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<sup>3</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea

<sup>4</sup> Department of Dental Hygiene, Cunnam Techno University, South Korea

### Problem Statement

To lower the risk factors of metabolic syndrome and improve the quality of life through efficient health management, convergent management of whole-body health, mental health, and oral health, and effective dental hygiene interventions are needed to induce changes in correct oral health behavior.

### Purpose

This study investigates the effects of oral health behavior and mental health on metabolic syndrome in Korean adults, and in terms of oral health, effective dental hygiene interventions that can induce correct changes in oral health behavior and lower risk factors for metabolic syndrome, and efficient health management and the effects of oral health behavior and mental health on metabolic syndrome.

### Methods

A total of 4,227 Korean adults aged 20 years or older were selected as study subjects using raw data from the first year (2019) of the 8th period of the Korea National Health and Nutrition Examination Survey (KNHANES). The dependent variable was metabolic syndrome and the independent variables were general traits, oral health behavior, and mental health. To investigate the effects on metabolic syndrome, complex sample logistic regression analysis was performed.

### Results

The effect on metabolic syndrome was significantly higher in male than in 1.833 times in male, 2.914 times in 30~49 years old, and 3.855 times in 50~64 years old, and 3.929 times in people over 65 years old compared to 20~29 years old, and compared to those with a college degree or higher, those with a middle school degree or lower are 2.116 times, those with lower income levels are 1.507 times higher, those with middle-lower are 1.359 times higher, those with middle-

high are 1.401 times. Compared to non-smokers, smokers were 1.570 times higher than non-smokers and compared to those without speech problem and chewing difficulty, they were 1.717 times and 1.397 times higher, respectively and 1.973 times higher in those with 0~1 brushing times per day. Mental health did not affect prevalence of metabolic syndrome.

### Conclusions

It is necessary to improve maintain a healthy lifestyle to lower the risk of metabolic syndrome. It is necessary to establish effective dental hygiene customized education and an efficient health management system at the national level that can induce improvement of oral health behavior for the prevention and management of metabolic syndrome.

### Studies in Progress

Not applicable.

### Learning Outcomes

We aim to provide basic data for the development of an effective health and oral health management education intervention program that combines lifestyle factors and oral health factors to prevent metabolic syndrome.

### Citation for Publication

J Dent Hyg Sci Vol. 22, No. 2, 2022, pp.90-98  
<https://doi.org/10.17135/jdhs.2022.22.2.90>

### Presenting Author Brief CV

-Professor, Department of Dental Hygiene, Gwangyang Health Sciences University  
-Director of the Korean Society of Dental Hygiene Science

## Pilot survey for developing a perioperative oral health management educational program

**Aiko Hoshiai<sup>1,2\*</sup>, Yukiko Yamamura<sup>1</sup>, Hiromi Otsuka<sup>3</sup>, Yujeong Shin<sup>1,2</sup>, Itsuki Takazawa<sup>1,4</sup>, Yumi Ishikawa<sup>1</sup>**

<sup>1</sup> Oral Health Sciences, School of Health Sciences, Meikai University, Japan

<sup>2</sup> Department of Pediatric Dentistry/Special Needs Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

<sup>3</sup> A Public Interest Incorporated Association, Tokyo Dental Hygienists' Association, Japan

<sup>4</sup> Department of Oral Health Care Education, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

### Problem Statement

Preoperative oral health management reduces postoperative complications and is useful for preventing wound infections and aspiration pneumonia. However, there have been few reports on the educational content necessary for perioperative oral health management. It is necessary to standardize perioperative oral health management education in educational institutions for dental hygienists in Japan.

### Purpose / Goals / Objective

This study aimed to evaluate the original educational video materials that we created to develop an educational program that will become the standard for perioperative oral health management education at domestic dental hygienist educational institutions.

### Key Features

We created original educational video materials for lectures and practical training on perioperative oral health management that could be used by dental hygienists at educational institutions. We conducted lectures and practical training using original educational video materials for 32 students enrolled in the third year of the Department of Oral Health Sciences, School of Health Sciences, Meikai University. We investigated the students' level of achievement toward the attainment targets after the lecture and practical training. This study was approved by the Ethics Committee of the Faculty of Dentistry, Meikai University (approval number: A2017).

### Impact

We prepared 29 attainment targets related to perioperative oral health management, including general statements,

understanding the patient's condition, medical cooperation, dental hygienist affairs, oral health management of head and neck surgery patients, chemotherapy patients, radiotherapy patients, and medical fees. As a result of comparing the achievement level for the attainment targets before and after the lecture, it was found that the achievement level for all attainment targets had increased. However, attainment targets that are difficult to achieve in practice, such as psychological support methods, tend to have a low level of achievement. Regarding practical training, 70% of the students were able to collect information from the original educational video materials. 40% of the students were able to interpret and analyze the collected information. 20% of the students were able to organize subject and objective data and, conduct dental hygiene assessment. Only 3% of students were able to develop a dental hygiene intervention plan.

### Conclusions

We believe that lectures on perioperative oral health management should be made more relevant to the clinical situation. For practical training in perioperative oral health management, we suggest increasing the number of cases in the original educational video materials so that students can experience many cycles of information collection, interpretation, and analysis of information, dental hygiene assessment, and intervention planning.

### Learning Outcomes

We would like you to learn about the educational methods for perioperative oral health management in Japan and utilize them at educational institutions for dental hygienists in their respective countries.



## Presenting Author Brief CV

### Education

Doctor of Philosophy in Dental Science, Tokyo Medical and Dental University, 2022

### Professional Experience

- Department of Oral Health Sciences, School of Health Sciences, Meikai University, Senior Lecturer, 2019-Present
- The Tokyo College of Dental Hygiene, 2014-2018
- Tokyo Medical and Dental University Hospital, 2005-2012

- The University of Tokyo Hospital, 2002-2005

### Skills and qualifications

- dental hygienist
- Dental hygienist certified by the Japanese Academy of Maxillofacial Prosthetics (JAMP)

### Awards and honor

Academic Paper Encouragement Award, Sunstar Foundation Award

Japan Dental Hygienists Association, A case of radiotherapy patient that solved various issues using the dental hygiene process, 2020

### Professional Association

- The Japan Society dental hygiene, 2007-Present
- The Japanese Academy of Maxillofacial Prosthetics, 2010-Present
- The Japan Society of Dental Hygiene Education, 2014-Present
- The Japanese Society for Disability and Oral Health, 2016-Present

# Effect on learning strategies and academic self-efficacy of dental hygiene students on grit

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<sup>2</sup> Dental Hygiene, EULJI UNIVERSITY, South Korea

## Problem Statement

Grit is the ability to overcome obstacles and persistently pursue long-term goals. Thus, it is an important ingredient for achieving success. The grit level of dental hygienists is a major factor affecting job competency. Since grit is not developed within a short period, it is necessary to cultivate it from the time one becomes a dental hygiene student. However, research on grit levels in dental hygiene students is lacking.

## Purpose

To identify ways to improve the grit level of dental hygiene students, we analyzed the impact of learning strategies and academic self-efficacy on grit.

## Methods

Overall, 274 students attending the Department of Dental Hygiene participated in the study. A survey, including questions on learning strategies (surface-level cognitive strategies, deep-level cognitive strategies, and resource management strategies), academic self-efficacy (self-regulation efficacy, confidence, and task difficulty preference), grit (sustained interest and persistent effort), other characteristics (average study time per week, control of smartphone use time, ability to control smartphones, trust in professors, distrust in parents, etc.), and general characteristics (sex, field of study, grade, and average grade), was conducted among the participants from November 8 to December 9, 2022. There were 99 survey questions; however, as high levels of construct validity and reliability were obtained, 59 questions were finally included. Statistical analyses, including frequency analysis, independent sample t-test, correlation analysis, and multiple regression analysis, were performed using PASW Statistics (version 18.0; SPSS Inc., Chicago, IL, USA) with a significance level of .05.

## Results

Factors influencing the “grit-sustained interest” of third-

year dental hygiene students were “resource management” in the learning strategy parameter and “confidence” and “task difficulty preference” in the academic self-efficacy parameter. Factors affecting the “grit-sustained interest” of fourth-year dental hygiene students included “average study time per week,” “inability to control smartphone use” and “surface-level cognition” in the learning strategy parameter; “resource management” and “academic self-efficacy” appeared as factors of “self-regulation efficacy” and “confidence.”

Factors influencing the “grit-persistent effort” of third-year dental hygiene students were “self-regulation efficacy” and “task difficulty preference” in the academic self-efficacy parameter. Factors that influenced the “grit-persistent effort” of fourth-year dental hygiene students included “self-regulatory efficacy,” “grade,” “control of smartphone use time,” and “trust of professor” in the academic self-efficacy parameter. It appeared to be a factor in “preference for task difficulty.”

## Conclusions

If dental hygiene students improve their study strategies and academic self-efficacy, their grit will also improve. However, specific approaches should differ for each parameter.

## Learning Outcomes

If dental hygiene students improve their study strategies and academic self-efficacy, their grit will also improve. However, specific approaches should differ for each parameter.

## Presenting Author Brief CV

# Validity of developing information content for clients of the dental hygiene students' scaling program : Based on Metaverse

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<sup>1</sup> Department of Dental Hygiene, Yonsei University, South Korea

## Problem Statement

When you do not know what is happening in your mouth during dental treatment, using instruments or removing tartar, anxiety is stimulated. Anxiety has been reported in dental student clinics.

Providing information is used as one of the ways to reduce dental anxiety and fear, and the metaverse allows for new experiences that are impossible in the real world, and this has shown a positive effect on anxiety. The main target of the practice is people in their 20s and 30s, so it is meaningful to develop content using the metaverse after the pandemic.

## Purpose

The purpose of this study is to develop visit information contents for patients in the dental hygiene student's scaling program using metaverse.

## Methods

The research procedure is divided into three stages: literature review and content design, development, and validity verification. The content was composed based on literature reviews, dental hygiene process, and clinical dental hygiene practice-related subjects. The metaverse environment was built according to the content components. A content validity verification was conducted on six professor and instructors related to clinical dental hygiene.

## Results

The metaverse environment was established according to the content composition and platform selection. The components of the content consisted of directions, reception information, and dental hygiene process, and the metaverse space map was designed to be similar to the actual location and movement route. The content validity of the content was calculated with a I-CVI value of 0.90.

## Conclusions

The visit information content provides accurate and

concise information that is easy to understand for 'clinical dental hygiene process practice' clients.

Metaverse is an interesting delivery medium for providing environment and information, and we suggest that it be used in more diverse dental hygiene education and clinical environments through future effectiveness evaluation.

## Learning Outcomes

I hope that this can be an opportunity to think about various methods for patient management in dental hygiene education and clinical environments.

## Presenting Author Brief CV

I am a clinical dental hygienist and graduate student.

I am currently a doctoral student in the Department of Dental Hygiene at Yonsei University. My major is dental hygiene. My areas of interest include dental infection control and clinical environments.

## Training of general nurses in stomatology hospital

**Jingying Hu<sup>1\*</sup>**

<sup>1</sup> Peking University Stomatological Hospital, hjingying@sina.com, China

### Problem Statement

The nursing work in the outpatient department of oral diagnosis and treatment institutions has its particularity, which not only includes reception, triage service and health education, but also includes the four-hand operation beside the chair coordinated with the doctor's diagnosis and treatment process. Therefore, for nurses in the comprehensive specialty of oral medicine, in addition to mastering the corresponding nursing theories and specialized nursing skills of various oral specialties, Oral general care skills must also be mastered to be competent for the job. At present, China's oral professional nursing education system is not perfect, oral diagnosis and treatment institutions have become the main places for oral outpatient nurses to contact and learn oral professional knowledge and skills, on-the-job training is mostly "master apprentice" type of non-standard training, lack of systematic training in theory and practice.

### Purpose

In order to ensure the coordinated development of medical care and guarantee the quality of nursing, this study analyzed and discussed the standardized training program of general outpatient nurses in stomatology hospital

### Methods

Based on the results of literature analysis, expert interviews and group discussions, the competency index system for dental nurses developed by Zhang Yizhen et al. was used for reference according to Spencer's competency dictionary.

### Results

The establishment of a sound evaluation index system for the core competence of stomatology nurses is conducive to providing a general description of the core competence of stomatology nurses, showing the knowledge, skills, attitude and behavior standards that stomatology nurses should have, and providing a basis for the training curriculum of general nurses in stomatology hospitals, and can also be

used to evaluate the clinical practice ability of stomatology nurses

### Conclusions

Through exploring the specific implementation plan of standardized training for general nurses in stomatology hospitals, it provides a reference for the further promotion of standardized training for general nurses in stomatology hospitals

### Learning Outcomes

Development of training rules and norms for dental nurses in general practice

### Presenting Author Brief CV

Deputy Director of Nursing Department, Peking University Stomatological Hospital, Deputy chief nurse, Responsible for hospital nursing teaching.

## Red biofluorescence for assessing longitudinal tooth fracture

**Hye-min Ku<sup>1</sup>, Baek-Il Kim<sup>2\*</sup>**

<sup>1</sup> Department of conservative dentistry, Yonsei University college of dentistry, South Korea

<sup>2</sup> Department of preventive dentistry, Yonsei University college of dentistry, South Korea

### Problem Statement

Previous studies have demonstrated the possibility of detecting tooth lesions and quantifying cracked tooth depths using biofluorescence, as well as detecting bacterial contamination in root fractures using red biofluorescence. However, no study has demonstrated an association between fractures with red fluorescence and clinical diagnostic findings related to the fractures, such as the presence of bone resorption along it.

### Purpose

This study was designed to determine whether biofluorescence emitted from longitudinal tooth fractures (LTFs) differs between fracture types, with the aim of determining which clinical factors are related to red biofluorescence at the fracture line.

### Methods

Thirty-three extracted teeth were classified into cracked teeth, split teeth, and root fractures using LTF types according to the American Association of Endodontists classification. The types of LTFs were identified using an operating microscope. LTF biofluorescence was captured using a biofluorescence technique. Clinical examinations were performed using the preoperative factors from clinical and radiographic findings.

### Results

Red biofluorescence was identified in 82% and 83% of cracked and split teeth, respectively. None of the vertical root fractures exhibited red biofluorescence ( $p < 0.001$ ). When red biofluorescence was identified on the outer tooth surface, it penetrated into the crack line, but biofluorescence that was not red at the tooth surface did not penetrate the fracture line. Among the examined preoperative clinical factors, differences between the presence and absence of red biofluorescence were identified for sinus tract formation ( $p = 0.021$ ), and radiographic features ( $p = 0.027$ ). Regression analysis revealed a significant factor related

to the red biofluorescence, with sinus tract formation having a negative effect on red biofluorescence (odds ratio [OR]=0.09). The presence of comprehensive periradicular lesions in radiography had a positive effect on red biofluorescence (OR=5.04).

### Conclusions

Cracks originating from tooth crowns in certain types of LTFs were associated with red biofluorescence, and cracks with red biofluorescence were associated with extensive periodontal bone resorption around the teeth roots.

### Studies in Progress

This study has been published in its entirety.

### Learning Outcomes

The red fluorescence of the longitudinal tooth fractures can be used to indicate risk of comprehensive periodontal destruction.

### Citation for Publication

Ku HM, Kim E, Kim BI. Red fluorescence for assessing longitudinal tooth fractures. Photodiagnosis Photodyn Ther. 2022 Jun;38:102845. doi: 10.1016/j.pdpdt.2022.102845.

### Presenting Author Brief CV

Post-doctor, Department of conservative dentistry, Yonsei University College of dentistry

## Effect of Playing Harmonica on Dysphagia Improvement in the Elderly : Interventional study

**Bo-Young Lee<sup>1\*</sup>, Hyeon-Sook Kwun<sup>1</sup>, Jeong-Hee Park<sup>1</sup>, Mi-Gyung Seong<sup>1</sup>, Nam-Suk Heo<sup>1</sup>**

<sup>1</sup> Dental Hygiene, Masan university, South Korea

### Problem Statement

Aging alters swallowing function. When swallowing strength weakens, it can lead to dysphagia. Dysphagia can cause nutritional deficiencies, aspiration pneumonia, and negatively impact social and emotional well-being.

### Purpose

To evaluate the improving effects of dysphagia, orofacial muscle strength and oral moisture through harmonica playing performance.

### Methods

The subjects were a total of 61 elderly living at a region of Gyeongsangnam-do who 31 people (intervention group, Gr I) selected from the Harmonica Education Center and 30 people (control group, Gr C) selected from the Senior Welfare Center. The intervention conducted for 8 weeks with singing, step-by-step practice of playing, harmonica playing and ensemble. The Korean version of the Dysphagia Handicap Index (DHI), Iowa Oral Performance Instrument (IOPI) and oral moisture test equipment (Mucus, Life Co., Saitama, Japan) were used as measurement tools. Data analysis was performed using SPSS ver. 25.0. DHI, muscle strength of tongue, lip, and cheek and oral moisture of when before and after intervention were compared with independent t-test. And the effect of the intervention on the change in DHI and the factors affecting DHI were evaluated by multivariate analysis.

### Results

The two compared group secured as homogeneous with almost no statistically different characteristics. As a result of the before-and-after comparison, the followings were significantly changed in Gr I; DHI decreased by 3.74 points, instead, increased by oral moisture by 4.15 points, tongue elevation pressure by 3.95 kPa, lip pressure by 3.64 kPa, left cheek pressure by 2.91 kPa, and right cheek pressure by 3.19 kPa. However, there were mostly no significant changes in Gr C. By the subject's characteristics, DHI was significant lower in the case of younger age ( $p=0.007$ ), more remaining teeth ( $p<0.001$ ), use dental floss ( $p=0.032$ ), and get regular oral examination ( $p<0.001$ ). As a result of multiple logistic

regression analysis, join in Gr I showed an apparent effect in reducing DHI (improvement of dysphagia), and, DHI were significantly influenced by the number of oral healthy behaviors ( $\beta=-3.231$ ,  $p=0.004$ ), tongue elevation pressure ( $\beta=-0.643$ ,  $p=0.005$ ) and the number of remaining teeth ( $\beta=-0.526$ ,  $p=0.068$ ).

### Conclusions

Participation in harmonica playing intervention program identified as effective for improving dysphagia, orofacial muscle strength and oral moisture in the elderly. Swallowing function is one of the most basic life maintaining activities through nutritional intake and because it easily deteriorated in the elderly, strengthening the interest and efforts on dysphagia would be necessary in the oral health field.

### Learning Outcomes

1. Understanding Dysphagia in the Elderly
2. Understanding of Swallowing Function-Elements and Dysphagia Influencing Factors
3. Realization The importance of Focus on Dysphagia in Oral Health

### Presenting Author Brief CV

02/2021 - 12/2023:

- Adjunct Prof. Department of dental hygiene, Masan University and Taegu University of science, Korea.
- Dental hygienist, Kang Jinho Dental clinic.

03/2018 - 08/2023:

PhD in Public Health,  
Department of Public Health,  
InJe University, Korea.

Title: Effect of Playing Harmonica on Dysphagia Improvement in the Elderly : Interventional study

03/2012 - 02/2014:

Master of Science in Dentistry,  
Department of Dentistry,  
Pusan National University, Korea.

Title: Inhibition of oxidative stress by chios gum mastic is associated with autophagy.



# Evaluating the Integration of Social Entrepreneurship into a 4-Year Dental Hygiene Degree Program (DHDP)

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## Problem Statement

The University of British Columbia's (UBC) DHDP recently completed a curriculum renewal process during which an entrepreneurship competency domain was created. Based on literature in health care, the concept of entrepreneurship was shaped to include 'social entrepreneurship' and 'social intrapreneurship' to be inclusive of all dental hygiene practice environments. A new Social Entrepreneurship & Leadership course was created to support the new domain. After the development of this new domain, the Federation of Dental Hygiene Regulators of Canada revised the Canadian national dental hygiene competencies with the addition of an entrepreneurial sub-competency within the domain of Practice Management thus now making the entrepreneurial competency a national accreditation requirement.

## Purpose

The purpose of this study is to evaluate the outcome of the Social Entrepreneurship curriculum by assessing senior students' confidence levels and attitudes in the Social Entrepreneurship domain and associated sub-competencies (n=12). The research questions are:

1. How confident are graduating dental hygiene students in their ability to demonstrate the sub-competencies in the Social Entrepreneurship domain?
2. How important do the graduating dental hygiene students view each of the Social Entrepreneurship sub-competencies to their future career as a dental hygienist?
3. What type of learning activities and experiences, if any, were helpful and/or less helpful to students in gaining the sub-competencies?

## Methods

This 3-year longitudinal study in progress will ask UBC 4th year DHDP students (n=23 per year) to complete the Readiness for Social Entrepreneurship survey upon graduation in 2024 to 2026 inclusive. Questions will include Likert scales and open-ended questions. Quantitative analysis will be conducted using the SPSS software for descriptive and inferential statistical analysis. Thematic analysis using descriptive and in-vivo coding will be used for open-ended responses.

## Results

The current social entrepreneurial domain is a unique domain in oral health education in Canada and internationally. It emphasizes the social responsibility of dental hygienists regardless of private or public settings. The findings have the potential to influence oral health students and educators to place more emphasis on the 'social good' of their actions, and to stimulate a broader discussion about entrepreneurship in the oral health professions.

## Conclusions

The authors anticipate being able to share insight into students' educational preparedness for social entrepreneurship by assessing their confidence levels in the Social Entrepreneurship domain. The findings could inform Canadian and international oral health educators, accreditation agencies, and regulators.

## Studies in Progress

Initial findings from the study will be presented at the conference.

## Learning Outcomes

1. To discuss initial findings from the newly developed Social Entrepreneurship curriculum.
2. To explore students' confidence levels and attitudes in the Social Entrepreneurship domain and associated sub-competencies.
3. To identify graduate views on learning activities and their experiences in the Social Entrepreneurship and Leadership course.

## Citation for Publication

NA

## Presenting Author Brief CV

Salima Alibhai received her BScDH from the Medical College of Georgia and MPH from the University of Washington. She is the Program Director of the Dental Hygiene Degree Program at the University of British Columbia. Salima is leading the research on the newly implemented Social Entrepreneurship and Leadership course.

# Comparison of Cytotoxicity and Genotoxicity in Three Types of Indirect Restorative Materials on Human Periodontal Stem Cells

**Soyeong Park<sup>1\*</sup>**

<sup>1</sup> Department of Dental Hygiene, Dongseo University, South Korea

## Problem Statement

It is necessary to apply RelyX RC or Nexus RMGIC only to localized areas, and the safety of various resin composites used in clinical dentistry must be evaluated. As resin comes into direct contact with periodontal tissues, further research is necessary to determine the cellular mechanisms and the degree of cytotoxicity.

## Purpose

This study aimed to compare the cell toxicity and biological characteristics of Ketac GIC (glass ionomer cement), Nexus RMGIC (resin-modified glass ionomer cement), and RelyX RC (resin cement) in human periodontal stem cells (PDSCs).

## Methods

To compare the effects of Ketac GIC, Nexus RMGIC, and RelyX RC on PDSCs, the cements were diluted from 1:2 to 1:8. PDSCs were then treated with the serially diluted cements with or without N-acetyl-cysteine (NAC), and cell survival was measured using water-soluble tetrazolium salt (WST-1) assay. Intracellular reactive oxygen species (ROS) was measured using 2',7'-dichlorofluorescein diacetate (DCFDA), and western blot analysis was performed to observe phosphorylation and activation of extracellular signal-regulated kinase (ERK) by Nexus RMGIC or RelyX RC.

## Results

Cell death and proliferation were dose-dependently reduced following Nexus RMGIC or RelyX RC treatment. In addition, Nexus RMGIC or RelyX RC showed an increase in intracellular ROS generation compared to Ketac GIC. Pretreatment with NAC confirmed the suppression of cell toxicity and ROS generation induced by Nexus RMGIC or RelyX RC. Nexus RMGIC or RelyX RC activates ERK phosphorylation, not p38 phosphorylation, in PDSCs.

## Conclusions

This study showed that the treatment with Nexus RMGIC or RelyX generates intracellular ROS and cell death through the

ERK signaling pathway in PDSCs. In contrast, these effects were not observed with Ketac GIC, indicating that resin-based materials may have cytotoxic and genotoxic effects on PDSCs.

## Learning Outcomes

Although resin monomer-mediated cell cytotoxicity has been reported, the biocompatibility of new resin-based materials is unclear. It is essential to study various features of dental restorative and prosthetic materials as they contact tooth structures, periodontium, and oral soft tissues. Thus, this study compares the cell toxicity and biological characteristics of Ketac GIC (glass ionomer cement), Nexus RMGIC (resin-modified glass ionomer cement), and RelyX RC (resin cement) in human periodontal stem cells (PDSCs).

## Citation for Publication

Park SY, Lee KH. Comparison of Cytotoxicity and Genotoxicity in Three Types of Indirect Restorative Materials on Human Periodontal Stem Cells. *Oral Health Prev Dent*. 2023 Jul 13;21(1):243-250. doi: 10.3290/j.ohpd.b4211055. PMID: 37439802.

## Presenting Author Brief CV

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## In vitro wear behavior of materials for additive manufacturing opposing deciduous dentition

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<sup>1</sup> Pediatric Dentistry/Special Needs Dentistry, Tokyo Medical and Dental University, Japan

<sup>2</sup> Oral Health Sciences, School of Health Sciences, Meikai University, Japan

### Problem Statement

Digital dentistry, additive manufacturing (AM), has developed significantly. However, with the development and improvement of materials and machine for AM, the development of digital dentistry in the field of pediatric dentistry is scarce. Furthermore, pediatric dental materials should maintain the occlusal height without interfering with growth and development of child.

### Purpose

The aim of this study was used to evaluate the surface wear characteristics of materials for AM when antagonized by deciduous teeth in a simulated occlusal test and detect materials for AM were suitable for restoring deciduous teeth, when compared deciduous enamel-enamel wear.

### Methods

The prepared upper specimens were subjected to impacting-sliding wear test (ISWT) machine against the flattened enamel of deciduous molars on lower specimens. The samples were subjected to 20,000 load cycles between the opposing surfaces under controlled conditions. In the upper specimens, five groups (n=9): four types of additively manufactured materials and a deciduous enamel groups were tested in this study. The enamel-to-enamel group was used as the control. In order to qualitatively and quantitatively evaluate wear surface area, wear depth, wear volumetric loss, and surface roughness were measured with a confocal laser scanning microscopy (CLSM) and scanning electron microscopy (SEM). Data obtained were statistically analyzed by Kruskal-Wallis test and Dunn's test with Bonferroni correction. This study was approved by the Ethics Committee of Tokyo Medical and Dental University (IRB no. D069-01).

### Results

In the upper specimens, SEM images of wear surfaces of the four AM materials and enamel showed morphological differences. Also, the results of worn surface area, volumetric

loss, and damaged opposing enamel showed that one AM materials showed significant difference between control group. In the lower specimens, enamel specimens, AM materials showed higher volumetric loss and, damaged opposing enamel than control group.

### Conclusions

We concluded that the materials for AM showed different wear behavior among the groups when compared to control group. In the upper specimens, AM materials showed large wear to antagonistic primary enamel. Also, In the lower specimens, AM materials caused larger enamel wear and damage. This might indicate that additive manufactured dental materials could be considered as a restorative treatment in deciduous teeth. Therefore, dental hygienist are in perfect position to be functional observers.

Continued development of the existing of materials in pediatric dentistry, dental hygienist should recognize the wear properties and closely monitor of restorations and opposing surface in oral condition.

### Studies in Progress

It is final results.

### Learning Outcomes

Compared with permanent tooth, deciduous tooth enamel showed lower resistance to wear. With the development of restorative materials in pediatric dentistry, dental hygienist also need to understand materials properties and monitor in oral condition.

### Citation for Publication

Yujeong Shin, Kanae Wada, Yumi Tsuchida, Manhal Ijbara, Masaomi Ikeda, Hidekazu Takahashi, Tsutomu Iwamoto, Wear behavior of materials for additive manufacturing after simulated occlusion of deciduous dentition, Journal of the Mechanical Behavior of Biomedical Materials(2023)138:105627



## Presenting Author Brief CV

### <Education>

[Mar, 2013 - Feb, 2017] Department of Dental hygiene, Dankook University, Republic of Korea (Bachelor of Dental hygiene Surgery)

[Apr, 2017 - Mar, 2019] Department of Preventive Oral Health Care Sciences, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan (Master of Oral Health Care Science)

[Apr, 2019 - Mar, 2023] Department of Pediatric Dentistry / Special Needs Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan (Doctor of Philosophy in Dental Science)

[Apr, 2023 - Now] Graduate Research Student, Department of Pediatric Dentistry / Special Needs Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Japan

### <License>

Dental hygienist in Republic of Korea, Dental hygienist in Japan

### <Career>

[2023.4 - Now] Assistant professor, Oral Health Sciences, School of Health sciences, Meikai University, JAPAN



# Analysis of Quantitative Light-Induced Fluorescence Images for the Assessment of Bacterial Activity and Distribution of Tongue Coating

Hyun Kyung Kang<sup>1\*</sup>, Yu-Rin Kim<sup>1</sup>

<sup>1</sup> College of Health and Welfare, Dental Hygiene, Silla University, South Korea

## Problem Statement

Since social communication has become essential in establishing diverse interpersonal relations, the management of oral malodor is highly important for social and health reasons. Oral malodor is an unpleasant smell from the oral cavity due to physiological or various pathological causes. The common intraoral sites that induce oral malodor are the tongue and the subgingival area. In particular, about 60% of all halitosis cases originate from the coating on the tongue surface. This occurs due to the accumulation of bacteria, a large number of epithelial cells detached from the oral cavity, blood metabolites, and food debris. It is necessary to confirm the association of tongue coating with oral malodor by investigating not only its distribution but also the activity of halitosis-inducing bacteria. Therefore, diagnostic techniques to quantitatively identify tongue coating and bacterial activity are required.

## Purpose

This study aimed to verify and to validate the correlation between, and validate the assessment of, bacterial activity and the distribution of tongue coating by analyzing quantitative light-induced fluorescence (QLF) images for the diagnosis of oral malodor.

## Methods

Oral malodor was measured using the Twin Breasor II, and bacterial activity and the distribution of tongue coating were investigated using quantitative light-induced fluorescence (QLF) images. Bacterial activity and the distribution of tongue coating were quantitatively analyzed by dividing the tongue into six areas using the TB01 1.05 software. ROC curves were generated using MedCalc® software to validate the diagnosis of oral malodor, the testing of bacterial activity, and the distribution of tongue coating.

## Results

Bacterial activity and the distribution of tongue coating showed a very strong association with each other ( $r = 0.937$ ,  $p < 0.01$ ), and were significantly higher in the oral malodor group ( $p < 0.05$ ). The distribution of tongue coating was highly correlated with H<sub>2</sub>S ( $r = 0.223$ ,  $p < 0.01$ ) but not associated with

CH<sub>3</sub>SH. Sensitivity, specificity, and the area under the curve confirmed the high accuracy of this method in assessing bacterial activity and the distribution of tongue coating in the diagnosis of oral malodor.

## Conclusions

Since quantitative light-induced fluorescence (QLF) images provide significant accuracy during quantitative analysis in the identification of bacterial activity and the distribution of tongue coating, systematic management of tongue coating and reduced oral malodor can be achieved by actively using quantitative light-induced fluorescence (QLF) images and oral malodor measurement

## Learning Outcomes

1. Digital QLF images showed a higher distribution of tongue coating and bacterial activity in the oral malodor group than in the non-oral malodor group through quantitative analysis.
2. Since both tests showed significant accuracy in the assessment of oral malodor, systematic management of tongue coating and reduced oral malodor can be achieved by actively using digital QLF images and oral malodor measurements.

## Citation for Publication

This study was published in the journal HEALTHCARE on January 23.

Healthcare 2023, 11(2), 217; <https://doi.org/10.3390/healthcare11020217>

## Presenting Author Brief CV

Hyun-Kyung Kang has been a professor of dental hygiene from 2005 to the present, and she has been a professor at Silla University in Busan, South Korea since 2010. And she has been a graduate school head professor since 2014.

Her research interests are mainly in clinical dental hygiene, oral prevention, and analysis using various equipment. she has conducted research on oral prevention with Q-ray and am currently conducting research on microcurrent toothbrushes. She served as the president of the Korean Society of Oral Health Sciences and is currently working as the Director of External Affairs at Silla University.

## Distribution of oral microorganisms in 3-year-old children according to the degree of dental plaque deposition detected using QLF

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<sup>10</sup> -, Seongdong-gu Health Center, South Korea

<sup>11</sup> Department of Dental Hygiene, Baekseok Culture University, South Korea

<sup>12</sup> -, Kunkuk University, South Korea

### Problem Statement

Dental plaque assessment using QLF is already widely used. However, specific information on oral microorganisms in plaque detected by QLF was limited, especially in children.

### Purpose

The purpose of this study was to determine the prevalence of oral disease-related bacteria using real-time polymerase chain reaction (PCR) analysis in 3-year-old Korean children and to determine the correlation between the amount of plaque deposition and dental caries experience (dft) detected by QLF.

### Methods

Real-time polymerase chain reaction (PCR) analysis was used to determine the prevalence and amount of 10 major types of bacteria related to oral diseases in 99 children.

Amount of plaque deposition in the anterior teeth (PD) were evaluated using QLF. In addition, caries experience and untreated caries in primary teeth (dft and dt) were evaluated by visual inspection.

The correlation between the PD, dft and dt and the numbers of DNA of each bacterial species, the complex classified according to the characteristics, and the total bacteria were calculated.

### Results

*F. nucleatum* was detected in all subjects (100%,  $n = 99$ ). The numbers of positive bacteria were 1(1.0%), 43(43.4%), 11(11.1%), 1(1.0%), 42(42.4%), 15(15.2%), 1(1%), 23(23.2%) for *A. actinomycetemcomitans*, *P. gingivalis*, *T. forsythia*, *P. intermedia*, *P. nigrescens*, *S. mutans*, *S. sobrinus*, *L. casei*, respectively.

PD evaluated by QLF showed a significant positive correlation with the DNA copy numbers of *F. nucleatum* ( $r = 0.420$ ,  $p < 0.001$ ) and *P. nigrescens* ( $r = 0.464$ ,  $p < 0.001$ ). and also showed a significant correlation with orange complex ( $r = 0.494$ ,  $p < 0.001$ ) and total bacteria ( $r = 0.394$ ,  $p < 0.001$ ).

dft and dt showed no significant correlation with the number of DNA of each bacterial species and total bacteria. However, in the correlation with yellow complex, both dft and dt showed a significant positive correlation. ( $r = 0.276$ ,  $p = 0.006$  and  $r = 0.386$ ,  $p < 0.001$ , respectively)

### Conclusions

In 3-year-old children, a significant correlation was confirmed between the amount of dental plaque deposition measured by QLF and the amount of oral microorganisms belonging to the orange complex. On the other hand, the number of caries experience and untreated caries showed correlations with microorganisms belonging to the yellow complex.



## Learning Outcomes

The dental plaque observed using QLF in children may be related to microorganisms of the orange complex, which acts as an intermediate link connecting the early microbial community to the later community. Therefore, detection of plaque in children using QLF could be a tool for predicting and preventing oral diseases.

## Presenting Author Brief CV

- Ph.D. (Preventive Dentistry)
- Post doc.
- Dental hygienist
- Adjunct Faculty (Yonsei University College of Dentistry, Namseoul University, Baekseok University)

# Recognition of dental hygiene students about the advanced dental hygienist system for the elderly and people with disabilities

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<sup>3</sup> Department of Dental Hygiene, Howon University, South Korea

## Problem Statement

Dental hygienists should be recognized for their expertise in oral hygiene management for the elderly and the disabled and they should be recognized as a professional resource in the national policy.

## Purpose

This study aimed to investigate the awareness of students majoring in dental hygiene regarding the advanced dental hygiene system for the elderly and people with disabilities.

## Methods

From September 25 to October 20, 2023, an online survey was conducted with junior and senior students in 27 universities, including eight in the Seoul area, seven in the Chungcheong area, eight in the Yeongnam area, and four in the Honam area. Data analysis methods included frequency analysis, independent t-test, and one-way ANOVA.

## Results

After graduation, 72.9% of students were willing to work as advanced dental hygienists for the elderly and people with disabilities, and had greater recognition of the system ( $p=0.042$ ), role ( $p<0.001$ ), and expected effect ( $p=0.027$ ) of an advanced dental hygienist than students who were not willing to work in this capacity.

## Conclusions

It is necessary to introduce a system that recognizes advanced dental hygienists for their expertise in oral hygiene management for the elderly and people with disabilities.

## Learning Outcomes

This outcomes will be utilized as a one of the various institutional criteria in the specialized advanced dental

hygienist system.

## Citation for Publication

This study was published in the Journal of Korean society of Dental Hygiene (J Korean Soc Dent Hyg) in December 2023.

## Presenting Author Brief CV

Professor, Department of Dental Hygiene, Chungcheong University, Republic of Korea

## The impact of demographics factors and oral conditions on tongue pressure

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<sup>2</sup> Prosthodontics, Seoul National University School of Dentistry, South Korea

### Problem Statement

Aging and aging-related degenerative diseases, head and neck cancers, surgical interventions, and radiation therapy in head and neck regions are frequently related to oral dysphagia, and there is a decline in tongue pressure. Dysphagia is commonly associated with several complications, such as choking, dehydration, and malnutrition, which then lead to an impaired quality of life (QoL) in elderly. Hence, in Korea, where the elderly population is increasing, the evaluation of tongue function is crucial in dysphagia rehabilitation, and it should be considered to be integrated into geriatric oral health management programs for elderly patients in the future.

### Purpose

The purpose of this study was to determine the influence of age, gender, and body mass index (BMI) on tongue pressure, and to evaluate the correlation between tongue pressure and oral conditions such as tongue volume (TV), cross-sectional area (CSA) of the masseter muscle, maximum occlusal force (MOF), and occlusal contact area (OCA) in healthy individuals. Additionally, the correlation between maximum tongue pressure (MTP) and swallowing tongue pressure (STP) was also analyzed.

### Methods

10 healthy young individuals ( $\leq 40$  years) and 10 healthy elderly individuals ( $\geq 60$  years) with normal oral structures and swallowing function were included. TV (cm<sup>3</sup>) and CSA of masseter muscle (cm<sup>2</sup>) were evaluated using the MRI DICOM data of each participant. MOF (N) and OCA (mm<sup>2</sup>) were calculated using an occlusal force analysis system. MTP and STP (kPa) were measured using a tongue pressure measurement device.

### Results

Results showed that age had a significant effect on MTP, and it was indicated that 0.325 kPa of MTP was reduced when a year of age was increased. Moreover, there were significant positive correlations between MTP and oral conditions such as CSA of the masseter muscle, and MOF. Regarding STP, no variables were significantly correlated with STP. However,

there was a positive correlation between MTP and STP.

### Conclusions

It can be concluded that MTP is age-dependent and STP could be sustained at a certain level for a lifetime, and there was a significant positive correlation between MTP and STP. Oral conditions such as CSA of the masseter muscle, and MOF had a considerable effect on MTP. Furthermore, based on the study, it is recommended to include the evaluation of tongue function in geriatric oral health management programs in the future. This method has a potential to favorably contribute to the oral health management program, thereby improving the overall QoL for the elderly.

### Learning Outcomes

At the end of my poster presentation, the audience will be able to understand and appreciate the significance of tongue function in geriatric oral health care.

### Presenting Author Brief CV

Ms. Mi-El Kim earned her Bachelor's Degree from Gwangju Health University (GHU) and Sahmyook Health University (SHU). She then obtained her Registered Dental Hygienist (RDH) license in 2010.

She worked as a dental hygienist at Hun Network Dental Clinic for 5 years. Ms. Kim also received a Master's Degree in Public Health (MPH) from Yonsei University Graduate School of Public Health (YUGSPH) in 2016. She is currently a researcher in the Department of Prosthodontics at Seoul National University Dental Hospital (SNUDH) and has been working for 10 years. Furthermore, in 2022, Ms. Kim also started pursuing a doctoral program in Oral Anatomy at Seoul National University School of Dentistry (SNUSD).

Her main strengths include 3D modeling of the oral anatomy with subspecialty in the oral maxillofacial region. Her main research interests include digital dentistry, dental education, and global oral health inequality research in Asia.

# The relationship between the decline in oral function and medical and dental expenditures in the latter-stage older adult

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Manabu Shimomura<sup>3</sup>, Kimi Matsumoto<sup>3</sup>, Miwa Matsuyama<sup>4</sup>, Daisuke Hinode<sup>1\*</sup>**

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<sup>3</sup> Tokushima Prefecture Dental Association, Tokushima, Japan

<sup>4</sup> Department of Oral Health Care and Rehabilitation, Tokushima University Graduate School of Biomedical Sciences, Japan

## Problem Statement

The increase in medical care expenditures for older adults has become a serious problem under the current circumstances in Japan. It has been reported that the decline in oral function is related to the deterioration of the general condition. Moreover, a decline in oral function is associated with a poor general condition and is expected to lead to an increase in medical care expenditures.

## Purpose

The aim of this study was to investigate the relationship between the decline in oral function and medical care expenditures in latter-stage older adults using data obtained from the oral health examination and the national health insurance through a cross-sectional study.

## Methods

The participants enrolled in the cross-sectional study were 1008 Tokushima City residents aged 75 and 80 years old who received oral health examinations. The data for medical expenditures, dental expenditures, and total medical expenditure of each participant was obtained from the National Health Insurance Database. The number of items of the decline in oral function in six categories: "tongue coating," "xerostomia," "occlusal status," "tongue/lip function status," "chewing function," and "swallowing function" were investigated. In addition, participants who corresponded to three or more items were analyzed as those with decreased oral function.

## Results

Results showed a tendency of positive correlation between total medical expenditure and the number of items of the decline in oral function ( $p=0.0501$ ). The number of participants with decreased oral function was 281 (27.9%) and significant differences were observed in medical

expenditure and total medical expenditure compared to those who were in good oral condition ( $p<0.05$ ).

## Conclusions

It was shown that a decline in oral function may lead to an increase in medical care expenditure. Therefore, it was suggested that the management of oral function was important for older adults.

## Learning Outcomes

Understand the relationship between the decline in oral function and medical expenditures in the latter-stage older adult.

## Citation for Publication

This article is a new finding based on the content of a published paper (Doi T et al, Clin Exp Dent Res, 2023).

## Presenting Author Brief CV

2020: Bachelor's degree of Oral Health and Welfare, Tokushima University

2021- current: Tokushima University Hospital (Dental Hygienist)

2022: Master's degree of Oral Health Science, Tokushima University

2023- current: Doctor's Course of Oral Health Science, Tokushima University

# In what direction should gross anatomy education in the field of dentistry go? : Perceptions of clinical dentists

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<sup>1</sup> Department of Dental Hygiene, College of Bio-Health Convergence, Dongseo University, South Korea

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## Problem Statement

Successful dental treatment is only possible if dental staff have basic knowledge of gross anatomy because dental care is inherently surgical in nature.

## Purpose

This study aimed to survey clinical dentists' opinions on the content and methods of gross anatomy education required for prospective dental staff for successful dental treatment, and to analyze differences in perception according to their general characteristics.

## Methods

182 respondents ultimately participated in this study and were included in the analysis. The content of gross anatomy education was first divided into the whole body and the head and neck, and each was further subdivided into local body parts (14 items) and detailed anatomical structures (22 items). For each detailed question, the degree to which the respondent thought it was necessary for job performance was indicated on a five-point Likert scale. The questions related to gross anatomy education methods consisted of eight detailed items, and answers were elicited in the same manner as above.

## Results

As a result of checking clinical dentists' opinions on the degree to which anatomy knowledge by body part is necessary for work performance, the head received the highest score out of 14 parts ( $4.73 \pm 0.58$ ). In the head and neck region, temporomandibular joint received the highest score ( $4.83 \pm 0.55$ ), followed by masticatory muscles ( $4.82 \pm 0.52$ ), maxilla ( $4.82 \pm 0.58$ ), and mandible ( $4.82 \pm 0.58$ ) with the same average. Among gross anatomy education methods, practice using medical images such as radiographs recorded the highest score ( $4.52 \pm 0.62$ ). There was a high need for integrated education of anatomy and other clinical subjects ( $4.41 \pm 0.69$ ) and practice using 3D visualization software

( $4.37 \pm 0.71$ ).

## Conclusions

It may be helpful to run a basic anatomy course in the lower grades and a clinical anatomy course in the upper grades. The basic course should allow learners to acquire the structure of the head and neck along with a basic introduction to the structure of the whole body. In the clinical course, the results of this study are used to select key structures necessary for dental clinical work, educate theories in connection with procedures, and strengthen learners' clinical capabilities through team-based problem-oriented learning. In addition, blended learning will be able to increase learner satisfaction and improve academic achievement. Theoretical content is delivered in advance through asynchronous distance contents, and during face-to-face classes, small groups can be formed to observe medical images and 3D dissection software, and engage in activities such as quiz games and discussions.

## Learning Outcomes

We hope that this study can be used as useful data to set the direction of gross anatomy education in the dental field and to improve education in other basic disciplines.

## Presenting Author Brief CV

- Dean, Department of Dental Hygiene, College of Bio-Health Convergence, Dongseo University
- Head Professor, Department of Dental Hygiene, Dongseo University Graduate School
- Director of the Korean Academy of Dental Hygiene Science
- Director of the Korean Academy of Oral Anatomy
- Member of the Scoring Committee for the Dental Hygienist National Examination (practical examination)

## Comparison of periodontal instruments for detection of subgingival calculus

**Mako Naniwa<sup>1</sup>, Masayo Nakamura<sup>1</sup>, Yoshie Usui<sup>1</sup>, Takako Yodogawa<sup>1\*</sup>**

<sup>1</sup> Department of Oral Health Sciences, Kyushu University of Nursing and Social Welfare, Japan

<sup>2</sup> Department of Oral Health Sciences, Kyushu University of Nursing and Social Welfare, Japan

<sup>3</sup> Department of Oral Health Sciences, Kyushu University of Nursing and Social Welfare, Japan

<sup>4</sup> Department of Oral Health Sciences, Kyushu University of Nursing and Social Welfare, Japan

### Problem Statement

A periodontal instrument #11/12 explorer is currently rarely used in Japan, although been regarded as the gold standard for subgingival calculus detection in the world. There are few reports comparing periodontal assessment instruments for calculus detection ability.

### Purpose / Goals / Objective

This study aimed to compare useful instruments for detecting subgingival calculus.

### Key Features

The instruments used in the study were WHO probe, CP-11 probe, explorer, and #11/12 explorer. The subjects were dental hygiene students from sophomore to senior currently enrolled in a Japanese university. All subjects have learned how to use instruments including #11/12 explorer. Model teeth with dental calculus were placed bilaterally in the mandibular central incisors and second molars of the jaw model. Model teeth with artificial dental calculus were used for the left central incisor and the right second molar. Four types of artificial dental calculus (spicules, ledge, ring, veneer) were attached to the right central incisor and the left second molar. In addition, two model sticks with artificial calculus were modified to have three and seven calculus, respectively, and subjects were asked to indicate the number of calculus on each stick.

### Impact

The #11/12 explorer and the CP-11 probes were significantly more accurate in calculus detection than the WHO probe. In addition, the accuracy rate of 4 dental calculus shapes was higher in the #11/12 explorer than in the WHO probe. Moreover, in detecting the number of dental calculus, the #11/12 explorer was significantly more correct than the WHO probe in the stick with seven artificial dental calculus. However, there was no significant difference in the ability

to detect the number of dental calculus in a stick with three artificial dental calculus.

### Conclusions

The #11/12 explorer is the superior instrument for detecting the location and shape of dental calculus based on these results. The adequate selection of instrument in periodontal assessment may influence the outcome of the periodontal assessment.

### Learning Outcomes

Based on these results, the #11/12 explorer is considered the best tool for detecting the location and shape of dental calculus. Appropriate instrument selection for periodontal assessment can impact its outcome.

### Presenting Author Brief CV

Kyushu University of Nursing and Social Welfare,  
Kumamoto October 2022 - present

•Assistant Professor

Kyushu Dental University, Fukuoka April 2022 - September 2022

•Researcher

## Armed and ready for the future: dental hygienists administering vaccines

**Lancette Vanguilder<sup>1\*</sup>**

<sup>1</sup> Owner, Hygienist for Health, USA

### Problem Statement

Most recently, the COVID-19 pandemic shed light on the need for workforce readiness, disease prevention and COVID vaccines in a state of emergency. Dental hygienists across the US stepped up and became vaccinators to help serve our communities. As the healthcare landscape continues to evolve around the globe, more emphasis has been placed on the need for improved access to vaccines, interprofessional collaboration and public health efforts. Vaccines are available for many diseases and have the potential to save lives. Dental professionals are poised to play a new and innovative role in the healthcare delivery system and disease prevention with the administration of various vaccines such as those needed for school entry, oral cancer prevention and the flu.

### Purpose / Goals / Objective

Allowing dental hygienists to administer critical vaccines supports the overall health care system, increases access to care and bridges the medical- dental divide.

### Key Features

This poster will highlight dental hygienists as a ready-made workforce to assist in vaccination efforts and identify the various immunizations available for disease prevention.

### Impact

Empowering oral health care providers to provide critical vaccinations not only has the potential to save lives, but also allow offer alternative career opportunities, expand medical-dental integration and address the gaps in healthcare equality.

### Conclusions

The potential future implications of dental hygienists administering vaccines are multifaceted and complex. Benefits include helping underserved communities, expanding the scope of practice and protecting individuals and communities from preventable illnesses. This could have a substantial impact on public health outcomes and reduce the burden on healthcare systems.

The potential future challenges include the need for additional training and scope of practice/regulatory Issues.

### Learning Outcomes

participants will be able to:

1. Recognize various vaccines available for disease prevention
2. Identify the vaccination that has been FDA approved for mouth and throat cancer
3. Review COVID 19 Vaccines
4. Discuss the promotion and administration of vaccines by dentists and dental hygienists.

### Presenting Author Brief CV

Lancette VanGuilder, BS, RDH, PHEDH, CEAS is a complete health dental hygienist committed to improving practitioner and patient health while bridging the medical-dental divide. She is an internationally recognized continuing education speaker, a clinician, airway ambassador, business owner, non-profit founder, public health advocate/vaccinator. Lancette has received numerous awards for her contributions to dentistry. She is passionate about increasing access to care, disease prevention and medical-dental collaboration. Lancette is the current Vice-President of the American Dental Hygienists' Association.

## Choose your own adventure: an innovative final year portfolio in oral health

**William Carlson-Jones<sup>1</sup>, Melanie Aley<sup>1\*</sup>**

<sup>1</sup>Sydney Dental School, The University of Sydney, Australia

### Problem Statement

Portfolios are routinely used for assessment of final-year students, as they encourage students to deeply explore multiple areas of practice and support their learning with evidence-based resources and reflections. In dental education, portfolios are often used to assess a student's ability to provide patient-centred and evidence-based care through documenting patient cases and justifying their clinical decisions. A mapping of our Bachelor of Oral Health program assessments found these learning outcomes were already being assessed during workplace-based placements and in oral examinations. Further, the portfolios were onerous to mark, and student performance and feedback indicated poor engagement with the portfolio assessment.

### Purpose / Goals / Objective

The aim of this project was to redesign our final-year portfolio assessment to provide students with an opportunity to choose and explore multiple alternative areas of professional practice and development. It was anticipated that the student-driven focus of the portfolios will drive student engagement, by allowing them to choose the activities which interest them to explore more deeply.

### Key Features

A range of authentic activities were designed for students to choose from for inclusion in their portfolio. The design process required alignment with the unit of study learning outcomes and professional competencies determined by the regulatory authority, and intentionally aimed to design activities that would prepare students for the challenges of future practice across multiple diverse areas of practice. Portfolio activities designed include developing a philosophy of practice, self-care planning, reflection on interprofessional practice, product review, community oral health analysis, planning an oral health promotion project, evaluation of sustainability in dental service, and a report on alternative (ie non-clinical) career paths.

### Impact

Students engaged well with the portfolio assessment, with an average grade of 93% (range: 47-100). Students completed

a Unit of Study Survey to provide feedback on this unit, including the portfolio assessment. Quantitative data was collected on a five-point likert scale, from strongly disagree (1) to strongly agree (5). Students were very satisfied with the content of this unit, with improvement in mean rating from 4.35, 85% mean agreement in 2022, to 4.61, 95% mean agreement in 2023. Student's qualitative comments indicated that they found the portfolio assessment interesting, relevant and useful for future practice.

### Conclusions

Building on the success of this innovative educational approach, we are developing additional online learning modules to support their learning in these diverse areas of practice and exploring avenues for involving students in the co-design of additional portfolio activities to ensure continued engagement and relevance.

### Learning Outcomes

In this poster, attendees will learn about:

The elements of an alternative portfolio assessment for oral health students

The impact of an alternative portfolio assessment on the student experience

### Citation for Publication

Not applicable.

### Presenting Author Brief CV

William 'CJ' Carlson-Jones is a Lecturer for the Bachelor of Oral Health at the University of Sydney, Australia. He is a registered oral health therapist with a Graduate Certificate in Oral Health Science, Graduate Certificate in Educational Studies (Higher Education) and a Master of Business Administration, and is currently completing his PhD. As a Lecturer he is the discipline lead for Professional Practice, and coordinates the 3rd years units of study Comprehensive Oral Health Management I & II. His commitment to educational innovation has been recognised with a School teaching award in 2023. CJ is the current President for the Australian Dental & Oral Health Therapists' Association.

## Association between vocational expertise and comprehension dental hygiene curriculum on some dental hygienists

**Sae hee Cheon<sup>1\*</sup>, Hye Jin Lee<sup>2</sup>**

<sup>1</sup> Dental Hygiene, Masan University, South Korea

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### Problem Statement

There is an urgent need for a system that can increase job satisfaction and cultivate professional dental hygienists by giving dental hygienists satisfaction with the comprehensive dental hygiene education course their professional expertise. In Korea, data related to the job satisfaction of dental hygienists are being actively conducted through prior research, but data on the occupational expertise and comprehensive dental hygiene curriculum of dental hygienists are still insufficient.

### Purpose

This study aims to determine whether there is an association between satisfaction with a comprehensive dental hygiene curriculum course and professionalism of dental hygienists among some dental hygienists.

We aim to contribute to improving the professionalism of dental hygienists by identifying factors related to major satisfaction and vocational expertise. This study was to examine association between vocational expertise and comprehension dental hygiene curriculum in some dental hygienists.

### Methods

The survey was composed of 6 questions on the general characteristics of the study subjects, 10 questions regarding vocational expertise, and 10 questions regarding comprehension dental hygiene curriculum. SPSS 26.0 was used. Descriptive statistics analysis, t-test and correlation analysis were conducted and the significance level set at 0.05.

### Results

There was a positive association between vocational expertise and comprehension dental hygiene curriculum in some dental hygienists. In univariate analysis, vocational expertise was significantly associated with satisfaction major( $p < 0.001$ ). Comprehension dental hygiene curriculum was also significantly associated with gender, career and satisfaction major( $p = 0.028, 0.041, < 0.001$ ).

### Conclusions

Therefore, this study can be used as basic data to improve vocational expertise and comprehension dental hygiene curriculum in dental hygienists.

### Learning Outcomes

By identifying the association between vocational expertise and satisfaction with comprehensive dental hygiene curriculum courses, we intend to use this as basic data to develop and increase interest in dental hygiene curriculum and develop high-quality education programs.

### Presenting Author Brief CV

Dept of. Dental Hygiene, Masan University, Assistant professor  
Management Committee Director, International Symposium on Dental Hygiene  
Korean Dental Hygienists Association

## Utilization of QLF technology in dental unit waterlines contamination assessment: Pilot Study

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### Problem Statement

The dental unit waterlines (DUWLs) are narrow, and regular disinfection is necessary to prevent microbe growth. QLF technology is one of the optical technologies that detect porphyrin, a microbial metabolite, with red fluorescence and many achievements in the field of early disease detection and risk detection caused by oral microorganisms. However, studies have yet to be reported to evaluate the contamination of dental unit waters using QLF technology. If contamination of DUWLs can be detected, the optimal disinfection time can be easily determined according to each dental treatment environment, making effective DUWLs management possible.

### Purpose

In this study, we attempted to assess whether QLF technology can be used to detect DUWLs contamination.

### Methods

This study was conducted in the Department of Dental Hygiene laboratory at a university where DUWLs disinfection is performed every two weeks. Samples were collected on the first day (baseline) after disinfection and two weeks later in a 3-way syringe (3W), ultrasonic scaler (US), and cup filler (CF) of 1 dental unit. First, to monitor the level of DUWLs contamination, samples taken after the baseline and after two weeks were smeared individually onto R2A agar medium and then cultured at 37°C for 72 hours, and the CFU/ml was counted and photographed using the QLF-D. Furthermore, to monitor the rise in the redness of microorganisms within the DUWLs, the sample (baseline, two weeks later) underwent inoculation and culturing in R2A broth, and the pellets obtained by centrifugation were photographed using the QLF-D. Then, a researcher performed an image analysis to calculate the R/G ratio.

### Results

As a result of DUWLs contamination monitoring of 3W, US, and CF, the baseline (range: 1 to 18 CFU/ml) was all of them were significantly lower than 100 CFU/ml (The Korean standard), but after two weeks, it increased considerably to

700 to 1800 CFU/ml, and many colonies emitting redness were observed in the QLF-D image. The R/G ratio of the concentrated microbial pellets ranged from 0.64 to 1.33 in baseline and, after two weeks, increased from 1.19 to 2.67. The increase in contamination level was the largest in the US.

### Conclusions

After two weeks, the contamination level of the DUWLs increased, and redness was also observed in the QLF-D image. Since this study confirmed the possibility of evaluating contamination of DUWLs using QLF technology, feasibility studies will be needed to propose a new DUWLs contamination evaluation method.

### Learning Outcomes

We have identified the feasibility of using the QLF technique to assess DUWL contamination. QLF technology can be used to determine the risk of contamination through the detection of microorganisms in DUWL, as well as early detection of diseases caused by oral microorganisms.

### Presenting Author Brief CV

#### Education

- 2020.03.~present. Yonsei University Graduate School, MS/ PhD Combined course
- 2009.03.~2016.02. Sahmyook health University, Seoul, Republic of Korea, Bachelor's degree

#### Professional organization

- 2023.01.~present. Society of Infection Control and Prevention in Dental Hygiene

#### Publications

- Kang JH, Park SC, Jung HI et al. Validation of the Korean Academy of Geriatric Dentistry screening questionnaire and oral frailty diagnostic criteria in community-dwelling older adults. *Epidemiol Health* 2024;e2024008.
- Park SC, Han SY. Factors related to non-use of interdental care products by Korean adolescents. *Journal of Korean Society of Dental Hygiene* 2022;22(6):515-522.



## Noble approach to gingival health: A case study on the impact of probiotics on periodontal pathogens and chronic disease indicators

**Mu-Yeol Cho<sup>1</sup>, Inseong Hwang<sup>1</sup>, Young-Youn Kim<sup>1</sup>, Hye-Sung Kim<sup>1\*</sup>**

<sup>1</sup> Apple Tree Institute of Biomedical Science, Apple Tree Dental Hospital, South Korea

### Problem Statement

Periodontal disease arises from disruptions in the oral microbial balance, potentially increasing the risk of chronic diseases. This study evaluates the impact of probiotics on periodontopathic bacteria and chronic disease indicators, exploring a new approach to oral health management. By assessing the efficacy of probiotics, this research can offer non-invasive and effective treatment strategies to dental hygiene professionals.

### Purpose

To explore the effectiveness of probiotics in improving oral health by reducing periodontopathic bacteria and chronic disease indicators.

### Methods

Two cases were selected for the study after agreeing to participate, as evidenced by signing the 'Research Consent Form'. The participants made two visits: the initial visit and a follow-up visit 12 weeks later. During the first visit, scaling and root planning (SRP) procedures were performed, and instructions for probiotic intake were provided. At each visit, tests were conducted for periodontal indicators, including pocket depth, bleeding on probing, gingival index, and plaque index on Ramfjord teeth, as well as oral pathogenic bacteria tests (qPCR), vital signs assessments, and blood tests.

### Results

After SRP and probiotic intake, the average probing depth showed a decreasing trend in both cases. Conversely, other periodontal assessments indicated an increasing trend, though still maintaining low values. Oral pathogenic bacterial test results showed a decrease or maintenance in *P. gingivalis*, *T. forsythia*, *P. intermedia*, *C. rectus*, and *F. nucleatum* in both cases. *T. denticola* decreased by about 48% in case 1, while it showed an increasing trend in case 2 but was detected at a lower level than in case 1. *S. mutans* decreased by about 29% in case 1 and increased in case 2. Glucose values tended to increase in both cases, but HbA1c showed a decreasing trend. In case 1, all dyslipidemia-related values decreased, while in

case 2, triglyceride and LDL values showed a decreasing trend.

### Conclusions

This study suggests that the integration of probiotics with traditional periodontal treatment can be a valuable strategy in managing periodontal diseases and possibly improving systemic health. However, the variability in response and the complex interplay between oral and systemic health underscore the importance of further research and personalized treatment plans.

### Studies in Progress

This submission is a case report and, as such, does not have additional statistical analysis planned beyond the descriptive analysis of the two cases. Therefore, while acknowledging the requirement for studies in progress, our submission focuses on detailed observational and clinical data from these cases, without the need for further statistical analysis.

### Learning Outcomes

I'd like that attendees will gain insights into how probiotics, in conjunction with traditional periodontal treatments like scaling and root planing, can positively influence periodontal health, particularly in reducing pathogenic oral bacteria.

### Presenting Author Brief CV

Position: Team Leader at the Institute of Life Sciences, Appletree Dental Hospital

Education:

Doctor, College of Dentistry, Yonsei University

Bachelor of Science in Dental Hygiene, Yonsei University

Professional Experience:

Adjunct Professor, Department of Dental Hygiene, Baekseok University

Adjunct Professor, Department of Dental Hygiene, Sahmyook Health University

Affiliations:

Board Member, Korean Society of Infection Control and Prevention in Dental Hygiene

# Novel Dental Poly (Methyl Methacrylate) Containing Phytoncide for Antifungal Effect and Inhibition of Oral Multispecies Biofilm

**Myung-Jin Lee<sup>1\*</sup>**

<sup>1</sup> Dental hygiene, Baekseok University, South Korea

## Problem Statement

Even though PMMA is widely used as a denture base resin, it also has many inherent limitations.

One of the main drawbacks is a poor antifungal and antibacterial property, which results in microorganisms being able to attach and accumulate into the biofilms. Denture surfaces act as a reservoir for microorganisms, and may lead to diseases such as denture stomatitis. Accordingly, the antifungal properties of denture base resins play an important role in the reduction of denture stomatitis.

## Purpose

The aim of this study was to incorporate a phytoncide with PMMA that would improve the antifungal effect and prevent biofilm accumulation without impairing the basic and biological property of PMMA.

## Methods

A variable amount of phytoncide (0 wt % to 5 wt %) was incorporated into PMMA, and the basic material properties of microhardness, flexural strength and gloss were evaluated. In addition, cell viability was confirmed by MTT assay. This MTT assay measures cell viability via metabolic activity, and the color intensity of the formazan correlates viable cells. The fungal adhesion and viability on the PMMA surfaces were evaluated using *Candida albicans* (a pathogenic yeast). Finally, the thickness of saliva-derived biofilm was estimated.

## Results

The flexural strength of PMMA decreased with increasing phytoncide contents, whereas there were no significant differences in the microhardness and gloss ( $p > 0.05$ ) and the cell viability ( $p > 0.05$ ) between the control and the phytoncide-incorporated PMMA samples. The amounts of adherent *Candida albicans* colony-forming unit (CFU) counts, and saliva-derived biofilm thickness were significantly lower in the phytoncide-incorporated PMMA compared to the control ( $p < 0.05$ ).

## Conclusions

Hence, it was concluded that the incorporation of appropriate amounts of phytoncide in PMMA demonstrated antifungal effects while maintaining the properties, which could be a possible use in dentistry application such as denture base resin.

## Learning Outcomes

This study demonstrates one aspect of the combination of phytoncides and dental materials, and these basic data have the potential for use in the future development of PMMA possessing antifungal effects.

## Citation for Publication

Novel Dental Poly (Methyl Methacrylate) Containing Phytoncide for Antifungal Effect and Inhibition of Oral Multispecies Biofilm

## Presenting Author Brief CV

Baekseok University  
2020-03-01 to present  
Associate Professor (Department of Dental Hygiene)

Yonsei University  
2018-03-01 to 2020-02-28  
Postdoctor Researcher (Department and Research Institute of Dental Biomaterials and Bioengineering)

Yonsei University  
2014-03-01 to 2018-02-28  
Teaching assistant and Researcher (Department and Research Institute of Dental Biomaterials and Bioengineering)

## Smartphone-based combined oral and whole-body exercise program aimed at improving oral functions: a randomized clinical trial

**Kyeong-Hee Lee<sup>1\*</sup>**

<sup>1</sup> Dental Hygiene, Shinhan University, South Korea

### Problem Statement

Studies that have examined oral function improvement have shown that those who combined oral exercise with whole-body exercise had greater improvements in oral strength and salivation than those who did oral exercise alone. Therefore, oral health interventions to improve oral function should consider comprehensive interventions that include whole-body exercise.

In recent years, numerous smartphone apps for health promotion and management have been developed and are widely used without temporal and spatial restrictions. In particular, nursing interventions provided through smartphone apps have been reported to be cost-effective while ensuring high accessibility and equity. Getting health-related advice from smartphone apps and utilizing the acquired information has been reported to promote satisfaction in older adults, which was related to their autonomy in the use of information in managing their own health.

### Purpose

this study aimed to investigate the effects of a smartphone-based combined oral and whole-body exercise program on oral muscle strength, salivary secretion, and perceived oral health in older Korean adults.

### Methods

Individuals aged 65 years or older were randomized to three groups (non-app use, app use, and control group), and the program was conducted over a period of five weeks. Oral muscle strength, saliva flow rate, OHIP-14, and GOHAI were measured before and after the intervention. The changes at the end of the program in each group were analyzed using paired sample t-tests, and the differences among the three groups were analyzed using the chi-square test, Fisher's exact test, and ANOVA.

### Results

The anterior tongue strength increased by 2.80kPa after the intervention in the non-app use group; however, the change was not statistically significant. In the app use group, the anterior tongue strength significantly increased by 4.48 kPa. The saliva flow rate increased by 0.54 g/min and 0.71 g/min in the non-app use and app use group, respectively, after the intervention ( $P<0.05$ ), and the change was greater in the app use group than in the other groups ( $P<0.01$ ). There were no significant changes in the posterior tongue strength, cheek strength, OHIP-14, or GOHAI scores over the course of the study.

### Conclusions

A smartphone-based combined oral and whole-body exercise program can improve anterior tongue strength and saliva flow rate in older participants. Though, the program did not result in significant changes in posterior tongue strength, cheek strength, and perceived oral health.

### Learning Outcomes

We discovered that smartphone-based combined oral and whole-body exercises can improve the anterior tongue strength and salivary flow rate in older adults.

### Citation for Publication

The first poster presentation was held at the 2021 Korean Dental Hygiene Society General Conference, and the paper is currently under review at the International Journal of Dental Hygiene.

### Presenting Author Brief CV

Licensed as a dental hygienist in 1998,  
Associate Professor, Department of Dental Hygiene,  
Shinhan University, as of 2023  
Principal Investigator of the study

# Influence of mechanical and thermal cleaning frequency on sterilization and loss of dental handpieces

**Chunli Wang<sup>1\*</sup>**

<sup>1</sup> Nursing Department, Peking University School of Stomatology, China

## Problem Statement

Dental handpieces are one of the most commonly used instruments in dentistry, and effective cleaning is an important step in ensuring the sterilization effect of dental handpieces and extending their service life. Both mechanical and hand cleaning alone can achieve qualified sterilization results, but there are advantages and disadvantages of the two methods, and more suitable cleaning methods and frequencies need to be explored.

## Purpose

To study the effect of mechanical thermal cleaning frequency on sterilization and loss of dental handpiece

## Methods

150 new dental handpieces that can be heat-cleaned were randomly divided into three groups : A, B, and C, with 50 in each group. After using, Each handpiece was cleaned, oiled, sterilized by special cleaning oil filling machine. And Group A, B, and C use mechanical thermal cleaning and maintenance procedures once a week, every other week, and every three weeks. Monitor the sterilization and cleaning effects every 3 months, and record the maintenance and loss of dental handpiece at any time. A total of 29 months of monitoring were conducted.

## Results

The dental handpieces of group A were used and sterilized  $9.06 \pm 2.098$  times on average, and  $9.00 \pm 2.189$  times of B group,  $11.01 \pm 2.347$  times of C group, no significant difference between the three groups ( $\chi^2=12.997$ ,  $P=0.086$ ); there was no difference in visual inspection, the pass rates are group A 95%, group B 100%, group C 100%; during the experiment, 38 dental handpieces were reused after maintenance, of which 11 was from group A, 17 from group B and the other 10 was from group C ( $\chi^2=26.000$ ,  $p<0.001$ ); 13 handpieces could not be maintained, of which 9 was from group A, 3 from group B and the other 1 was from group C ( $\chi^2=76.000$ ,  $p<0.001$ ). Besides there was no difference in

sterilization, the pass rates are all 100%.

## Conclusions

Using mechanical and thermal cleaning and maintenance process for dental handpiece every three weeks can ensure the internal cleaning degree and Increasing the frequency of mechanical thermal cleaning will increase losses of dental handpieces.

## Learning Outcomes

Influence of mechanical and thermal cleaning frequency on sterilization and loss of dental handpieces

## Presenting Author Brief CV

vice director of the nursing department of Peking University School and Hospital of Stomatology, chief nurse, engaged in oral clinical nursing work for over 30 years, with rich experience in oral nursing management and clinical nursing. She served as vice director of the Stomatology Nursing Committee of the Chinese Nursing Association. She has published 21 papers in core journals; edited 2 books, translated 1 book, and edited 8 books; undertook 2 association-level research projects; 3 hospital-level research projects.

## Development of Integrated Curriculum for Basic Dental Hygiene Based on Competencies

**Hye-young Yoon<sup>1,2,3</sup>, Sun-Jung Shin<sup>1,2,3</sup>, Bo-Mi Shin<sup>1,2,3</sup>, Hyo-Jin Lee<sup>1,2,3</sup>, Jin-Sun Choi<sup>1,2,3</sup>,  
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<sup>2</sup> Research Institute of Oral Science, Gangneung-Wonju National University, South Korea

<sup>3</sup> Research Institute of Dental Hygiene Science, Gangneung-Wonju National University, South Korea

### Problem Statement

In order to train dental hygienists who can utilize knowledge in practice, integrated curriculum based on the competencies of dental hygienists is being expanded, but in the field of basic dental hygiene, the curriculum is still fragmented and based on segmented knowledge. Therefore, the current basic dental hygiene curriculum is a limiting factor in the development of integrated thinking and problem-solving skills. However, there is still a lack of specific case studies that have developed integrated curriculum based on the competencies of dental hygienists that can be performed through basic dental hygiene.

### Purpose

The purpose of this study is to develop an integrated curriculum based on the competencies of dental hygienists in Anatomy, Histology & Embryology, and Physiology, which are subjects that belong to the field of basic dental hygiene and have a high linkage and overlap.

### Methods

After selecting the learning objectives of the integrated curriculum from the learning objectives of Anatomy, Histology & Embryology, and Physiology, the duties of the dental hygienist in relation to the learning objectives were analyzed. The learning objectives were combined with the duties of a dental hygienist to derive competencies for the integrated curriculum. Based on the derived competencies, the main learning objectives of each subject before integration were reclassified to derive the education contents of the integrated curriculum. Referring to the syllabus and the learning objectives for each subject, education content per week, learning objectives, and credit hours of the integrated curriculum were derived. After conducting a Delphi survey to validate the competencies and contents of the derived integrated curriculum, the

integrated curriculum was finally developed.

### Results

Through first and second Delphi surveys, four competencies for dental hygienists that can be achieved through an integrated basic dental hygiene curriculum were developed. In addition, an integrated curriculum of Anatomy, Histology & Embryology, and Physiology, Structure and Function of the Human Body/Head/Neck and Structure and Function of the Oral Cavity, was developed.

### Conclusions

As a study that shows a specific case of developing a competency-based integrated curriculum, this study can be used as a framework to derive a competency-based integrated curriculum between subjects that can be integrated according to the linkage of learning contents and the competencies that can be achieved.

### Learning Outcomes

Necessity and methods for the introduction of competency-based integrated curriculum in the basic dental hygiene curriculum

### Presenting Author Brief CV

Professor of Dental hygiene Department, College of Dentistry, Gangneung-Wonju National University.  
Research Areas: Basic Dental Hygiene, Dental Infection Control, Oral Microorganism, etc

## Suggestion of Learning Objectives in Social Dental Hygiene -National Board Dental Hygiene Examination in Republic of Korea

**Su-Kyung Park<sup>1,2</sup>, Young-Eun Jang<sup>1,3</sup>, Sang-Hee Yoo<sup>1,4</sup>, Sue-Hyang Lee<sup>1,4</sup>, Myoung-Hee Kim<sup>1,5</sup>, Hee-Kyoung Kim<sup>1,6</sup>, Da-Young Ryu<sup>1,7</sup>, Min-Ji Kim<sup>1,8</sup>, Sun-Jung Shin<sup>1,4</sup>, Nam-Hee Kim<sup>1,9</sup>, Mi-Sook Yoon<sup>1,10\*</sup>**

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<sup>2</sup> Dept. of Dental Hygiene, Jeonju Kijeon College, South Korea

<sup>3</sup> Dept. of Dental Hygiene, Baekseok University, South Korea

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<sup>9</sup> Dept. of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, South Korea

<sup>10</sup> Dept. of Dental Hygiene, Shinhan University, South Korea

### Problem Statement

Dental hygienists, crucial healthcare professionals promoting health and oral health, require systematic knowledge and competencies to assume roles as advocates, changemakers, and collaborators locally and globally within the healthcare system

### Purpose

The purpose of this study was to reconstruct the learning objectives in the field of social dental hygiene for the national board dental hygiene examination in Korea and to suggestion new learning objectives.

### Methods

This cross-sectional study employed a mixed-method approach, including a self-questionnaire survey and an expert delphi study. Fifteen subjects were conveniently selected, and survey questions encompassed 48 learning objectives related to the healthcare system and oral health policy. These were classified into 'dental hygiene job relevance', 'dental hygiene competency relevance', 'timeliness', and 'value discrimination of educational goal setting', totaling 192 items. Additionally, a delphi survey was conducted with 7 academic experts. Statistical analysis utilized the IBM SPSS Statistics ver. 23.0 program.

### Results

Core competencies in social dental hygiene were categorized into social security and medical security, health care system, health administration, and oral health policy. Out of the 48 existing learning objectives for the NBDHE in social dental hygiene, 18 were deleted, 15 were maintained, and 15 were revised and supplemented. The study proposed a total of 75 learning objectives, including 45 new ones. Continuous revision of learning objectives and core competencies is recommended in response to changing social environments. Suggestions include developing competencies highly relevant to actual job competencies, creating textbooks based on revised objectives, and improving the NBDHE for dental hygienists.

### Conclusions

Practical education is essential for dental hygienists to fulfill social roles in clinical and community settings. To achieve this, a systematic curriculum must be prepared by setting core competencies and learning objectives in the field of social dental hygiene. For dental hygienists to impact public and oral health as healthcare professionals, their roles should expand from clinicians and educators to advocates, collaborators, and entrepreneurs.



## Learning Outcomes

Suggestion of Learning Objectives in Social Dental Hygiene

## Citation for Publication

J Dent Hyg Sci Vol. 18, No. 2, 2018, pp.85-96

## Presenting Author Brief CV

Yonsei University Graduate School, Dept. of Dental Hygiene (RDH, BSDH, MSDH, Ph.D. candidate)

Jeonju Kijeon college, Dept. of Dental Hygiene (Assistant Professor)

Korean Society of Dental Hygiene Science, Social dental hygiene subcommittee (Committee member)

## P3(Project, Place, Problem)-Based Learning(P3L) activity in dental hygiene education for changing sugar consumption from ‘Tanghulu’ in Korean adolescents

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<sup>2</sup> Department of Dental hygiene, MIRAE Campus, Yonsei university, South Korea

### Problem Statement

To reduce the risk of obesity and tooth decay, the World Health Organization (WHO) recommends max 5 to 10 teaspoons of free sugar per day. However, ‘Tanghulu’ has been popping up among Korean adolescents, recently. Tanghulu is one of the traditional Chinese desserts, consisting of several rock sugar-coated fruits. Dental hygienists, as dental professionals, should control environmental risk factors to prevent dental decay by monitoring.

### Purpose

Based on the P3(Project, Place, Problem)-based Learning (P3L) process, Yonsei University of dental hygiene students investigated the stores of the tanghulu and the place where it was located the stores, the customers who were the most buying, the time when it was the best-selling. They aimed to identify the problems, and find solutions based on the health behavior theory.

### Methods

P3L processes three steps. First, students define the problem and place with lectures and brainstorming. Second, they dedicate themselves to addressing the problem and exploring the area in community activities. Finally, they try to find a solution, report the issues, and discuss them with experts and authorities. To identify and understand the issue, students investigated the latest evidence, such as sugar consumption patterns among adolescents. To explore and find the solution based on the health behavior theory (Theory of Triadic Influence; TTI), the students visited and examined the stores and customers during 4 hours every Thursday for 4 weeks on sophomore second semesters in 2023.

### Results

They find three issues. Tanghulu stores have been increased

nearby every school without regulation marks for health messages. Second, adolescents were exposed to unhealthy marketing from Tanghulu stores. For example, they provide promotional events; buy ten get one and delivery service. Third, there is no information for nutrition fact labels on the Tanghulu. Students want to highlight that this was an environmental factor for TTI. The solution may be to control and regulate the number of stores and distance from schools. It may also mandate implementation of nutrition fact labels, including sugar content information. Those tasks could have the responsibility of the dental hygienist.

### Conclusions

The P3L process in dental hygiene education can be essential for better knowledge of the community and society where we live. This may help to build competency for critical thinking and decision making with communication skills with colleagues to find creative solutions in the real world. Learning activities outside of the school may help to expand job and duty tasks of the community dental hygiene.

### Learning Outcomes

To apply learning activities in dental hygiene education with a novel approach

To better understand of the P3(Project, Place, Problem)-Based Learning(P3L) process

### Presenting Author Brief CV

I am a graduate student in the Master of Science in Dental Hygiene (MSDH) at Yonsei University in 2023.



## Assessment of the dental erosive potential of non-alcoholic beer

Hye Young Mun<sup>1</sup>, Mi Gyung Cho<sup>1</sup>, Ye Bin Cho<sup>1</sup>, Seung Joo Kim<sup>1</sup>, Do Yeon Kim<sup>1</sup>, Jung Yun Kang<sup>1\*</sup>

<sup>1</sup> Department of Dental Hygiene, Yonsei University, South Korea

### Problem Statement

The health-conscious trend in the domestic beverage market due to COVID-19 has brought about many changes in our lives. One notable shift is the increasing interest in non-alcoholic beers with a low-calorie burden and reduced alcohol content. Previous studies have shown the effects of alcoholic beverages such as alcoholic beer on oral health, but there are no studies on the effects of non-alcoholic beer on oral health.

### Purpose

This study aimed to analyze the effects of non-alcoholic beer on oral health by comparing it with alcoholic beer.

### Methods

Four beverages (beer C, non-alcoholic beer C, beer H, and non-alcoholic beer H) and two control groups (mineral water and coke) were utilized to measure pH. The buffering capacity of each beverage was compared by assessing the pH from the initial pH to pH 5.5 and pH 7.0. In addition, *Streptococcus mutans* was inoculated into Brain Heart Infusion cultures diluted to a final concentration of 0%, 5%, 10%, and 20% of the experimental beverages, and absorbance was measured after 24 hours to compare biofilm formation.

### Results

The pH of the experimental beverages was all below pH5.5 except for the mineral water, and the least buffering beverage was non-alcoholic beer H, which was the same for both pH5.5 and pH7.0. In addition, biofilm formation was significantly higher in cultures diluted with 5% and 10% non-alcoholic beer H ( $P>0.001$ ).

### Conclusions

Enamel, the tooth surface, undergoes remineralization above pH5.5, while dental erosion occurs below pH4.5. The findings of this study indicate that non-alcoholic beers have a pH 4.5 or lower, potentially impacting the

tooth surface. Moreover, biofilm formation was notably higher in the case of non-alcoholic beer H compared to other beverages, emphasizing the necessity for additional research on the effects of various non-alcoholic products on oral health. There is a need to caution individuals who regularly consume non-alcoholic beer.

### Learning Outcomes

The reader can learn about the effect of non-alcoholic beer on oral health by comparing it with alcoholic beer.

### Presenting Author Brief CV

Hye Young Mun has worked in dentistry for about 4 years after her undergraduate studies and is currently a master's student in the Department of Dental Hygiene at Yonsei University. Her main field of study is cell physiology, which she is combining with the field of dentistry. Her interests cell physiology, dental caries, and periodontal disease bacteria related geriatric dentistry. In this current research, together with other colleagues, she designed the study, run experiment and analyzed the data, wrote the paper, and presented the poster. In this current research, together with other colleagues, she designed the study, run experiment, analyzed the data, wrote the paper, and presented the poster. For future collaboration, she can be contacted through email: hyeyoung@yonsei.ac.kr

## Plaque removal and gingivitis reductions evaluation using toothbrush with a thin-head, slender-neck and super-tapered bristles

**Hyo Jung Kim<sup>1</sup>, Joo Yeon Lee<sup>2</sup>, Eun song Lee<sup>1</sup>, Ui Won Jung<sup>2</sup>, Ryo Horikoshi<sup>3</sup>, Naho Suzuki<sup>3</sup>, Yasushi Okuda<sup>4</sup>, Jae Kook Cha<sup>2</sup>, Baek Il Kim<sup>1\*</sup>**

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<sup>3</sup> Research and Development Headquarters, Lion Corporation, Japan

<sup>4</sup>., Lion Innovation Center (Shanghai) Co., Ltd., China

### Problem Statement

Proper tooth brushing is fundamental for dental plaque control, but various challenges, such as buccal mucosa, tongue, and prosthetic appliances, make it difficult to reach certain areas in the oral cavity. Typically, it is challenging to access the rearmost molars and implants with conventional toothbrushes, which leads to difficulties in maintaining optimal oral hygiene and an increases the risk of oral diseases. In response to these challenges, a novel toothbrush design was developed by integrating several features, including a thin head, super-tapered bristles, and a slender neck. These design characteristics are expected to reduce plaque and gingivitis in hard-to-reach areas, such as the rearmost molars and spaces between implants and gingiva. This innovative toothbrush design aims to address the limitations of conventional toothbrushes and enhance oral health outcomes in the difficult-to-access regions of the oral cavity.

### Purpose

To evaluate a toothbrush designed with a thin head, slender neck, and super-tapered bristles to target hard-to-reach areas in the oral cavity in terms of reducing dental plaque and gingivitis.

### Methods

This cross-over study included 58 adults aged 20 and older. All participants were randomly assigned test and control toothbrushes (normal head and round filament) for two 4-week phases. Participants brushed their teeth twice daily in a habitual manner. At the start and end of each phase, we assessed the Silness-Löe Plaque Index (PI), Löe & Silness Gingival index (GI), and Bleeding on probing index (BOP) and performed plaque fluorescence tests using quantitative

light-induced fluorescence.

### Results

After using the test toothbrush, PI, GI, and BOP decreased by 25%, 30%, and 48%, respectively ( $p < 0.05$ ). In the case of the rearmost molars, PI, GI, and BOP decreased by 18%, 26%, and 47%, respectively ( $p < 0.05$ ). In the case of implants, GI and BOP decreased by 31% and 57%, respectively ( $p < 0.05$ ). Furthermore, based on the plaque fluorescence tests, after using the test toothbrush, both the plaque area in the anterior teeth and the plaque score on the rear most molars decreased by 25% ( $p < 0.05$ ) and 14% ( $p = 0.527$ ), respectively.

### Conclusions

The test toothbrush excelled at reducing plaque and gingivitis than the control toothbrush. In particular, the test toothbrush showed an excellent reduction in dental plaque and gingivitis in the rearmost molars and implants.

### Studies in Progress

This study has been completed in its entirety before submission.

### Learning Outcomes

The toothbrush designed with a thin head, slender neck, and super-tapered bristles is for general use and specifically addresses the challenges associated with implant care, providing an effective means for controlling plaque and preventing peri-implant inflammation.

### Presenting Author Brief CV

Registered Dental Hygienist

Ph.D. in Preventive Dentistry and Public Oral Health



## Development of a washing holder and a washing brush to prevent stabbing accidents when dental instruments washing

**Gyu-Min Jung<sup>1\*</sup>, Jeong-hyeon Kim<sup>1</sup>, So-hyun Nam<sup>1</sup>, Kyeong-ran Park<sup>1</sup>, Go-eun Lee<sup>1</sup>, Han-ul Cha<sup>1</sup>, Yu-jin Cho<sup>1</sup>, Jin-gyeong Jung<sup>1</sup>, Ji-yeon Choi<sup>1</sup>, Seo-yeon Hong<sup>1</sup>**

<sup>1</sup> Department of Dental Hygiene, Daegu Health College, South Korea

### Problem Statement

The majority of dental medical devices are characterized by their sharp and pointed features in both directions, leading to frequent occurrences of bodily injury and puncture accidents during the cleaning process of these devices. In particular, various studies have reported confirmed cases of viral and bacterial infections through blood-related exposure to cross-contamination.

### Purpose / Goals / Objective

In this study, we aim to develop a device cleaning stand and a cleaning brush for preventing puncture accidents during device cleaning, in order to ensure the safety of infection control personnel, such as dental hygienists.

### Key Features

During the dental clinical practice period, the student researcher selected a problem situation and conducted a situation assessment by searching relevant papers (puncture accidents, safety accidents in the dental clinic, device cleaning, etc.) and articles as well as searching the patent information search site (KIPRIS). Interviews with advisory organizations (dental clinics, industry) and dental hygienists were conducted to define the key issues (applying design thinking). Then, the TRIZ (40 inventive principles) was applied to derive solutions, and a prototype (test sample) was produced. In the actual production phase, security points were derived through industry consultation, repetitive testing of modified prototype designs, selection of the final design, production of the final prototype, and final evaluation by the industry were carried out in order to proceed with problem-solving and prototype development.

To prevent repeated puncture accidents during device cleaning in dental settings, a device stand was created as an alternative to holding the device by hand during device cleaning, and a silicone-attached pressing plate was made to prevent the device from being pulled during brushing.

The cross-section of the cleaning brush is composed of two materials, with a sponge for cleaning flat surfaces and a strong bristle for cleaning sharp and deep grooves.

### Impact

It is expected to be easy to effectively clean sharp edges when used in clinical settings and to prevent bodily injury due to puncture accidents in advance.

### Conclusions

Through this research, a device cleaning stand for preventing puncture accidents during device cleaning, along with a cleaning brush, was developed.

### Learning Outcomes

This research is the result of the 'Capstone Design' course in the Dental Hygiene Department, where dental clinical problems are identified and the problem-solving process in the school curriculum is experienced, which will be encountered after graduation in dental practice. Through the research results, I hope to see an increased understanding and interest in 'Capstone Design,' which is not limited to the field of engineering, and in the problem-solving processes that encompass 'Design Thinking' and 'TRIZ,' which are addressed in all fields.

### Citation for Publication

This research has a history of presenting posters at the 2023 Korean Dental Hygienists Association Annual Conference and the Daegu International Dental Exhibition (DIDEX).

### Presenting Author Brief CV

Professor in the Department of Dental Hygiene at Daegu Health College

Courses: Oral Health Education, Dental Hygiene Capstone Design

## Public health center-based itinerant oral health care pilot project: Focused on the Cheongyang , Korea

**Hyeran Eun<sup>1</sup>, Jae-Young Lee<sup>1\*</sup>**

<sup>1</sup> Department of Public Health Science, Graduate School of Dankook University, Cheonan, Korea, South Korea

<sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, Cheonan, Korea, South Korea

### Problem Statement

Certain regions in Korea lack adequate dental facilities in the oral health sector, making itinerant oral health care based on public facilities essential. Consequently, the aim of this study was to conduct itinerant oral health management and observe corresponding changes in health status.

### Purpose

This project aimed to create a structured mobile oral health management manual and offer services by researching the establishment of a public health center-based mobile oral health management manual. The goal was to standardize services for each target group in the mobile oral health care project.

### Methods

We conducted a itinerant oral health management in the Cheongyang area and compared and evaluated the changes in oral health status of those who participated in oral care and those who did not participate after 3 months.

### Results

The subjects who participated in the itinerant oral health management were found to be in a healthier state in terms of gingival inflammation symptoms and average dental biofilm index than those who did not participate, and their self-efficacy for oral health management was found to have significantly increased compared to before participation.

### Conclusions

In conclusion, itinerant oral health care in medically underserved areas can help improve oral health and self-efficacy.

### Learning Outcomes

In conclusion, itinerant oral health care in medically underserved areas can help improve oral health and self-efficacy.

### Citation for Publication

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### Presenting Author Brief CV

As a doctoral student in dental hygiene, I am conducting research on oral care in the community.

# The currently situation of oral health and the future perspective of dental hygienist in Taiwan

**Su Cheng-yih<sup>1\*</sup>**

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## Problem Statement

In Taiwan, the prevalence of periodontitis rate of adult is 80.48% (2016), carries prevalence of carries under five years old children is 65.43% (2018). Also, Taiwan is coming to the agency society, which means the oral care of elderly will be an important issue in the future.

The oral health in Taiwanese is poor, but in Taiwan, national qualification of dental hygienist is not existed.

Dental hygienist plays an important role in maintain well oral health, which performs periodontal therapy, education to promote and maintain a good oral health. People who works at assistant in dental clinic or hospital, but not as a dental hygienist.

## Purpose / Goals / Objective

This research is to understand the currently situation of dental assistant, then examined the future perspective of dental hygienist in Taiwan.

## Key Features

We have take the interview of several people who is actually work in dental clinic as dental assistant, and analysis the problem and there expect of their occupation.

## Impact

Most of the people has the dissatisfied at similar problems, such as salary, content of the business, business hours. The most important issue is that there isn't have the national qualifications so they cannot do the dental hygienist business.

## Conclusions

Establish of the national qualifications of dental hygienist is the current issue in Taiwan.

## Learning Outcomes

This poster is expect to informed the currently situation of oral health and dental hygienist in Taiwan ,and to

understand the importance of oral hygienist.

## Presenting Author Brief CV

Dental Hygienist, Hiroshima University Hospital, Japan (2022~)

PhD in Oral Health Siences Major, Hiroshima University, Japan (2017-2022)

MA in Oral Health Siences Major, Hiroshima University, Japan (2016-2017)

BA in Departmen of Oral Hygiene ,Taipei Medical University, Taiwan (2013-2016)

## Living Lab Activities for Digital Transformation Problem Solving

**Chanyoung Park<sup>1</sup>, Ra-Ae Bak<sup>1</sup>, Dong-Yun Gang<sup>2</sup>, Yu-Mi Kim<sup>2</sup>, Hyo-Jin Kim<sup>2</sup>, Se-Young Park<sup>2</sup>, Su-Wan Park<sup>2</sup>, Hyo-Lim Sun<sup>2</sup>, Min-Young Song<sup>2</sup>, Hye-In Song<sup>2</sup>, Eun-Bi Cho<sup>2</sup>, Ha-Yeon Choi<sup>2</sup>, Hae-Eun Choi<sup>2</sup>, Nam-Hee Kim<sup>2\*</sup>**

<sup>1</sup> Department of dental hygiene, Yonsei university graduate school, South Korea

<sup>2</sup> Department of dental hygiene, MIRAE Campus, Yonsei university, South Korea

### Problem Statement

The emergence of new technologies such as artificial intelligence (AI), which are driving the Fourth Industrial Revolution, is digitizing social and economic structures. However, community members have difficulty accessing and using digital devices, which poses challenges in the current digitally transformed environment. Dental hygienists should take an active role in assisting community members, including people vulnerable to digital advancement. This includes not only recognizing the impact of digital transformation on access to medical information, but also participating in initiatives to promote digital literacy.

### Purpose

The dental hygiene students of Yonsei University explored digital transformation via the living lab process. Specifically, they investigated whether local residents can use digital technologies to search for clinics and dental information as well as identify problems. Additionally, the students suggested a solution based on the health behavior theory.

### Methods

#### 1. Contextualisation

Students investigated digital transformation in their communities and conducted literature research on digital health literacy. The main goal was to understand and identify key concepts related to digital transformation.

#### 2. Concretization

It was concretized through discussions on how to apply digital to our community in order to solve the inconvenience of digital change.

#### 3. Implementation

Students explored the community to observe digital devices for four weeks. They identified whether residents were using these digital devices well, and sought solutions based on the health behavior theory model.

#### 4. Feedback

Other students in the class provided feedback from their perspectives. Through these activities, we discussed to develop their result, considering various aspects of the impact on society and how to apply in the local community.

### Results

Students identified the following problems. Firstly, they observed that many kiosks have been installed in hospitals due to digital transformation, but vulnerable people (elderly, disabled) have difficulty using the kiosks. Therefore, we suggest a solution to use digital devices for vulnerable people.

Secondly, when local residents searched for dental clinics through the portal, they found incorrect dental information. In response, the students put in a request to correct the information.

### Conclusions

Incorporating the development of community problems and solutions into dental hygiene education will help students improve their knowledge, communication skills, critical thinking, and decision-making skills. It is an opportunity for the dental hygiene profession to address digital challenges and find realistic solutions. It is expected that dental hygienists will be able to better help patients by using digital information to find and correct issues.

### Learning Outcomes

To better understand of the living lab process

### Presenting Author Brief CV

I am a graduate student in Dental Hygiene at Yonsei University in 2023.

## Korean dental hygiene students' perceptions and attitudes toward artificial intelligence: an online survey

Hui Jeong<sup>1</sup>, Sang-Sun Han<sup>1</sup>, Ki-Eun Kim<sup>2</sup>, Il-Soon Park<sup>3</sup>, Youngyuhn Choi<sup>4</sup>, Kug Jin Jeon<sup>1\*</sup>

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### Problem Statement

The development of artificial intelligence (AI) has accelerated along with the Fourth Industrial Revolution, and its importance and necessity have been recognized in the dental field. Dental hygienists, who play a crucial role in providing overall care in the field of dentistry, will need the ability to understand and use AI in order to prepare for the future changes brought by AI. In order to nurture competent dental hygienists who can adapt to the changes of the times, the current status of students must be understood, including their perceptions and attitudes about applications of AI technology in dentistry and expectations for its impact on them. However, no studies have been conducted involving dental hygienists or dental hygiene students.

### Purpose / Goals / Objective

This study investigated Korean dental hygiene students' perceptions and attitudes toward artificial intelligence (AI) and aimed to identify needs for education to strengthen professional competencies.

### Key Features

A 24-question online survey was conducted to the dental hygiene students from four Korean schools in 2021. The questionnaire included seven questions on basic characteristics and 17 AI-related questions on the student's attitudes toward AI, the confidence in AI, predictions about AI, and its future prospects. Responses were analyzed according to the frequencies and correlations between the participants' subjective level of knowledge about AI and questions using chi-square test.

### Impact

Invitations were sent out to 1310 students and 800 (61.1%) participated. Note that 44.2% of participants were interested in AI, and 93.1% accessed AI-related information through the internet. Participants expressed lower confidence in AI's diagnosis (14.8%) and judgment (8.1%) than in those of humans, and 21.9% believed AI would replace their job.

The proportions of participants with positive perceptions of the usefulness and the potential for improvement of AI in dentistry were 65.5% and 55.4%, respectively. Participants from schools who had existing AI knowledge expressed higher demands for AI-related content as compared to those who did not ( $p < 0.05$ ).

### Conclusions

Although dental hygiene students expressed low level of confidence in AI, they were interested in it and had positive views of its application and potential for improvement in dentistry. However, the fact they had little AI-related information from dental hygiene curriculum strongly suggests the need for AI-related lectures in schools to prepare for the future.

### Learning Outcomes

Because dental hygienists mainly perform assistive tasks in dental care, it may be difficult for them to directly utilize AI for essential functions such as disease detection, classification, and diagnosis, like dentists. However, there is strong potential for AI to play a role in significantly reducing the workload of dental hygienists. Therefore, we strongly request that dental hygiene programs include content on basic AI structures and applications in their regular school curriculum.

### Citation for Publication

Jeong, H., Han, S. S., Kim, K. E., Park, I. S., Choi, Y., & Jeon, K. J. (2023). Korean dental hygiene students' perceptions and attitudes toward artificial intelligence: An online survey. *Journal of Dental Education*.

### Presenting Author Brief CV

Graduate student in Department of Oral and Maxillofacial Radiology, Yonsei University, South Korea [Mar 2021 ~ ]  
B.S in Department of Dental Hygiene, Yonsei University, South Korea [Mar 2015 ~ Feb 2018]  
A.S in Department of Dental Hygiene, Shinheung College, South Korea [Mar 2012 ~ Feb 2015]

# Trends of smoking prevalence among Korean adolescents using joinpoint regression: Focusing on the Korea Youth Risk Behavior Web-based Survey(2011-2020)

**Mina Kim<sup>1</sup>, Hiejin Noh<sup>\*</sup>**

<sup>1</sup> Dental Hygiene, Yonsei University Graduate School, South Korea

## Problem Statement

In Korea, policies such as raising cigarette prices and adding warning images on packs have effectively raised awareness and discouraged smoking initiation, especially among teenagers. Examining the trends in smoking rates helps in understanding the impact of smoking cessation policies and the COVID-19 pandemic on adolescent smoking rates. Most of the existing related studies were cross-sectional studies but there were limitations in analyzing the trends in youth smoking prevalence in the short term and understanding the long term.

## Purpose

Therefore, this study investigated long-term trends in youth smoking prevalence for cigarettes and e-cigarettes between 2011 and 2020 using joinpoint regression.

## Methods

This study utilized data from the 7th to 16th Korea Youth Risk Behavior Web-based Survey, with participant numbers declining annually from 75,643 in 2011 to 54,948 in 2020. Smoking-related questions in this retrospective study were presented differently depending on the period and type of cigarettes. From 2011 to 2018, participants were asked about the number of days they smoked cigarettes in the last 30 days. This question was slightly modified for 2019-2020. For e-cigarettes, the question from 2011 to 2014 was about any use in the last 30 days, which then changed to the frequency of use from 2015 to 2018 and further to specific use of liquid nicotine e-cigarettes for 2019-2020. This study used the SAS 9.4 software to analyze complex sample frequency. Additionally, the study assessed the smoking trends using the joinpoint regression analysis, which showed the Annual Percent Change(APC) and 95% confidence interval. The statistical significance level was set at ( $p < .05$ ). Graph visualization was conducted with the R 4.2.3 software.

## Results

The adolescent smoking rate for cigarettes started at 12.1% in 2011 and gradually declined, reaching 6.3% in 2016. In 2020, the rate steeply decreased to 4.4%. The rate of e-cigarette uses among adolescents started at 4.7% in 2011, slightly increased

to 5.0% in 2014, and then decreased to 4.0% in 2015. Following the outbreak of COVID-19 in 2019, the rate further declined to 1.9%. Between 2011 and 2020, APC showed a decrease of -9.1% annually for cigarettes (95% CI: -11.3, -6.8), -7.4% annually for e-cigarettes(95% CI:-12.3,-2.1).

## Conclusions

This study demonstrated that the smoking rates of both cigarettes and e-cigarettes among Korean adolescents significantly decreased between 2011 and 2020, suggesting that the implementation of anti-smoking policies and the impact of COVID-19 have contributed to the reduction in smoking rates among adolescents.

## Learning Outcomes

This study, focusing on the trends in smoking prevalence among Korean adolescents between 2011 and 2020, reveals significant outcomes for cessation policy. Attendees will learn about the effectiveness of anti-smoking measures implemented in South Korea, including increased cigarette prices and the introduction of warning images on cigarette packs. They will also understand the impact of the COVID-19 pandemic on adolescent smoking habits, notably the heightened awareness of respiratory health leading to a reduction in smoking rates. The study's use of joinpoint regression analysis offers insights into the long-term trends of smoking prevalence among youth, highlighting a marked decrease in both cigarette and e-cigarette usage. By examining these trends, attendees will grasp the importance of early intervention in adolescent smoking behaviors and the potential long-term benefits of sustained cessation policy.

## Presenting Author Brief CV

The author is a doctoral candidate at Yonsei University in South Korea, pursuing a degree in Dental Hygiene. The author is deeply engaged in researching the nexus of oral health, smoking, and smoking cessation policies. Her work focuses on understanding how smoking habits influence oral health and assessing the effectiveness of policies designed to curb tobacco use.

# Changes in Dental Hygienist Behavior through the Implementation of Personalized Interdental Brush Prescriptions Utilizing Interdental Space Measurements during Oral Hygiene Education.

**You-jin Cho<sup>1\*</sup>**

<sup>1</sup> Dental biomaterials science, School of Dentistry, Pusan national university, South Korea

## Problem Statement

The interdental brushes are essential tools in oral hygiene. However, the variety of sizes and shapes from numerous manufacturers makes choosing the right one difficult. Even within a patient, interdental space sizes vary. Dental hygienists, as professionals, should be able to choose the right size for each space, prescribe different sizes, and educate patients. Unfortunately, this is not always the case. In such situations, relying on proper individual oral hygiene education to achieve positive outcomes may be futile.

## Purpose / Goals / Objective

This investigation with prescription of interdental brushes using the ISMT has a purpose to get the fundamental data to establish a more effective program in oral hygiene education and get patient's cooperation and motivation.

## Key Features

The use of interdental brushes of appropriate size is essential for effective interdental cleaning. Therefore, ISMT recommends the appropriate interdental brush size by measuring the interdental space. ISMT provides sizes according to the international ISO standard and distinguishes sizes by color. The intervention with new approach of prescription of the right size of interdental brushes in the usual oral hygiene education makes difference to the professionals and patients together.

## Impact

The encouragement of oral hygiene education by professionals with trust of patients can be acquired by the use of prescription system of interdental brushes.

## Conclusions

The educational protocols for the interdental brushes are not firmly established. The measurement and prescription

using ISMT encourage the sense of vocation of dental hygienists results in the increase of educational activities. The trust from the patients leads to cooperation. The interdental space measurement tool and prescription of interdental brushes can increase the clinical ability of dental hygienists.

## Learning Outcomes

The prescription of interdental brushes through interdental space measuring can increase the clinical ability of dental hygienists.

## Presenting Author Brief CV

I'm a 10-year dental hygienist and currently in the PhD at Graduate school. I am interested in oral care products, starting with research on interdental brushes.



# Association of oral health knowledge with oral health literacy and oral health behaviors among newly enrolled students in a Japanese medical university

**Hitomi Suzuki<sup>1\*</sup>, Kumiko Sugimoto<sup>1,2</sup>, Nana Yoshida<sup>1</sup>, Ayako Kubota-Miyazawa<sup>1,3</sup>, Itsuki Takazawa<sup>1,4</sup>, Naomi Yoshida<sup>1</sup>**

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<sup>4</sup> Department of Oral Health Sciences, School of Health Sciences, Meikai University, Japan

## Problem Statement

Acquisition of oral health knowledge and oral health literacy (OHL), the ability to collect and utilize oral health information, is important to promote oral health. In Japan, oral health conditions of university students were reported to rapidly get worse compared with high school students. Therefore, it is important to investigate the status of oral health knowledge, OHL, and oral health behaviors and relationships between them in university students.

## Purpose

This study aimed to clarify the status of oral health knowledge and the relationships of the knowledge with OHL and oral health behaviors among newly enrolled university students.

## Methods

An online questionnaire survey of 847 first-year students at Tokyo Medical and Dental University was conducted in 2020-2022. Question items included basic information, source of oral health information, OHL, recognition of dental terms, accuracy of oral health knowledge, and oral health behaviors. To analyze the relationships between oral health knowledge and OHL or oral health behaviors, the students were classified into high knowledge (HK) and low knowledge (LK) groups based on the median of the sum numbers of recognized terms and correct answers, and the differences in OHL and the behaviors between the 2 groups were analyzed using Chi-square and Mann-Whitney U tests. A p-value of <0.05 was considered statistically significant.

## Results

A total of 353 students voluntarily participated in this study (41.7% response rate). The median of sum number of knowing items was 17 (68% of total items). Regarding OHL, the HK group (n=175) demonstrated significantly higher ratios of students reporting that they were able to understand and transmit information, and make decisions about oral health behaviors based on the information, compared with the LK group. The HK group used more internet through smartphones and PCs as a source of information, indicating that they actively collected oral health information. Additionally, the HK group showed a significantly higher frequency of tooth brushing per day and higher ratios of students using fluoride toothpaste and visiting dental clinics regularly, suggesting that acquiring oral health knowledge may link to better oral hygiene habits.

## Conclusions

The HK group reported a significantly higher ability to understand and transmit information and make decisions of behavior based on the information among five OHL contents, which indicates that acquiring knowledge may enhance the ability to make use of collected information. Furthermore, the results indicated that the HK group may actively search for information and their obtained knowledge may lead to better oral hygiene habits.

## Learning Outcomes

The provision of accurate and useful information on





oral health from dental hygienists is important for the promotion of oral health literacy and oral health behaviors in university students

## Presenting Author Brief CV

Dental Hygienist, Assistant Professor, Tokyo Medical and Dental University

### Education:

-PhD, Niigata University, 2019

### Occupation:

-Assistant Professor, Tokyo Medical and Dental University, Tokyo, Japan, 2019-current

-Dental Hygienist, Department of Dentistry and Oral Surgery, Fujita Health University Hospital, Aichi, Japan, 2013-2018

-Dental Hygienist, Tokyo Metropolitan Center for Oral Health of Persons with Disabilities, Tokyo, Japan, 2004-2013

## Relationship between Oral Function and Physical Fitness of Aged 75 and over in Community-dwelling

Masayo Fukuda<sup>1\*</sup>, Hiromi Ezaki<sup>1</sup>, Yukie Hama<sup>1</sup>, Miki Nakamura<sup>1</sup>, Ayako Miyazawa<sup>1</sup>, Takako Ujihashi<sup>1</sup>, Aki Nishiyasu<sup>1</sup>, Yukie Yoshida<sup>1</sup>

<sup>1</sup> Oral Health Science, Kobe Tokiwa University, Japan

### Problem Statement

As the average life expectancy continues to increase worldwide, one of life's goals is to end one's lifetime in good health. In achieving this goal, the oral is an important part of eating, speaking, and aesthetics, and the same is true for physical fitness, which is directly related to exercise.

### Purpose

In Japan, the number of people certified in the elderly requiring nursing care rises significantly with age. In this report, we examined the relationship between oral function and physical fitness among aged 75 and over in community-dwelling and obtained some findings.

### Methods

The subjects were 96 aged 75-93 years (16 men and 80 women; mean age  $80.7 \pm 4.3$  years). The OF-5 was used to deterioration of oral function, and those with two or more items were in the group with oral frailty.

Physical fitness was measured in grip strength, time for one-leg standing with eyes open, 5-second chair stand test, and toe grip strength. The association between the oral frailty group and physical fitness was examined by Mann-Whitney U test ( $p < 0.05$ ).

### Results

Of the 96 subjects, 46 (47.9%) fell in the group with oral frailty. Regarding the relationship between oral frailty and physical fitness, grip strength and toe grip strength were examined separately for men and women because these items are related to muscle strength, and a significant association was found for both men and women in toe grip strength ( $p < 0.05$ ). Many of the aged 75 and over who participated in the measurement sessions on their own and were considered to have a high level of health consciousness also fell into the category of those with oral frailty. Oral frailty, if left untreated, is likely to progress to

oral hypofunction and must be addressed early. In addition, a relationship between oral frailty and toe grip strength was observed, indicating the importance of maintaining oral function and toe grip strength throughout life to avoid elderly requiring nursing care.

### Conclusions

The results suggest that prevention of deterioration in oral function and toe grip strength is important for maintaining good health as the elderly.

### Learning Outcomes

The results of an examination of the relationship between oral function and physical fitness of aged 75 and over in community-dwelling suggest that prevention of deterioration in oral function and toe grip strength is important for maintaining good health as people age. The point is that dental hygienists must be actively involved in prevention of deterioration in oral function.

### Presenting Author Brief CV

Licensed Dental Hygienist (1986)

Education

Ph.D. (Dentistry, 2018) Niigata University Graduate School of Medical and Dental Sciences Division of Comprehensive Prosthodontics

Master of Arts and Sciences (2009) Osaka Kyoiku University Course of Health Sciences at the Graduate School of Education

Bachelor of Sociology (2005) Bukkyo University School of Sociology Department of Social Welfare

Professional experience

2024- present Professor, Kobe Tokiwa University Department of Oral Health Sciences

2019-2024 Professor, Department of Oral Health, Kobe Tokiwa Junior College





2015-2019 Associate professor, Department of Oral Health,  
Kobe Tokiwa Junior College

2009-2015 Lecturer, Department of Oral Health, Kobe  
Tokiwa Junior College

2008-2009 Assistant professor, Department of Oral Health,  
Kobe Tokiwa Junior College

2005-2008 Full-time teacher, Osaka Dental University Dental  
Hygienist College

1989-2005 Chief academic officer, Taisei Gakuin University  
Dental Hygienist College

1988-1989 Dental Hygienist, Morinomiya Dental Clinic

1986-1988 Dental Hygienist, Shima Dental Clinic



# Evaluating the effectiveness of in vitro testing devices using saliva through analysis of correlation with oral characteristics

**Na kyung Hwangbo<sup>1</sup>, Sun mi lee<sup>1\*</sup>**

<sup>1</sup> Department of Dental Hygiene, dongnam health university, South Korea

## Problem Statement

Recent advancements in non-invasive saliva analysis technologies for in vitro diagnosis have garnered attention for their potential in predicting, preventing, treating, and educating about oral diseases. Customized approaches based on patient's oral characteristics are feasible, emphasizing the need to confirm their effectiveness and highlighting their high clinical value.

## Purpose

This study aims to analyze the correlation between saliva components, oral Candida, and oral characteristics. Additionally, it seeks to confirm the utility of an in vitro testing device for diagnosing, preventing, treating, and educating not only major oral diseases but also conditions like oral candidiasis and bad breath.

## Methods

In a study from May 1 to June 20, 2023, 184 female college students underwent detailed saliva analysis, involving filtration, smearing on dextrose Sabouraud medium, culturing at 37°C for 24 hours, and colony counting. The SiLL-Ha® saliva tester analyzed samples per the manufacturer's instructions. Questionnaires collected oral-related characteristics, and IBM SPSS Statistics (ver 22.0) analyzed the data with a 0.05 significance level.

## Results

Results showed individuals with no bacteria (MS) reported significantly higher subjective bad breath (26.98) than frequent perceivers (10.83). However, the device's limitation to detecting only NADH from caries bacteria metabolism restricted its correlation with bad breath. Occasional perceptions of blood (30.66) were significantly higher than its absence (17.02), suggesting a potential link between periodontal disease morbidity and bad breath. For dry mouth, individuals experiencing it often (50.76) had significantly higher white blood cell counts than those who never (36.20) or occasionally (33.51) felt dry mouth,

indicating a correlation between increased white blood cell count and dry mouth, potentially useful for assessing dry mouth in patients.

Significant differences were noted in Candida bacteria, acidity, blood, protein, and ammonia levels. Bacteria values above 100 were low, while values above 100 for other components were consistently high, indicating a significant relationship between Candida bacteria levels and the oral environment, influencing teeth, periodontal tissue, and bad breath.

## Conclusions

The study revealed a significant relationship between saliva components, oral characteristics, and Candida bacteria, emphasizing strong correlations. Bacterial presence and acidity in dental health correlated with Candida bacteria levels. Higher blood counts associated with perceived bad breath in periodontal health, and increased white blood cell counts were linked to a sensation of dry mouth. The findings underscore correlations, suggesting versatile applications across patient groups. The clinical utility of an in vitro testing device using saliva was confirmed, providing crucial foundational data for future oral disease diagnostic device and technology development.

## Learning Outcomes

Understand oral characteristics and in vitro testing devices using saliva.  
Gain insight into how to apply this device to various patient groups in clinical.  
Learn the correlation between various oral characteristics and saliva components and learn how to apply them to the patient's dental hygiene process.

## Presenting Author Brief CV

- Affiliated with the Department of Oral and Facial Pain and Oral Medicine, College of Dentistry, Yonsei University  
- ph.D. in Dental science



# The Oral Health Sector of Korea National Health Promotion Plan: An Integrative Literature Review

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<sup>2</sup> Department of Dental Hygiene, Suwon Science College, South Korea

## Objective

The 5th Comprehensive National Health Promotion Plan is currently in progress, but there are no changes in the oral health field. Research on the direction of improvement is insufficient. Therefore, in this study, the change and main characteristics of the oral health field of the Comprehensive Plan for National Health Promotion from the 1st to the 5th rounds are examined, and the implications and future improvement directions are examined by comparing them with cases in developed countries.

## Search Strategy / Selection Criteria

In selecting the reviewed literature for this study, English-language literature was limited due to the availability of subscriptions. English literature was limited to the subject of investigation. The oral health policy at the national level was investigated, and the United States and Canada were targeted.

## Data Collection and Analysis

Changes in Comprehensive National Health Promotion Plan's Oral health sector in three countries were compared, and the direction of the three countries (Korea, the United States, and Canada) in accordance with the recent Oral health paradigm was confirmed. In this study, we reviewed the existing literature using the narrative review method to draw implications for strategies and directions for oral health promotion in Korea.

## Main Results

In Korea, the oral health promotion strategy is included in the 5th Comprehensive National Health Promotion Plan, and the project is being led by the government. The United States prepared a national-led oral health promotion strategy and suggested multi-disciplinary cooperation to improve overall oral health and reduce the oral health inequality. For more active intervention, Canada established an oral health-related department and assigned experts, while emphasizing cooperation between the government and the private sector.

## Conclusions

As a result of this study, Korea is also making efforts to improve oral health, but more active government intervention is needed to reduce the inequality in oral health by population group. To this end, it is necessary to establish a strong multi-sectoral cooperation system and prepare a strategy for implementation.

## Free of Bias

Limitations of this study include the fact that only North American countries were compared, and the narrative review process may have limited literature selection. Therefore, future studies should be more comprehensive, including European and Oceania states, and consideration should be given to improving validity through systematic reviews.

## Learning Outcomes

For the consistent and continuous implementation of the oral health strategy, it is thought that the expansion of an organization in charge of oral health and the investment of public funds should be expanded. Although the Department of Oral Health Policy was newly established in the Ministry of Health and Welfare in 2016, its size is very small compared to other countries. In addition, in order to implement effective oral health strategies, it is necessary to develop an active cooperation system between the public and private sectors for each local government. The input of public resources is essential to the implementation of oral health strategies targeting the socio-economically disadvantaged.

## Citation for Publication

Previously published in J dent hyg sci 2023;23:185-92, <https://doi.org/10.17135/jdhs.2023.23.3.185>

## Presenting Author Brief CV

Suwon Science College

## Addressing the accessibility of oral health services for disabled individuals: utilizing the Study-Life Integration(SLI) in South Korea

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### Problem Statement

The FDI/WHO/IADR has emphasized the importance of ensuring equal access to oral health services for people with disabilities, who experience a significant disease burden. Oral health services should be provided for vulnerable populations. The South Korean government has reported a goal to achieve oral health equity by 2026. Dental hygienists should advocate for access to dental care for vulnerable populations in order to help achieve national healthcare goals.

### Purpose

Based on a Study-Life Integration (SLI) model, dental hygiene students at Yonsei University investigated access to dental care environments using the “Guide-Experience-Accompaniment-Activity” process. They aimed to identify problems and find solutions based on health behavior theory to address them.

### Methods

The SLI model has four steps: First, students identify the problem within lectures. Secondly, they prioritize which problems to solve first among the issues. Third, they thought and analyzed the causes of the problems. Finally, they attempt to discuss a solution with experts and authorities. Students researched the reasons why people with disabilities have limited access to dental care to identify the challenges faced when visiting a dental clinic for dental services. These reasons include barriers to sidewalks, crosswalks, and transportation. To explore and find solutions based on the Integrated Behavior Model (IBM), the students visited and examined the dental clinic for four hours every Thursday for four weeks during the second semester of their sophomore year in 2022-2023.

### Results

During the guided phase, students learned about disparities

in oral health among vulnerable populations. They encountered challenges in accessing dental care. While exploring the area around the dental clinic with teaching assistants, the students identified two issues. First, there were no elevator or non-slip stickers. Secondly, there were motorcycles on the sidewalk, no traffic lights, and a lack of low-floor buses. They want to emphasize that this was an environmental constraint based on the Integrated Behavior Model (IBM). The solutions may include improving accessibility by reconstructing sidewalks, installing traffic lights with braille, and increasing the number of low-floor buses. Finally, they organized a solution and requested a proposal from the city hall. These issues may be the responsibility of a dental hygienist to monitor.

### Conclusions

The SLI process in dental hygiene education may be necessary to promote creative and integrated thinking and to cultivate empathy for vulnerable social groups. This may help students connect the classroom with their living environment or community and address social issues.

### Learning Outcomes

The Study-Life Integration (SLI) process may help students integrate dental hygiene education into lectures and community to address social issues.

### Presenting Author Brief CV

Dept. of Dental Hygiene, Yonsei University Graduate School, Integrative Program

Dept. of Dental Hygiene, Yonsei university, Teaching Assistant

Social Dental Hygiene Subcommittee, Korean Society of Dental Hygiene Science, Committee Member

# Investigation of oral care related knowledge and behavior of nursing staffs in nursing homes

**Xiue Li<sup>1\*</sup>**

<sup>1</sup> department of nursing, Peking University School of Stomatology, China

## Problem Statement

According to the results of the seventh national census, in 2020, the population aged 60 and above in China was accounting for 18.70% of the total population, among which the population aged 65 and above was accounting for 13.50% of the total population. China has fully entered an aging society. Good oral health is the basis for improving the quality of life and ensuring social status of the elderly. Good oral care can promote the quality of life and social status of the elderly. The oral health of the elderly living in nursing homes is worse than that in the family pension mode.

## Purpose

To investigate the current status of oral care cognition and behavior in nursing homes for the elderly.

## Methods

By convenient cluster sampling method, 215 nursing staffs (nurses and caregivers) from 6 nursing homes in Beijing-Tianjin-Hebei region were selected as the research objects from January to May 2022, and the self-designed questionnaire was used to investigate the oral care knowledge and behavior of nursing staffs in nursing homes.

## Results

A total of 200 valid questionnaires were collected, 100% of the respondents thought that oral care should be provided for the elderly, and 99.5% of the nursing staffs had done oral care; 94.5% of the nursing staffs performed oral care for the elderly twice or more a day, 92.0% of the nursing staffs performed oral care for the elderly for more than 5 minutes, more than 50% of the nursing staffs thought that oral care for the elderly could achieve the purpose of "preventing oral infection", "keeping the oral environment clean", "preventing dental diseases" and "preventing halitosis". The most frequently performed oral care was "denture

cleaning", "tooth brushing", "mouth rinsing" and "tongue cleaning", and the most difficult contents were "feeding and swallowing training" (26.5%), "tongue cleaning" (25.5%) and "salivary gland massage" (21.5%); 80.56% of the nurses and 96.34% of the caregivers performed oral care for the elderly ( $\chi^2=12.104$ ,  $p=0.001$ ), and the frequency of oral care was higher in the caregivers than in the nurses ( $\chi^2=18.626$ ,  $p=0.001$ ). The proportion of nurses and caregivers who had received relevant training was 47.22% and 85.37%, respectively ( $\chi^2=25.448$ ,  $p<0.001$ ).

## Conclusions

The related standards of oral care for nursing staffs in nursing homes are not perfect, the relevant training is insufficient, the division of labor between practicing nurses and caregivers is not clear, and the relevant situation still needs to be further improved.

## Learning Outcomes

the status of oral care in China

## Presenting Author Brief CV

Master Tutor of Peking University  
professional field:

Oral and maxillofacial surgery, Hospital infection control, Emergency care and Nursing management  
professional affiliations:

Chairman of stomatology professional committee, Chinese nursing association, Vice chairman of the oral care committee of the Chinese dental association, Chairman of stomatology committee of Beijing nursing association.

# Influence of biofilm maturity on the in vitro antibacterial efficacy of cold atmospheric plasma in oral microcosm biofilms

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<sup>1</sup> Department of Health Science, Gachon University Graduate School of Public Health, South Korea

<sup>2</sup> Department of Dental Hygiene, Gachon University College of Health Science, South Korea

## Problem Statement

The strategic management of oral biofilms is pivotal in both preventing and treating various oral pathologies. Cold atmospheric plasma (CAP) emerges as a novel and efficacious modality for biofilm regulation, offering the advantage of targeted application while sparing the surrounding oral tissues from damage. A critical aspect to consider is the progressive maturation of oral biofilms, characterized by increased biomass and the accumulation of extracellular polymeric substances (EPSs). These EPSs form a robust barrier that significantly hinders the permeation of antimicrobial treatments. Despite this, the specific impact of biofilm maturity on the effectiveness of CAP jet treatments in disrupting these biofilms remains an underexplored area in contemporary dental research.

## Purpose

Therefore, this study aimed to evaluate the antibacterial efficacy of cold atmospheric plasma (CAP) against oral microcosm biofilms and determine whether it is influenced by biofilm maturity.

## Methods

Using human saliva, oral microcosm biofilms were cultured on 114 hydroxyapatite disks for 2 and 6 days, creating two maturation stages. The biofilms were divided into three treatment groups as follows: distilled water (DW) for 1 min, CAP for 2 min, and 0.12% chlorhexidine gluconate (CHX) for 1 min. The treatment process was repeated daily for 5 days at the same time each day. Antibacterial efficacy was assessed by measuring the red fluorescence intensity (RatioR/G) of the oral biofilms and quantifying EPSs and bacterial viability. The RatioR/G was analyzed using images captured with a quantitative light-induced fluorescence digital camera. EPSs were quantified through phenol-sulfuric acid colorimetric analysis, and bacterial survival rates were evaluated using live/dead bacterial staining assays and confocal laser scanning microscopy.

## Results

CAP and CHX treatments notably increased RatioR/G in 6-day biofilms, with increases of 1.09- and 1.08-fold compared to the 2-day biofilms, respectively. Following CHX treatment, there was a significant 1.71-fold increase in EPSs in the 6-day biofilms. However, the efficacy of CAP against EPSs did not significantly differ depending on biofilm maturity. Furthermore, CAP treatment resulted in the lowest bacterial survival rate in the 2-day biofilms, accompanied by observed weakening of bacterial cohesion.

## Conclusions

Our findings highlight the significant impact of oral biofilm maturity on the antimicrobial treatment efficacy, suggesting that mature biofilms may have reduced susceptibility to antimicrobial agents. Furthermore, CAP consistently exhibits antimicrobial effectiveness against biofilms at any maturity stage, effectively reducing biofilm pathogenicity.

## Learning Outcomes

Our study provides novel insights into the relationship between antibacterial treatments and biofilm maturity. CAP is potentially a better alternative to traditional antimicrobials, such as CHX, as its efficacy is more consistent across different biofilm stages and may have fewer side effects.

## Presenting Author Brief CV

Graduate student in Dental Hygiene, Gachon University College of Health Sciences, Korea

## Oral health support for Ukrainian refugees at dental office of university in Kobe, Japan: report and post-evaluation of dental checkups.

**Ayako Miyazawa<sup>1\*</sup>, Yoko Mizumura<sup>1</sup>, Yukiko Takahashi<sup>1</sup>, Takakazu Yagi<sup>1</sup>, Norifumi Moritani<sup>1</sup>, Keisuke Yamashiro<sup>1</sup>, Hiromi Ezaki<sup>1</sup>, Masayo Fukuda<sup>1</sup>, Yukie Yoshida<sup>1</sup>**

<sup>1</sup> Department of Oral Health Sciences, Faculty of Health Sciences, Kobe Tokiwa University, Japan

### Problem Statement

The military invasion of Ukraine caused widespread civilian casualties and infrastructure destruction and forced people for evacuation. Refugees in Kobe, Japan initially needed support in starting their lives, however, as they settled down, their needs shifted to more individualized and specific support. One notable concern was inadequacy of health care, particularly due to difficulties in accessing medical services caused by language barriers.

### Purpose

To address the concern of health care, a non-governmental organization commissioned by the local government, a private hospital, and a university in Kobe collaborated to provide health care by implementing medical and dental checkups.

### Methods

Eighty Ukrainian refugees residing in Kobe as of July 2023 were called for dental checkups through social media. Dental checkup was conducted at the university's dental office from July to September 2023. Dental questionnaires and materials for instructions were prepared in Ukrainian prior to the checkup. Examination items were current dental and prosthetic status, Community Periodontal Index, and oral hygiene, based on the examination items of Kobe City. In addition, as a unique program of the university, oral hygiene instruction (OHI) was provided according to the results of the individuals. After the dental checkup, a questionnaire survey was administered to participants residing in Kobe as of December 2023 to evaluate the program.

### Results

Among 12 participants, 1 (8.3%) had decayed teeth and 10

(83.3%) scored  $\geq 1$  on CPI (PD and/or bleedings), indicating treatment needs, and 5 (41.7%) were assessed "poor" on oral hygiene.

For the questionnaire survey, 7 (70.0%, 1 male, 6 females) with a mean age of 50.3 (SD 12.2) completed the answer. Six (85.7%) "had presenting symptoms" as the reason for receiving dental checkups, demonstrating an equivalent proportion with participants' treatment needs.

Of the six who answered "received treatment after the checkup", 5 (83.3%) cited "felt the need for treatment after the suggestion" as the reason for receiving treatment. All six were satisfied with the treatment they received, commenting "like the results" "everything was cured" and "symptoms disappeared".

While 28.6% felt anxious before the checkup, the "careful" "attitude" of the staff and response in the mother language may have led to six answering "satisfied".

### Conclusions

The presenting symptoms of the participants motivated receiving checkups, and implementation at a dental office may have led receiving treatments. Also, language barriers were covered by "careful" "attitude", as well as responses in their mother language. These factors may have contributed to overall satisfaction of the participants.

### Learning Outcomes

To support oral health of those with language barriers, conducting dental checkups at a dental office with careful attitude and responses in mother language may lead to receiving treatments.

### Citation for Publication

None



## Presenting Author Brief CV

Licensed Dental Hygienist (2010)

Education

Ph.D. (Dentistry, 2018) Tokyo Medical and Dental University

Master of Oral Health (2014) Tokyo Medical and Dental University

Bachelor of Oral Health (2012) Tokyo Medical and Dental University

Graduated from Hamamatsu Dental Hygienist School (2010)

Professional experience

2024-present Lecturer, Department of Oral Health, Faculty of Health Science, Kobe Tokiwa University

2022-2024 Lecturer, Department of Oral Health, Kobe Tokiwa Junior College

2016-2022 Publish Health Insurance Association (Dentistry, Health Care Center)

2014-2016 Tokyo Metropolitan Hiroo Hospital (Dentistry Oral Maxillofacial Surgery)

Summary of the roles in this study

I contributed to the study design, data collection and analysis, and manuscript drafting.



# Impact of rubber cup rotational speed on enamel surfaces with various defect

**A-Young Chun<sup>1</sup>, Hee-Eun Kim<sup>1,2\*</sup>**

<sup>1</sup> Department of Health Science, Graduate school of Gachon University, South Korea

<sup>2</sup> Department of Dental Hygiene, Gachon University College of Health Science, South Korea

## Problem Statement

Current studies lack a thorough investigation into the extent of enamel damage during tooth polishing, with a notable absence of studies specifically addressing the impacts on sound enamel as well as on teeth affected by early-stage caries and pre-existing microcracks.

## Purpose

This study aimed to quantify the extent of enamel damage incurred on various enamel surfaces during rubber cup polishing. It involved applying three distinct rotational speeds of a rubber cup to three types of enamel: sound enamel, enamel with early caries lesions and microcracks.

## Methods

A total of 108 tooth specimens were classified into three groups using a quantitative light-induced fluorescence-digital (QLF-D) camera: the sound enamel group, the early caries group, and the enamel cracks group. A skilled dental hygienist performed tooth polishing on these specimens using a rubber cup and polishing paste, applying an on-off method at a force of 3.0 N for 3 s. This procedure was carried out at three distinct rotational speeds of the rubber cup: 100 rpm, 3,000 rpm, and 10,000 rpm. After polishing, the depth of enamel damage was quantified using a surface profilometer and further examined under scanning electron microscopy (SEM).

## Results

When comparing enamel surface damage depths based on the rotational speed of the rubber cup during polishing, a sound enamel exhibited 3.9-fold deeper damage at 10,000 rpm and 2.7-fold deeper damage compared to the 100 rpm and 3,000 rpm groups, respectively ( $p < 0.001$ ). In the case of early caries, the damage was 3.81-fold deeper in the group with enamel at 10,000 rpm, and 1.6-fold deeper than the group with 100 rpm. Additionally, the damage was 2.42-fold

deeper in the 10,000 rpm group compared to the group with 3,000 rpm ( $p < 0.001$ ). In the case of micro-cracked surfaces, deeper damage occurred, measuring 3.32-fold and 2.39-fold in the group with a rubber cup rotational speed of 10,000 rpm compared to the group with 100 rpm or 3,000 rpm ( $p < 0.001$ ). Upon examining of the surface condition following the polishing of the rubber cup using SEM, the polished area exhibited a pattern characterized by a fractured or uneven surface.

## Conclusions

As the rotational speed of the rubber cup increases, may lead to increased enamel damage. Additionally, polishing defective surfaces may cause more harm compared to sound enamel. Therefore, when using a rubber cup for polishing, it is crucial to assess rpm and evaluate the initial tooth surface condition, including any existing defects.

## Learning Outcomes

Through the results of this study, it is possible to determine the extent of damage to the enamel surface in various conditions based on the rotational speed of the rubber cup. Additionally, it is evident that checking the RPM of the engine used during enamel surface polishing with a rubber cup is crucial. It is essential to assess the initial condition of the surface and identify existing defects.

## Presenting Author Brief CV

During the Ph.D. program at Department of Health Science, Graduate School of Gachon University.



# Relationship between the Korean oral frailty diagnostic items and oral diadochokinesis

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<sup>1</sup> Department of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju 26493, South Korea

## Problem Statement

In Korea, the elderly population is currently rapidly increasing. Because oral frailty is closely related to systemic frailty, the diagnosis and intervention of oral frailty must be actively carried out in dentistry. An oral frailty diagnosis method was recently announced at the Korean Academy of Geriatric Dentistry (KAGD), and interest in oral frailty is increasing. However, some of the six diagnostic items must be evaluated using equipment, and it may be challenging to test older adults because it takes time. Therefore, examining the correlation with indicators that can be assessed without equipment may contribute to expanding treatment for community-dwelling older adults.

## Purpose

This study was conducted to identify indicators with a high correlation with oral diadochokinesis using data that examined the Korean oral frailty diagnostic items for community-dwelling older adults.

## Methods

The data was collected by our research team from elderly over 60 years old (N=100) living in one city in South Korea in 2023. The research team visited senior centers and spoke with the person in charge, and seniors who visited the senior center provided written consent and conducted the study. The six Korea diagnostic criteria for oral frailty (chewing ability, occlusal force, tongue pressure, salivary gland function, swelling function, oral cleanliness status) and oral diadochokinesis were included for analysis. The participants were classified into the Young-old group (60-74 years old) and the Old-old group (75≤).

## Results

Of the 100 study participants, 66 (66%) were over 75 years old, and 45 (68.2%) were female. The number of oral diadochokinesis per second, maximum tongue pressure,

occlusal force (maximum occlusal force, remaining teeth) and chewing ability were significantly lower in the Old-old group than the Young-old group, indicating a higher risk of oral frailty. Tongue pressure, occlusal force and chewing ability, which require the use of equipment, had a statistically significant positive correlation with the number of times /p^/t^/k^/, with correlation coefficients of 0.431, 0.289, 0.291 and 0.379.

## Conclusions

Early diagnosis and evaluation of oral frailty can help older adults recover oral function and prevent the progression of systemic frailty. Indicators for diagnosing oral frailty have been developed in Korea, and related research is expected to expand. Creating a simple evaluation method with minimal cost will also be needed. As a result of this study, we were confirmed the possibility that oral diadochokinesis can also be used as an indicator to evaluate tongue pressure, occlusal force, and chewing ability that require equipment.

## Studies in Progress

The results of this study will be submitted to a journal related to oral frailty.

## Learning Outcomes

In this study, we examined the correlation of oral diadochokinesis as an alternative test method for measuring items using equipment to diagnose Korean oral frailty. We have established a basis that can be used as an alternative when measuring oral frailty in hospitals, clinics, and communities where equipment is unavailable.

## Presenting Author Brief CV

### Education

- 2016.03.~2019.08. Yonsei University, Wonju, Republic of Korea, Bachelor's degree
- 2019.09.~2022.08. Yonsei University Graduate School, Master's degree





- 2023.03.~present. Yonsei University Graduate School, PhD course

Professional organization

- 2022.1.~present. Society of Infection Control and Prevention in Dental Hygiene

Publications

- Rahman MH, Antonio JM, Lee YS, Fadrique A, Kim SM, Han SY, Lee Y, YOU J, Kim CS, Lee KJ. Oral health effect of an oral rinse containing cetylpyridinium chloride: a randomized clinical trial. *Molecular & Cellular Toxicology* 2023;1-8.

- Lee YS, Han SY. Comparison of autofluorescence and pH changes in *Acinetobacter baumannii* and *Candida albicans* cultures based on incubation time. *Korean Journal of Clinical Dental Hygiene* 2021;9(1):11-19.

## Current state of problematic eating behavior and oral function among kindergarten children

**Yuka Sogawa<sup>1</sup>, Masami Yoshioka<sup>1\*</sup>, Hiromi Nakae<sup>1</sup>, Harumi Sakamoto<sup>1</sup>, Chihiro Shinohara<sup>1</sup>, Daisuke Hinode<sup>2</sup>**

<sup>1</sup> Department of Oral Health Sciences, Faculty of Health and Welfare, Tokushima Bunri University, Japan

<sup>2</sup> Department of Hygiene and Oral Health Sciences, Tokushima University Graduate School of Biomedical Sciences, Japan

### Problem Statement

The preschool period is an important time for the maturation of healthy eating behavior. Approximately 80% of parents are concerned about their child's eating behavior. We hypothesized that problematic eating behavior is related to hypo-developed oral function.

### Purpose

This study aimed to investigate problems related to eating behavior and the current state of oral function among preschool children, and to clarify the relationship between them.

### Methods

The research subjects were 66 kindergarten children aged 61 to 77 months and their guardians. We conducted a questionnaire survey related to eating behavior and measured oral function, such as masticatory ability, tongue muscle strength, and lip closing strength. Masticatory ability was assessed using color-changing chewing gum (1-5 points, 5 represents the best ability). Tongue muscle strength and lip closing strength were measured using special instruments. Furthermore, we statistically analyzed the relationship between the results of the questionnaire survey and oral function.

### Results

Questions regarding eating behavior were answered on a 4-point scale (yes/rather yes/rather no/no). The most common concerns about eating behavior were eating slowly, picky eating, and bad posture when eating (30.3%, 25.8%, and 25.8%, respectively). When the guardians were asked whether their child sometimes has trouble swallowing food after chewing it and then spitting it out of their mouth, 21.2% of respondents answered "yes" and 18.2% answered "rather yes". A total of 54.5% of children had a masticatory

ability level  $\leq 3$ . The mean (standard deviation) of tongue muscle strength and lip closing strength was 0.19 (0.04) kg and 5.1 (2.0) N, respectively. No significant relationship was found between these three oral functions and age or sex. Children with a lower masticatory ability (levels 1, 2, and 3) were significantly more likely to report that they sometimes had difficulty swallowing after chewing than those with a higher masticatory ability (levels 4 and 5) ( $\chi^2$  test,  $p < 0.05$ ). Similarly, those with a lower tongue muscle strength ( $\leq 0.16$  kg) were significantly more likely than the other groups to answer that they sometimes had difficulty swallowing food after chewing ( $\chi^2$  test,  $p < 0.05$ ).

### Conclusions

This study suggests that guardians are concerned about kindergarten children's eating behavior, such as slow eating, picky eating, bad posture when eating, and difficulty swallowing after chewing. Difficulty in swallowing after chewing is associated with masticatory ability and tongue muscle strength, suggesting that insufficient oral function is associated with problematic eating behavior.

### Learning Outcomes

Guardians are concerned about kindergarten children's eating behavior such as slow eating, picky eating, bad posture when eating, and difficulty swallowing after chewing.

### Presenting Author Brief CV

2005-2017: Tokushima University Hospital (dental hygienist)  
2017-: Department of Oral Health Sciences Faculty of Health and Welfare, Tokushima Bunri University. (Lecturer)

# Effect of electronic, conventional smoking and non-smoker on Periodontal stage, grade, and distribution of Periodontal diseases

**Alwina Ghazi<sup>1\*</sup>, Ali Sadiq<sup>1</sup>, Farhan Raza Khan<sup>1</sup>**

<sup>1</sup> Dental Hygiene, Agha Khan University Hospital Karachi Pakistan, Pakistan

## Problem Statement

Conventional Smoking (CS) is a known risk factor for periodontitis. It increases the severity of periodontitis and negatively affects the outcome of periodontal therapy. In the last two decades, electronic cigarettes (E-cig) or vaping have become popular. It is a battery-powered smoking device that heats liquid (which contains nicotine, flavorings, and chemicals) to form the vapors that a person inhales. Literature regarding the effects of E-cig on periodontium is still developing. Only few studies show E-cig has relatively less negative effects on the periodontium owing to a low amount of nicotine and relative absence of harmful chemicals, but this is still debatable owing to lack of long-term data. Therefore, there is a scarcity of data on E-cig and its comparison with CS. Moreover, there is no research that has compared the effects of E-cig and conventional smoking on the stage, grade, extent, and status of periodontitis in Pakistan.

## Purpose

The study aimed to compare the periodontal stage, grade, and stability in the E-cig, CS, and non-smoker (NS) groups presenting at a periodontology clinic of a university hospital.

## Methods

It is a cross-sectional study comprising 45 participants in three groups (CS, E-cig, and NS). Six-point pocket charting, bleeding on probing (BOP), and radiographic presentation were assessed for periodontal staging, grading, and stability as per the 2017 periodontal classification. SPSS 23.0 was used for data analysis.

## Results

Out of 45 participants, 32 (71%) were males and 13 (29%) were females. The mean age was  $31.2 \pm 7.9$  years. Of these 45, 12 were NS, 21 were CS, and 12 were E-cig users. The median consumption of nicotine among E-cig users was 30 mg/day. For gingivitis ( $>10\%$  BoP), there were no differences among the study groups. There were significantly lower BoP scores recorded for E-cig (20.5%) and CS (26.9%) compared to the NS (53%). Furthermore, there was a statistically significant association reported between smoking (CS and E-cig) groups with regards to staging ( $p = 0.003$ ), grading ( $p = 0.003$ ), and stability ( $p = 0.05$ ).

## Conclusions

Within the limitations of our study, we conclude that E-cig negatively affects the stage, grade, and distribution of periodontal disease and has a similar baseline presentation as CS.

## Studies in Progress

Not Applicable

## Learning Outcomes

This study has compared the effects of electronic cigarettes and conventional smoking on the stage, grade, extent, and status of periodontitis, and these groups have been compared with non-smokers. The attendees will be able to describe the differences between electronic smoking, conventional smoking, and non-smoking in relation to their impact on periodontal health. The attendees will gain an in-depth understanding of the state of periodontal health in these various groups, contributing to the broader knowledge base in the field of periodontology.

## Citation for Publication

This research's abstract was accepted at the EuroPerio Congress (Jun 2022), Copenhagen Denmark.

## Presenting Author Brief CV

I am an independent and self-motivated researcher, educator, and clinical dental hygienist with around 4 years of working experience in clinical and community research, dental clinics, and dental hygiene teaching.

My educational background comprises a forthcoming Master's degree in Health Policy and Management from Aga Khan University (commencing February 2024), along with a Bachelor's degree in Business Administration from Hamdard University Karachi, where I graduated with a CGPA of 3.63 in 2022. Additionally, I hold an Associate degree in Dental Hygiene from Aga Khan University and graduated in 2019 with a CGPA of 3.10. Throughout my academic journey, I have honed my research skills by completing various projects.

## Oral function factors affecting low skeletal muscle index in community-dwelling older adults

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<sup>1</sup> Department of Dental Hygiene, Gachon University College of Health Science, South Korea

<sup>2</sup> Department of Health Science, Graduate School of Gachon University, South Korea

### Problem Statement

Malnutrition resulting from decreased oral function is considered as a risk factor for low skeletal muscle index (SMI) in older adults. However, detailed insights into specific oral function factors influencing low SMI remain scarce, particularly among healthy older adults.

### Purpose

This study aimed to identify oral function factors affecting low SMI in healthy community-dwelling older adults.

### Methods

A total of 165 healthy community-dwelling older adults aged  $\geq 75$  years were enrolled from senior culture centers in a metropolitan area of Korea. SMI was acquired via bioelectrical impedance analysis measurements and calculated as appendicular muscle mass (kg)/height-squared ( $m^2$ ). Participants were categorized into two groups (normal SMI or low SMI) based on the Asian Working Group for Sarcopenia criteria, and low SMI was defined as  $<7.0$  kg/ $m^2$  in men and  $<5.7$  kg/ $m^2$  in women. The evaluation of oral function factors was based on the following diagnostic criteria for oral hypofunction: 1) Occlusal force determined by having  $<20$  remaining teeth; 2) Tongue pressure, with a threshold of  $<30$  kPa; 3) Masticatory performance, assessed using color-changeable gum, with score  $<6.3$ ; 4) Tongue dexterity, measured by the ability to produce sounds like /pa/, /ta/, or /ka/ fewer than  $<6$  times/s; 5) Swallowing function, with deterioration indicated by an RSST score of  $<3$ ; 6) Oral dryness, identified when the score is  $<27$ ; 7) Oral hygiene, considered poor if the TCI (Tongue Cleaning Index) is  $\geq 50\%$ . Multiple logistic regression model was performed to identify the risk factors affecting low SMI.

### Results

The prevalence of low SMI was 19.4% ( $n=32$ ). The low SMI group exhibited significantly lower number of teeth, tongue pressure and masticatory performance than the normal

group. When controlling for sociodemographic factors, the adjusted odds ratios (aORs) for low SMI was 4.004 (95% CI, 1.141–14.048) for decreased masticatory performance and 3.533 (95% CI, 1.045–11.949) for decreased tongue pressure.

### Conclusions

This study established that lower masticatory performance and reduced tongue pressure were significant variables affecting low SMI in healthy older adults. These insights indicate that compromised oral functionality in older individuals may have a direct impact on their overall systemic health. Therefore, it is imperative to adopt a comprehensive approach that encompasses oral care for the effective management of systemic health in older adults.

### Learning Outcomes

Even in healthy older adults, oral function, particularly mastication and swallowing abilities, had a crucial role in preventing sarcopenia. Therefore, interventions aimed at enhancing overall oral function may be more effective in preventing sarcopenia than focusing on prosthetic teeth replacement.

### Presenting Author Brief CV

Ph.D in Preventive dentistry, Yonsei University College of Dentistry, Korea

M.Sc. in Dental hygiene, Gachon University college of Health Science, Korea

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## Changes in oral microbiome in the partial denture-wearing elderly based on home visit oral care intervention

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### Problem Statement

The surface of dentures can become a breeding ground for a diverse array of microorganisms, including bacteria, fungi, and viruses, forming a biofilm. This can increase the risk of opportunistic infections due to environmental changes within the mouth caused by wearing dentures. Specifically, the roughness of the denture surface and poor dental hygiene can accelerate bacterial colonization, leading to various oral health issues such as stomatitis, bad breath.

### Purpose

We aim to investigate changes in the oral microbiome of the elderly wearing partial dentures through an home visit oral care intervention.

### Methods

Dental hygienists visited the homes of the elderly wearing partial dentures to provide customized oral care interventions from March 1, 2022 to December 31, 2022. They were observed and measured for changes in the oral microbiome and other oral health conditions through oral care intervention.

### Results

Case 1 is a case of oral health recovery in a 91-year-old woman wearing upper partial denture and lower full denture. In a preliminary evaluation, the total bacterial risk was found to be 'very high' as a result of the oral microbiome using a PCR test, and four types of pathogens exceeding the normal level were discovered. The pathogens in question were Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola, and Streptococcus mutans. P. gingivalis, T. forsythia, and T. denticola, which are in the high-risk group for periodontal disease, were at the 'very dangerous' level with 7490728.75, 6150292.88, and 4817102.82, respectively, and S. mutans, a representative

dental caries-causing bacteria, was at the 'critical' level with 2611636.71. It corresponded to According to the oral disease correlation chart, which is the result of the oral microbiome test, caries (50.58), periodontal disease (56.50) and bad breath (68.95) all fell into the most serious stage, 'management and examination.' As a result of intervention activities conducted once a week for approximately 4 months, the total bacterial risk was 'good' in the post-evaluation, and no pathogens exceeding the normal level were found. All values decreased by 99.9% to 10.00 (good level). The predicted number of oral bacteria related to oral disease was greatly reduced to 1.02, 0.03, 0.03, and 0.11 for caries, periodontal disease and bad breath, respectively. In fact, the average level of bad breath measured with a bad breath meter also decreased by about 76.7% from 43ROV to 10ROV.

### Conclusions

Home visit oral care contributed to positive changes in the oral microbiome of the elderly wearing partial dentures.

### Studies in Progress

The study has been completed.

### Learning Outcomes

1. Oral health of the elderly wearing partial denture in Korea
2. Oral microbiome of the elderly wearing partial denture in Korea

### Presenting Author Brief CV

Presenting author Hae-Soo Yoon is a student of master's and doctorate integrated course at Department of Public Health, Dankook University Graduate School.

\* Main research area is oral health for the elderly and disabled.

# Perception of child abuse and attitudes towards mandatory reporting among dental hygienist

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## Problem Statement

Dental hygienists have the opportunity to closely monitor children in clinical settings, are healthcare workers who can check their mouths, and find child abuse. They are obligated to report and respond. In this regard, reporting and correct response through early detection of child abuse by dental hygienists is of great significance All.

## Purpose

This study aimed to enhance the role of dental hygienists by identifying perceptions of child abuse, attitude towards reporting obligations, and awareness of the reporting system, and providing basic data for early detection and reporting of child abuse reporting obligations.

## Methods

From 2021-06-20 to 2021-09-09, 156 dental hygienists working at dental clinics and hospitals in Gwangju and Jeollanam-do were surveyed. Statistical analyses were performed using t-tests, ANOVA, and Pearson's correlation analysis.

## Results

1. Child abuse awareness was 3.52 points, reporting obligation attitude was 3.01 points, and reporting obligation system recognition was 2.30 points.
2. In the attitude of reporting obligation, there was a statistically significant difference in the positive reporting attitude according to educational background ( $p < 0.05$ ), and the negative reporting attitude according to age and educational background .There was a statistically significant difference ( $p < 0.05$ ).
3. There was a statistically significant difference in the perception of the reporting obligation system according to educational background ( $p < 0.05$ ).
4. Child abuse had a significant positive correlation between negative reporting obligation attitude ( $r = 0.332$ ,  $p < 0.01$ ) and recognition of reporting obligation system ( $r = 0.343$ ,  $p < 0.01$ ).

5. The priority of education for the detection and prevention of child abuse by dental hygienists is how to consult and manage abused children (90.5%), and the priority of activation is when reporting.

## Conclusions

The results of this study confirmed the perception of child abuse by dental hygienists, the attitude of reporting obligations, and the perception of reporting systems. It is one of the ways to detect and report abuse early, and it is an important part of the role of a dental hygienist who is obligated to report it. Various educational programs and research are needed.

## Studies in Progress

Not applicable

## Learning Outcomes

Improving the awareness and attitude of dental hygienists to report child abuse

## Citation for Publication

J Korean Soc Dent Hyg 2021;21(5):667-74

Perception of child abuse and attitudes towards mandatory reporting among dental hygienist

## Presenting Author Brief CV

I majored in oral health and am currently working as a professor at Gwangju Women's University in Gwangju, Jeollanam-do, Korea.

## Professional oral hygiene care for patients admitted to long-term care hospital: case reports

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### Problem Statement

Patients admitted to long-term care hospitals have problems related to their general health and are subjects who need help in their daily lives. So they are a high-risk population exposed to oral diseases. Since South Korean long-term care facilities do not have dental clinic facilities or specialized personnel on hand, resolving oral-related issues is the responsibility of long-term care guardians. Furthermore, there is a lack of institutional equipment that can provide oral hygiene management services to patients within long-term care facilities, so there is little interest in oral health management in the field.

### Purpose / Goals / Objective

In this study, patients admitted to a long-term care hospital underwent professional oral hygiene management, and a decrease in bacterial film on tooth surfaces and salivary gland stimulation were confirmed. Therefore, we confirmed some cases in which oral health status improved. Through this research, it is hoped that the results will be used as basic materials for building an oral management system that can be handled by dental hygienists at long-term care facilities.

### Key Features

This study is a case report of patients admitted to a long-term care hospital in Jeonju who underwent professional oral hygiene management. It was The expert oral hygiene management program was conducted for 10 weeks. A dental hygienist visited the hospital once a week for patients who applied for oral hygiene management. The dental hygienist in charge holds a certification as a long-term care guardian and is an oral care specialist with over 10 years of clinical experience. This case study focused on four patients with dementia and hemiplegia, and measured changes in their oral status as a result of oral hygiene management by professionals. Professional oral hygiene management is a six-step process in total, consisting of

information gathering, oral massage, oral disinfection, primary oral cleaning, professional oral care, education, and consultation.

### Impact

The four cases reported in this study received professional oral hygiene care in hospital beds. In all cases, saliva secretion increased after oral care compared to before oral care. In addition, oral hygiene management scores increased after oral care compared to before oral care.

### Conclusions

Through oral hygiene management by experts, the oral health of patients admitted to a long-term care hospital improved.

### Learning Outcomes

Professional oral hygiene management by dental hygienists can improve the oral health of patients admitted to long-term care hospitals. Therefore, it is possible to suggest the need for dental hygienists in charge of oral cavity management at long-term care facilities.

### Citation for Publication

Not applicable

### Presenting Author Brief CV

Master's degree in oral health from Wonkwang University  
CEO of Enamel Co., Ltd.

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# Assessing the Impact of an AI-Based Oral Health Monitoring System for Children in Hanoi, Vietnam

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## Problem Statement

One of the most commonly used methods for managing dental plaque is the application of disclosing agents, which stain the dental plaque attached to the teeth, allowing for visual observation. This method enables efficient confirmation of the amount and location of dental plaque by direct visual inspection, motivating subjects. To conveniently and rapidly retrieve plaque index values, there is a need for the implementation of a user interface system. Additionally, a database system is required for the systematic storage, retrieval, and management of results related to the implementation of such a system.

## Purpose / Goals / Objective

The most effective method of self-management involves adopting proper brushing techniques and the use of oral hygiene products. Selecting and using suitable oral hygiene products tailored to individual needs, along with understanding their proper usage, is crucial. When combined with regular professional plaque management, oral disease prevention and management become achievable. While personalized education tailored to individual conditions is necessary, there is a growing interest in introducing an AI-based oral care monitoring system in regions where the concept of treatment outweighs that of prevention or management. This system aims to facilitate oral care based on individual needs.

## Key Features

AI-based application, oral Health Monitoring, Dental Plaque, Vietnam, ODA

## Impact

The AI-based oral health management monitoring application has had an impact on the improvement of numerical values related to dental plaque.

## Conclusions

The introduction of an AI-based oral health monitoring system has significantly improved oral health management among children in Hanoi, Vietnam.

## Learning Outcomes

Dental hygienists should focus on emerging technologies in the contemporary era, and AI-based oral health management applications can serve as tools to improve oral health complaints not only in developing countries but also worldwide.

## Presenting Author Brief CV

I'm Ji-Na Lim, a doctoral researcher in the Department of Dental Hygiene at Dankook University. My research focuses on the intersection of AI-based oral health management and Official Development Assistance (ODA). I'm passionate about exploring innovative ways to enhance oral health practices and contribute to global development through my academic endeavors. Thank you for having me today, and I look forward to sharing more about my research with you.



# Factors Associated with Oral Health Knowledge, Oral Health Performance and Oral Health Quality of Life of Cancer Patients

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## Problem Statement

It is important to increase interest in the oral health of cancer patients by examining the relationship between oral health-related quality of life in patients receiving cancer treatment.

## Purpose

The aim of this study was to examine the factors that affect the oral health knowledge, oral health performance and oral health quality of life of cancer patients.

## Methods

A self-reported questionnaire was surveyed by 102 cancer patients in G area. The data were analyzed for frequency analysis, average, standard deviation, independent t-test, one-way ANOVA, pearson's correlation coefficient by using SPSS 21.0 program.

## Results

The oral health knowledge were higher significantly having religion and in case of college graduation or higher monthly income( $p<0.01$ ). The oral health performance were higher significantly when married, higher monthly income. Multiple regression analysis showed significant differences in oral health knowledge and religion( $p<0.05$ ).

## Conclusions

There was a significant correlation between cancer patients' oral health knowledge and practice, and it was confirmed that oral health knowledge was the factor that had the greatest impact on oral health-related quality of life. Therefore, in order to improve cancer patients' oral health knowledge and practice, and quality of life, it was necessary to produce oral education materials for cancer patients and expand education on the importance of oral care, and to actively introduce the operation of oral health promotion programs for cancer patients. It is believed that this will be necessary.

## Learning Outcomes

In order to improve cancer patients' oral health knowledge, practice, and quality of life, it is necessary to produce oral education materials for cancer patients and expand education on the importance of oral care.

## Citation for Publication

Journal of The Health Care and Life Science(ISSN 2383-4552) Vol.11, No.2. pp.441-448 Dec. 2023

## Presenting Author Brief CV

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# Comparison of halitosis according to herbal mouthwash containing *Glycyrrhiza uralensis* extract and saline mouthwash: A randomized, double-blind, placebo-controlled study

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## Problem Statement

Halitosis is an odour that causes discomfort in other people due to the smell of exhaled air coming out of one's oral or nasal cavity. It is a disease that acts as a major obstacle to social life both in Korea and overseas, and the attention to halitosis removal is increasing with the improvement of quality of life.<sup>2</sup> The significance of individual hygiene is highlighted because the number of halitosis cases is increasing as people wear masks for extended periods of time due to COVID-19.

## Purpose

This study was conducted in order to determine the effect on halitosis and the antibacterial effect against halitosis-causing bacteria of the mouthwash made of the natural material, *Glycyrrhiza uralensis* (*G. uralensis*) extract.

## Methods

A randomized, double-blind, placebo-controlled study was conducted on 60 patients who visited M dental clinic located in Busan, South Korea, excluding those with systemic disease that may induce halitosis. There were 30 patients classified to the saline gargle group and the remaining 30 patients were classified to the *G. uralensis* extract gargle group. In addition, their level of halitosis and halitosis-causing bacteria were measured. They visited the dental clinic on a fasted state at baseline before gargle application (Baseline), immediately after gargle application (Treatment) and 5 days after gargle application (After 5 Days). For clinical indicators, participants were tested for halitosis and bacteria immediately after waking up without brushing their teeth and without hydration.

## Results

The prevalence of halitosis decreased in the *G. uralensis* extract gargle group compared to the saline gargle group at Treatment and After 5 Days. In cases with pseudo halitosis,

there was a significant decrease in halitosis-causing bacteria when *G. uralensis* extract gargle was applied ( $p < 0.05$ ).

## Conclusions

It was identified that using a mouthwash made with *G. uralensis* extract is effective for halitosis improvement and reduction of halitosis-causing bacteria. Therefore, using a mouthwash containing *G. uralensis* extract, it will be effective in improving bad breath and oral hygiene will be possible.

## Learning Outcomes

The use of mouthwash containing *G. uralensis* extract showed subjective and objective halitosis reducing effects. The application of *G. uralensis* extract gargle has bacteriostatic and antibacterial effects against halitosis-causing bacteria. Using a mouthwash of *G. uralensis* extract containing natural ingredients effectively removes halitosis and improves the oral environment, so it can be used as an alternative therapy to overcome halitosis.

## Citation for Publication

Kim YR, Nam SH. Comparison of halitosis according to herbal mouthwash containing *Glycyrrhiza uralensis* extract and saline mouthwash: A randomized, double-blind, placebo-controlled study. *Int J Dent Hyg*. 2023 Aug 28. doi: 10.1111/idxh.12724. Epub ahead of print. PMID: 37635655.

## Presenting Author Brief CV

2005.12.20 ~ 2009.02.20: Full-time dental hygienist, Samsung Changwon Hospital

2011.03.02. ~ 2014.02.21: PhD, Pusan National University Graduate School of Dentistry

2016.03.01 ~ 2024. Present: Professor, Department of Dental Hygiene, Kangwon National University

# Regional disparities in utilization for dental services in South Korea: representative population study with National Health Insurance data from 2018 to 2022

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## Problem Statement

The WHO has campaigned for universal health coverage for oral health by 2030. Dental insurance can be available, affordable, accessible dental care for all, including vulnerable and/or disabled people. Universal coverage can improve access to health care services and eliminate health inequalities. In South Korea, dental insurance (as a national insurance scheme) has expanded the service coverage and beneficiaries from children to older adults since 2009. However, dental practitioners and dental offices are largely found in metropolitan areas. This may be the reason for oral health disparity and inequality.

## Purpose

This study aims to identify the disparities in dental service utilization; which is covered by national dental insurance between 17 provinces on a state level in South Korea, and 18 county levels in Gangwon-do.

## Methods

We employed a cross-sectional design and analyzed Health Information Data from the National Health Insurance Service from 2018 to 2022. It is representative data to monitor and evaluate health service utilization in South Korea. The main variables were the utilization rate for coverage of dental insurance services by 17 provinces levels in South Korea and 18 county levels in Gangwon-do, respectively. An age-standardized rate was used to calculate and compare each region. The rate of oral examination, sealant, scaling, dentures, and dental implants were also calculated by region.

## Results

There were regional disparities in the utilization of dental insurance services such as; oral examination, dental scaling, dental sealants, denture service, and dental implants.

Approximately, the difference in rate of dental service utilization between regions ranged from 10 % to 30 %. The difference rate (absolute rate) and the difference ratio (relative rate) were remained. There was a large variation in the rates between regions. Dental infrastructure such as dental offices and dental providers are distributed unequally, with a concentration in areas with high population density and high urbanization.

## Conclusions

National dental insurance may not be sufficient enough to improve dental care access in rural areas, which may contribute to oral health disparities. Dental hygienists (as a dental profession and service provider) should take the responsibility of operating more dental practices in rural areas. For this action, dental hygienists should be allowed to operate without as many barriers to their practice. This would ensure that people who live in rural areas have access to these services and would push for oral health equity.

## Studies in Progress

Not applicable

## Learning Outcomes

To expand social responsibility for oral health equity.  
To better understand regional oral health disparities.

## Citation for Publication

Not applicable

## Presenting Author Brief CV

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# Relationship between depressive symptoms and unmet dental treatment according to gender of the elderly in Korea: 7th National Health and Nutrition Survey

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## Problem Statement

This study aimed to study the association between unmet dental treatment and depression in the dental area of the elderly.

## Purpose

This study aimed to study the association between unmet dental treatment and depression in the dental area of the elderly.

## Methods

The data was from the 7th period of the National Health and Nutrition Examination Survey. Multiple logistic regression analysis was performed to evaluate the relationship between depression and unmet dental treatment when confounding factors such as income quintile and smoking were considered. Statistical software, SAS 9.4 version was used.

## Results

After correcting all confounding factors, the analysis showed that the experience of unmet dental treatment was 2.73 times more likely among depressed men and 2.52 times more likely among depressed women ( $p < 0.05$ ).

## Conclusions

The results of this study suggested that we should consider that depression in the elderly can affect unmet dental treatment regardless of gender.

## Learning Outcomes

The results of this study suggested that we should consider that depression in the elderly can affect unmet dental treatment regardless of gender.

## Presenting Author Brief CV

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## Improvement of tongue-lip motor function after oral exercise program in Korean community-dwelling elderly people

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### Problem Statement

Poor oral function in the elderly is a cause of death due to malnutrition, dementia, and aspiration pneumonia. According to Korea National Health and Nutrition Examination Survey statistics, 34% of people over 60 years old and 44% of people over 70 years old suffer from oral function limitations, and 30-40% of people over 60 years old complain of chewing discomfort. It is very important to improve and maintain healthy oral function in older adults.

### Purpose

This study aimed to investigate the improvement of tongue-lip motor function after implementing an oral exercise program in elderly people aged 65 years or older living in the Korean community.

### Methods

This study included 48 participants who were diagnosed with low tongue-lip motor function in oral diadochokinesis (ODK) evaluation and who agreed to participate in an oral motor program. The oral exercise program was conducted once a week for 10 weeks. In one training session, lip and tongue strength strengthening exercises were performed for 50 minutes, and home-based exercises were performed daily. Tongue-lip motor function was assessed using ODK before, 5, and 10 weeks after the intervention. On the basis of each of these measurements, subjects were divided according to age (65-69, 70-79,  $\geq 80$ ), oral hygiene (good, poor), number of remaining teeth (0-9, 10-19,  $\geq 20$ ), and wearing dentures (with or without). The same evaluations were conducted. The changes were analyzed using repeated-measures ANOVA.

### Results

Before intervention, ODK's tongue-lip motor function was reduced to less than 6 times per second for all syllables /pa/, /ta/, /ka/. However, the ODK value significantly increased

to more than 6 times per second after 5 and 10 weeks of intervention. This improvement also significantly increased after the intervention in changes in ODK according to age, oral hygiene, number of remaining teeth, and denture wearing. Most began to improve to 6 or more beats per second after 5 weeks of intervention. However, in those over 80 years of age and with 0-9 remaining teeth, the rate remained above 6 times per second after 10 weeks of intervention.

### Conclusions

After implementing the oral exercise program, the tongue-lip motor function of elderly people with low tongue-lip motor function was significantly improved. This suggests that it may be effective in improving tongue-lip motor function after intervention regardless of age, oral hygiene, number of remaining teeth, and whether or not dentures are worn.

### Studies in Progress

Not applicable

### Learning Outcomes

1. Oral exercise programs are effective in improving tongue-lip motor function regardless of age, oral hygiene, number of remaining teeth, and whether dentures are worn.
2. It is necessary to activate oral exercise programs to improve oral muscle function in elderly welfare centers or nursing homes.

### Presenting Author Brief CV

Professor Kyung-yi Chung earned her doctoral degree from the department of preventive & public health dentistry at Chonnam National University in 2014. She currently serves as an associate professor in the department of dental hygiene at Honam University. Her teaching and research specialties are preventive dentistry and geriatric dental hygiene.

# A qualitative research on the needs of oral care according to the subjective oral health status of the elderly

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## Problem Statement

This study provided fundamental data for designing strategies for developing oral health education programs and expanding health insurance coverage by understanding the subjective oral health status and demands for oral health among the elderly.

## Purpose

This study aims to conduct an in-depth analysis on the subjective oral health status and the level of demand for oral health management through elderly participants' perspectives and language on the basis of the oral health assessment index for the elderly, and to provide foundational data for laying the foundation for the development of practical oral health education programs and the expansion of health insurance coverage for the elderly.

## Methods

Participants in the study were elderly people aged 65 and above residing in the Gwangju and Jeolla regions, who had no cognitive impairment and were capable of performing activities of daily life. After the Purpose of this study was explained, fifteen participants who made an agreement were finally selected. Semi-structured open-ended questionnaire were distributed before interviews, and then in-depth interviews covering starting, introductory, transition, main, and concluding questions were conducted during approximately 20 to 40 minutes.

## Results

The elderly's oral health management demands based on the subjective oral health status were analyzed. As a result, 139 meaningful words and 15 subcategories were extracted. Ultimately, these were categorized into five central themes: 'experience of aging,' 'aggregation of burdens,' 'path to tooth and gum health,' 'companion to a happy life,' and 'cradle of oral health.' The following results were drawn:

1. The elderly people experience sensitivity while chewing food.
2. The elderly people have the burdens related to treatment costs and pains during dental treatment.
3. They recognize the need for oral health education and restored confidence through dental treatment.
4. It is necessary to improve the image of dentistry and expand dental health insurance.

## Conclusions

Based on the social communication regarding elderly oral health management, it is necessary to come up with strategies for developing practical programs for the elderly's oral management and expanding health insurance coverage.

This study provided fundamental data for designing strategies for developing oral health education programs and expanding health insurance coverage by understanding the subjective oral health status and demands for oral health among the elderly.

## Studies in Progress

Not applicable

## Learning Outcomes

The need to develop oral health care programs for the elderly and expand health insurance coverage

## Citation for Publication

J Korean Soc Dent Hyg 2023;23(4):311-21  
<https://doi.org/10.13065/jksdh.20230035>

## Presenting Author Brief CV

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# Association of tooth brushing behavior with risks of cardiovascular and related chronic diseases: A scoping review

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## Objective

Thus far, some empirical studies have investigated the association between tooth brushing behavior (as a proxy of oral hygiene) with risk of cardiovascular and related chronic diseases. However, articles are lacking synthesizing this evidence. Hence, this review aimed to map the existing literature on the impact of tooth brushing on cardiovascular disease and related chronic diseases (i.e., metabolic syndrome, stroke, and chronic kidney disease).

## Search Strategy / Selection Criteria

Individual search strategies were developed for four databases (Ovid-Medline, EMBASE, CINAHL, and Cochrane Library). The selection stage is explained in detail using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram. From the initial search, 146 full-text studies were assessed for eligibility.

## Data Collection and Analysis

Data extraction covered sample characteristics, tooth brushing categories and the impact of tooth brushing on diseases. Study selection and data extraction were each conducted by two reviewers.

## Main Results

15 articles were included in our current work. Of these, 14 studies suggested that a low frequency of tooth brushing was associated with an increased risk of cardiovascular disease as well as chronic disease such as metabolic syndrome, stroke and chronic kidney disease. The frequency of daily tooth brushing was analyzed by assessing the self-reported measure of tooth brushing behavior based on a questionnaire.

## Conclusions

Most of the included studies demonstrated that the link between tooth brushing and cardiovascular disease and related chronic diseases. However, there is a lack of adequate data on these associations; in particular, future investigations should focus on the directionality between tooth brushing and stroke and chronic kidney disease.

## Free of Bias

Not applicable

## Learning Outcomes

Analyze the effects of tooth brushing on cardiovascular disease and related chronic diseases. Identify policymakers explore ideas related to public dental health interventions at the national level aimed directly at adults to improve general health.

## Presenting Author Brief CV

I am a dental hygienist with public health training who has dedicated his career to the design and implementation of community-based programs for underserved populations, including older adults.

The background knowledge in the areas of public health research, including insurance coverage access, provides a solid base to contribute to an exchange of ideas. I have been actively involved with public health research, particularly in the areas of healthcare policy issues for National Health Insurance (NHI) reform in Korea

## Prevalence of oral pre-frailty among middle-aged adults working in a nursing home

**Hiromi Nakae<sup>1</sup>, Masami Yoshioka<sup>1\*</sup>, Masanori Nakano<sup>1</sup>, Yuka Sogawa<sup>1</sup>, Chihiro Shinohara<sup>1</sup>, Keisuke Nishigawa<sup>1</sup>**

<sup>1</sup> Department of Oral Health Sciences Faculty of Health and Welfare, Tokushima Bunri University, Japan

### Problem Statement

Oral frailty is considered a risk factor for physical frailty and the onset of adverse health outcomes among community-dwelling older people, suggesting the importance of addressing oral frailty at an early stage. However, most studies on oral frailty have focused on older people. The current situation in middle-aged people remains unclear.

### Purpose

This study was performed to investigate the prevalence of signs related to oral frailty in middle age and determine whether these signs can serve as new indicators of oral frailty.

### Methods

The research participants comprised 51 middle-aged adults (62.7% women) aged 40 to 64 years (mean age,  $48.2 \pm 4.8$  years) working in a nursing home. We conducted a questionnaire survey regarding oral frailty, oral examination (number of present teeth, tongue coating index, and turbidity of mouth-rinsed water), and oral function measurement (chewing ability, articulatory ability, and tongue pressure). We investigated the prevalence of oral frailty based on six oral frailty indicators established by Tanaka et al. (Journal of Gerontology: Series A 2018;73(12):1661-7). Furthermore, we statistically analyzed the relationships between evaluation indicators.

### Results

Analysis of the six oral frailty indicators showed that 13.7% of the participants had "slight choking" and 13.7% had "difficulties in eating hard foods." By contrast, few participants had fewer than 20 teeth, articulation impairment ("pa"/"ta"/"ka" < 6 times/second), or tongue pressure of < 27 kPa. Thirteen (25.5%) participants met one or two of Tanaka's criteria; i.e., they had oral pre-frailty. We compared masticatory function with the Japanese

diagnostic criteria for oral hypofunction and found that no participants had oral hypofunction. An investigation of the relationship between each of the measures using Spearman's rank correlation analysis showed that the masticatory ability was significantly correlated with the number of present teeth ( $r = 0.417$ ,  $p < 0.01$ ) and the turbidity of mouth-rinsed water ( $r = -0.411$ ,  $p < 0.01$ ). However, there was no significant correlation between the number of present teeth and the turbidity of mouth-rinsed water.

### Conclusions

Approximately 25% of middle-aged participants who were unaware of any health abnormality were in the pre-frailty stage, which is the stage preceding oral frailty. The turbidity of mouth-rinsed water was found to be related to masticatory ability, suggesting that it can be used as an indicator of not only the oral hygiene status but also oral function.

### Learning Outcomes

Pre-oral frailty found in a quarter of healthy middle-aged adults working in a nursing home.

### Presenting Author Brief CV

2013-2017: Dept. of Hygiene and Oral Health Science, Institute of Biomedical Sciences, Tokushima University Graduate School (.Assistant Professor)

2017~: Department of Oral Health Sciences Faculty of Health and Welfare, Tokushima Bunri University. (Associate professor)

# The association between oral function and masticatory behaviors and grip strength in community-dwelling older people

**TAKAKO Ujihashi<sup>1,2\*</sup>, Hiromi Izuno<sup>3</sup>, Masayo Fukuda<sup>2</sup>, Misao Sawada<sup>2</sup>, Shogo Yoshimura<sup>1</sup>, Shoko Hori<sup>1</sup>, Fumiko Uehara<sup>1</sup>, Hinako Takano<sup>1</sup>, Kazuhiro Hori<sup>1</sup>**

<sup>1</sup> Division of Comprehensive Prosthodontics, Niigata University Graduate School of Medical and Dental Sciences, Japan

<sup>2</sup> Department of Oral Health Sciences, Faculty of Health Sciences, Kobe Tokiwa University, Japan

<sup>3</sup> Department of Oral Health Sciences Faculty of Nursing and Health Care, BAIKA Women's University, Japan

## Problem Statement

It is known that the maintenance of general health and oral function is important for the older people to lead independent daily lives for a long time, and that oral health influences general health. Previous studies had reported associations between whole-body muscle weakness and oral cavities, occlusal support. However, few reports have examined the relationship between grip strength, one of the indicators of whole-body muscle strength, and masticatory behavior.

## Purpose

This study aimed to investigate the relationship among masticatory behaviors, oral function, and grip strength in older people.

## Methods

One hundred community dwelling older people (31 men, 69 women, mean age 75.7 +/- 6.3 years) participated in this study. Age, gender, masticatory behaviors, oral functions (tongue pressure, tongue-lips motor function, occlusal force, and masticatory performance), and grip strength was assessed. The masticatory behaviors during consuming one rice ball (100g) was measured using wearable masticatory counter (bitescan® Sharp Co., Ltd., Sakai, Japan), and the number of chews, chewing rate, number of chews per bite, and meal time was assessed. The Spearman's correlation among each item were calculated. Statistical significance was set at  $P < 0.05$ .

## Results

The positive correlation was observed between grip strength to tongue pressure, lip pressure, tongue-lips motor function (/ta/ and /ka/) ( $r_s = -0.27, -0.38, -0.31, -0.31$  respectively). Higher grip strength suggested higher tongue and lip pressure and tongue dexterity. In addition, the negative

correlation between grip strength and chewing rate ( $r_s = -0.29$ ) and meal time ( $r_s = 0.26$ ) was observed and suggested that lower grip strength had association between slower chewing rate and longer meal time. It was suggested that decreased grip strength due to general muscle weakness was also associated with decreased muscle strength of the tongue and lips. The results also suggested that decreased grip strength was associated with decreased speed of repetitive movements such as oral diadochokinetic and chewing behavior.

## Conclusions

Lower masticatory speed, tongue and lips strength and dexterity are associated with decreased grip strength in community-dwelling, independent older people.

## Learning Outcomes

The relationship among masticatory behaviors, oral function, and grip strength in older people

## Presenting Author Brief CV

2020-present Division of Comprehensive Prosthodontics, Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University

2024-present Assistant professor Department of Oral Health Sciences, Faculty of Health Sciences, Kobe Tokiwa University

2020-2024 Assistant professor Department of Oral Health, Kobe Tokiwa Junior College

2004-2009 Assistant professor Osaka Dental College Hygienist School

2000 Graduated from Osaka Dental College Hygienist School

# Effects of dental hygienist knowledge of dysphagia and preventive attitudes on educational needs for oral health in the elderly

**Woo Jung Noh<sup>1\*</sup>, Seon Yeong Kim<sup>2</sup>**

<sup>1</sup> Periodont department, Department of Dental Clinic, Metaplant, South Korea

<sup>2</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea

## Problem Statement

This study aimed to identify the extent of dysphagia knowledge, prevention attitudes, and educational needs related to geriatric oral health among dental hygienists, and to explore the influencing factors, thereby raising awareness of dysphagia and providing basic data for preparing measures to increase the awareness of the need for knowledge and education related to geriatric oral health.

## Purpose

In this study, we aimed to examine the dysphagia knowledge, preventive attitudes toward dysphagia, and educational needs concerning geriatric oral health, of dental hygienists, and to provide fundamental information for recognizing the necessity of knowledge and education concerning geriatric oral health and for increasing educational needs.

## Methods

From April 1 to June 30, 2022, a questionnaire survey was administered to 198 dental hygienists via an online link. SPSS Statistics ver. 22.0 was used to conduct the frequency analysis, t-test, one-way ANOVA, Pearson's correlation coefficient, and multiple regression analysis.

## Results

Depending on general characteristics, knowledge of dysphagia was significantly different as the study subjects were more interested in dysphagia and had higher geriatric treatment frequency. Their preventive attitudes toward dysphagia was significantly different as they graduated from graduate school or higher, as they had more prevention and education at work, as they were more interested in dysphagia, as they more experienced the education of dysphagia, as they had more educational intention of dysphagia, and as they had higher geriatric treatment frequency. Their educational needs related to geriatric oral health was significantly different as they graduated from graduate school or higher, as they were more interested in dysphagia, dysphagia, as they more experienced the

education of dysphagia, as they had more educational intention of dysphagia, and as they had higher geriatric treatment frequency. There were positive correlations between preventive attitude toward dysphagia and educational needs related to geriatric oral health, between knowledge of dysphagia and educational needs related to geriatric oral health, and between knowledge of dysphagia and preventive attitude toward dysphagia. Regarding the influential factors on educational needs related to geriatric oral health, preventive attitude toward dysphagia, master's degree or higher, knowledge of dysphagia, and educational intention of dysphagia were positively and significantly influential.

## Conclusions

It is necessary to improve the quality of the oral health service offered to elderly patients through the right knowledge and prevention practice of dysphagia, to understand the educational contents necessary for oral hygienists, and to develop an effective education program for enhancing their professionalism.

## Studies in Progress

Not applicable

## Learning Outcomes

To determine the impact of dental hygienists dysphagia knowledge and prevention attitudes on their geriatric oral health education needs.

## Citation for Publication

J Korean Soc Dent Hyg 2023;23(4):261-8

Effects of dental hygienist knowledge of dysphagia and preventive attitudes on educational needs for oral health in the older adults

## Presenting Author Brief CV

After earning my master's degree, I am working as a clinical dental hygienist.

# Analysis of Tooth Surface Changes after Treatment with Silver Fluoride Using Energy-Dispersive Electromagnetic Radiation Spectroscopy

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<sup>1</sup> Department of Dental Hygiene, Gimhae College, South Korea

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<sup>3</sup> Department of Dental Hygiene, Kangwon National University, South Korea

## Problem Statement

Fluoride is well known as a preventive agent for dental caries and can alter hydroxyapatite to fluorapatite via ion exchange. But, Silver diamine fluoride called SDF has been used as an anti-caries agent for recent many years. SDF is used at 38 % concentration and contained 44880 ppm fluoride. Silver ion has antibacterial effect through interfering bacterial metabolism and bacterial enzyme glycosyltransferase, thus biofilm formation was inhibited.

## Purpose / Goals / Objective

The purpose of this study was to confirm the remineralization and surface changes of the tooth surface after applying Silver Diamine Fluoride (SDF) and Potassium Iodide (KI), which are known to have a remineralization effect on teeth. Tooth specimens were prepared by exposing enamel and dentin.

## Key Features

Riva Star Aqua (SDI, Bayswater, Australia) was applied to SDF and KI respectively and stored in artificial saliva for 7 and 14 days. Using SEM, the change in surface shape and remineralization were confirmed with X-RAY EDS.

## Impact

As a result of 7 and 14 days of SDF treatment, the dentin surface appeared very smooth, confirming that remineralization had occurred.

As a result of observing changes in the composition of Ca, P, and Ag using EDS, changes in the mineral components of Ca and P occurred in enamel, and after 14 days, significant changes in Ag were confirmed in dentin.

## Conclusions

Therefore, as a result of this study, the varnish applied with SDF and KI was able to confirm the remineralization effect

of teeth and its applicability as an effective remineralization material was confirmed.

## Learning Outcomes

The remineralization effect of SDF, a hypersensitizing agent, on tooth hard tissue such as enamel and dentin.

## Presenting Author Brief CV

1. Assistant Professor, Department of Dental Hygiene, Hallym polytechnic University
2. Ph.D of Dentistry
3. Research :
  1. ANTIBACTERIAL EFFECT OF CRATAEGUS PINNATIFIDA EXTRACT AGAINST ENTROCOCCUS FAECALIS A ROOT CANAL DISEASE-CAUSING BACTERIA
  2. GROWTH INHIBITORY EFFECT OF HOUTTUYNIA CORDATA EXTRACT ON STREPTOCOCCUS MUTANS

# Relationship between Daily Tasks and Years of Experience among Dental Hygienists Providing Home-Visit Dental Care

**Sanae Miyoshi<sup>1\*</sup>**

<sup>1</sup> -, Hiroshima Dental Hygienists' Association, Japan

## Problem Statement

In Japan's super-aged society, the demand for home-visit dental care for elderly people in need of care is increasing. However, the actual daily tasks of dental hygienists involved in this field are rarely reported.

## Purpose

The aim of this study was to clarify the relationship between the actual daily tasks of visiting dental hygienists and their years of experience.

## Methods

In January 2023, a self-administered, unsigned questionnaire survey was conducted by mail or web among 446 members of the Hiroshima Dental Hygienists' Association and dental hygienists working in 406 dental institutions with experience of visiting dental care in 2022. The survey items included age, working conditions, daily tasks, and work-related challenges. Fisher's exact test was used to analyse the nature of the work and the challenges by years of experience in home-visit dental care.

## Results

Of the 474 respondents (55.6% response rate), 215 (45.3%) were involved in home-visit dental care. The mean age of those engaged in home-visit dental care was  $45.5 \pm 12.9$  years, with a median of 6 years of visiting experience; 62.5% worked full-time. Overall, 95.6%, 89.6% and 88.5% of the dental hygienists' tasks during home-visit dental care were 'oral observation', 'oral hygiene management' and 'oral cleaning instruction'. On the other hand, the lowest rate of performance was 4.5% for 'attending admission and discharge conferences'. Tasks that showed a significant relationship with years of experience were 'instruction in cleaning and handling dentures' ( $p=0.01$ ) and 'training to improve feeding, swallowing and oral function' ( $p=0.006$ ). Overall, the most common work-related issue was 'multidisciplinary collaboration' (80.3%), followed by 'oral

care skills and knowledge for patients' (79.8%) and 'general management during treatment' (79.3%). The topic found to be related to years of experience was 'staff training' ( $P=0.05$ ).

## Conclusions

Among the tasks performed by dental hygienists during home visits, oral observation, oral hygiene management and teaching were performed at high rates regardless of years of experience. On the other hand, prosthesis management and feeding and swallowing education were suggested to be associated with years of experience. It was also clear that improving multidisciplinary collaboration and oral health care knowledge and skills was an important issue for all dental hygienists, regardless of their years of visiting experience.

## Learning Outcomes

Find out about the work of Japanese dental hygienists in visiting dental care and the challenges they face.

## Presenting Author Brief CV

My name is Sanae Miyoshi. I have worked in dental clinics and university hospitals and am currently freelancing. I am interested in oral function in the elderly and earned my master's degree in 2018 from the Department of Oral Health Science at the Graduate School of Medical Sciences, Hiroshima University. My primary research paper is titled 'Association of Oral Function with Long-term Participation in Community-based Oral Exercise Programs in Elderly Japanese Women: A Cross-sectional Study' (J Clin Med Res, 2019). In 2021, I received an academic paper award from the Japanese Society of Dental Hygiene for my research on oral function and dietary diversity in elderly women. Since 2020, I have served as the president of the Hiroshima Dental Hygiene Association, where I am dedicated to advancing the dental hygiene industry.

## Association between physical activity and periodontitis according to depression among Korean adults

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<sup>1</sup> Dental hygiene, College of Dentistry, College of Dentistry, Gangneung-Wonju National University, South Korea

<sup>2</sup> Research Institution of Oral Science, College of Dentistry, Gangneung-Wonju National University, South Korea

<sup>3</sup> Research Institute of Dental Hygiene Science, College of Dentistry, Gangneung-Wonju National University, South Korea

### Problem Statement

The association between physical activity and periodontitis according to depression

### Purpose

This study aimed to investigate the association between physical activity and periodontitis according to depression in a representative sample of Korean adults.

### Methods

A total of 12,689 subjects who participated in the 7th Korea National Health and Nutrition Examination Survey(2016–2018) were examined. Depression was defined as a PHQ-9  $\geq 10$ . Periodontal status was assessed with the community periodontal index (CPI). Periodontitis was defined as  $\geq$  code 3. Physical activity categories were divided into physical activity group and non-physical activity group, organized into work and leisure, taking into account the number of days and minutes of activity for each of the moderate and vigorous activities. Moderate activity was defined as being slightly out of breath or making heart beat a little faster. Vigorous activity was defined as being out of breath or making heart beat very fast. Multivariable logistic regression analyses were adjusted for sociodemographic variables (age, sex, education level and house hold income), oral and general health behaviors (use of floss and interdental proximal brush, current smoking), and systemic health status(diabetes and hypertension). All analyses used a complex sampling design, and a subgroup analysis was performed to determine estimates following stratification for depression (PHQ-9  $\leq 9$  and  $\geq 10$ ).

### Results

Multivariable regression analysis indicated that those who do physical activity among participants with depression of PHQ-9  $\geq 10$  were 60.3% (odds ratio = 0.40, 95% confidence interval = 0.17-0.91) less likely to have periodontitis.

### Conclusions

The findings of this study indicate that people who do any physical activity might be significantly less likely to have periodontitis in the group with depression.

### Learning Outcomes

People who do any physical activity might be significantly less likely to have periodontitis in the group with depression.

### Presenting Author Brief CV

Research Areas: Dental hygiene, Oral Health science, etc



# Effect of coconut oil pulling and professional toothbrushing of gingivitis

**Mi ra Lee<sup>1\*</sup>, Yun Jeong Kim<sup>2</sup>**

<sup>1</sup> Department of dental clinic, saevit, South Korea

<sup>2</sup> Department of Dental Hygiene, Kwangju Women's University, South Korea

## Problem Statement

This study evaluated the effects of oral health education, oil pulling, and professional brushing to provide a basis for professional oral care by dental hygienists for patients with gingivitis.

## Purpose

The purpose of this study is to provide basic data for the development of gingivitis management program by dental hygienist by evaluating the effect of gingivitis according to oral health education, oil pulling and professional toothbrushing.

## Methods

A total of 38 subjects were divided into three groups (12 control subjects, 1 experimental group and 2 each 13 subjects). Control group and experimental group were instructed on the brushing method by rotating method. Distilled water was given to the control group after training, Coconut oil was provided every morning for about 10 minutes. In Experiment 2, a professional brushing method was provided at each visit.

## Results

There was no significant difference in oral health form among the three groups, and the homology between the PHP index ( $p=0.144$ ) and the Bleeding rates ( $p=0.213$ ). The PHP index showed a significant interaction between group and measurement time, and the control group and the experimental groups 1 and 2 showed changes with time ( $F=3.711$ ,  $p=0.013$ ). The bleeding rate showed a significant interaction between the group and the measurement period, and the control group and the experimental groups 1 and 2 showed changes with time ( $F=6.707$ ,  $p<0.001$ ).

## Conclusions

The results of this study showed that oral health education, professional brushing, and oil pulling specialists in oral

care of gingivitis were effective in mitigating gingivitis. It is necessary to find out how to develop self - management education for oral health promotion and development of gingivitis management program through dental hygienist.

## Studies in Progress

Not applicable

## Learning Outcomes

In oral care for gingivitis, oral health education, professional brushing, and oil pulling are effective in mitigating gingivitis.

## Citation for Publication

J korean Soc Dent Hyg 2019;19(3):375-85

Effect of coconut oil pulling and professional toothbrushing of gingivitis

## Presenting Author Brief CV

After earning my master's degree, I am working as a clinical dental hygienist.



# A study on the association between chronic disease, metabolic syndrome and tooth loss using the Korean National and Nutrition Examination Survey(2016-2018)

**Junghui Son<sup>1\*</sup>**

<sup>1</sup> Department of Dental Hygiene, Daewon University college, South Korea

## Problem Statement

The leading causes of death worldwide are non-infectious diseases such as cancer, cardiovascular disease, diabetes, and chronic respiratory diseases. This accounts for 81% of all deaths in Korea and entails high disease management costs.

Chronic diseases and metabolic syndrome are multifactorial diseases caused by a combination of factors, and they occur intensively after middle and old age, and they are already difficult to cure or take a long time when subjective symptoms are felt.

These chronic diseases and metabolic syndrome are closely related to periodontal disease, and periodontal disease is known to be the main cause of tooth loss in adults. In view of this, it is necessary to have a precise understanding of the correlation between chronic diseases and metabolic syndrome with tooth loss.

## Purpose

Using the national data of the National Health and Nutrition Examination Survey 4th~7th, we will study the relationship between chronic diseases and metabolic syndrome and tooth loss in Korean adults.

## Methods

This study used raw data from the 4th~7th National Health and Nutrition Examination Surveys, and 49,468 adults aged 19 years and older were included in the final analysis. Chronic diseases were divided into hypertension, respiratory disease, cerebrovascular disease, cancer, and diabetes, and 'none', 1, 2, or 3 or more variables were generated according to the number of morbidities. Metabolic syndrome was judged to be metabolic syndrome if 3 or more out of 5 items were met. As for the tooth loss retention rate, if the sum of the caries experience loss and caries inexperience loss of teeth except wisdom teeth is 1 or more, the tooth is judged to be lost.

Logistic regression analysis was performed according to the complex sample to derive the factors influencing the loss. All statistical analyses were performed using SPSS

17.0, a statistical analysis software, and the significance level was considered to be 0.05.

## Results

Metabolic syndrome was more likely to have loss if applicable (OR=1.186,  $p<.001$ ), and chronic disease was more likely to have loss if there were two (OR=1.183,  $p=.012$ ) than if there were no chronic disease (OR=1.183,  $p=.012$ ).

## Conclusions

We were able to confirm the association between the number of chronic diseases and tooth loss due to metabolic syndrome. In the future, there is a need for further research to develop and apply health care programs that can effectively prevent tooth loss in adults with risk factors for chronic diseases and metabolic syndrome.

## Learning Outcomes

We will present the impact of metabolic syndrome and chronic diseases on tooth loss in Korean adults and consider ways to increase the tooth retention rate.

## Presenting Author Brief CV

2017.8.1.-2023.7.31. Public affairs director, Korean dental hygiene professors association

2018.3.1.-2020.7.31. External cooperation officer, Chungcheongbuk-do chapter of the Korean dental hygienists association

2019.3.1.-2023.2.28. Finance director, The Korean society of dental hygiene science

2022.8.1.-2024.7.31. Academic director, Chungcheongbuk-do chapter of the Korean dental hygienists association

2023.3.1.-2025.7.31. Director of General affairs, The Korean society of dental hygiene science

2021.3.1.-2024.12.31. Director of teaching and learning innovation center, Daewon University College

# The Influence of Maternal Educational Level on the Oral Health Behavior of Korean Adults

**Young-Eun Jang<sup>1</sup>, Su-kyung park<sup>2,3\*</sup>**

<sup>1</sup> Department of Dental Hygiene, BaekSeok University, South Korea

<sup>2</sup> Department of Dental Hygiene, Jeonju Kijeon College, South Korea

<sup>3</sup> Department of Dental Hygiene, Yonsei University Graduate School, South Korea

## Problem Statement

Parental attention is crucial for preventing childhood oral diseases. Mothers play a significant role in maintaining their families' oral health, and their educational level influences their children's oral health behaviors.

## Purpose

This study investigates the impact of mothers' educational levels on adult oral health behaviors using data from a national survey.

## Methods

This study employed a cross-sectional analysis of secondary data. In this study, we selected 3,712 participants from 7,359 survey participants of the first year of the 2019 Korean National Health and Nutrition Examination Survey (KNHANES), aged between 20 and 60 years. Descriptive statistics were calculated to identify participant characteristics. Next, t-tests and one-way analysis of variance were conducted to examine the effects of the explanatory variables on the distribution of the dependent variable. Finally, logistic regression analysis was used to investigate the influence of the explanatory variable on the dependent variable, using "no education" as the reference value, and calculate the odds ratios.

## Results

Individuals whose mothers with a college education or higher had a 1.13 times higher likelihood of receiving oral examinations than those whose mothers had no education. Individuals whose mothers graduated from college or higher had a 2.23 times higher probability of receiving preventative dental treatment than those whose mothers had no education. Individuals whose mothers graduated from college or higher had a 1.92 times higher probability of receiving scaling than those whose mothers had no education. Individuals whose mothers graduated from

high school had a 1.35 times higher probability of receiving scaling than those whose mothers had no education.

## Conclusions

Developing oral health programs is important for low-educated and low-income parents to change theirs and their children's oral health behaviors/attitudes. This will help reduce oral health disparities among adults raised by parents of higher and lower socioeconomic statuses. Therefore, a comprehensive approach is essential for adults to maintain good oral health, regardless of variations in their parental educational levels during childhood.

## Learning Outcomes

The influence of maternal educational level on the oral health behavior

## Citation for Publication

J Dent Hyg Sci Vol. 23, No. 4, 2023,

## Presenting Author Brief CV

Dental Hygienist in South Korea.

Adjunct Professor in Dental Hygiene at Baekseok University.

Ph.D. in Dental Hygiene from Yonsei University Graduate School.

# Scoping Review: trends of intervention method for oral function management in Korean older adults

**Soo-Min Kim<sup>1</sup>, Hye-Jin Park<sup>1</sup>, Sun-Young Han<sup>1\*</sup>**

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## Problem Statement

The rapid increase in the elderly population in Korea predicts that many dental treatment patients will be elderly. Some studies proved the effect of improving oral function by performing oral function exercises, oral rehabilitation exercises, and mouth exercises to strengthen and improve oral function by expanding the perspective of treatment. As such, interest in interventions for improving the oral function of older adults is increasing.

## Purpose

This study aimed to analyze trends in intervention research to improve oral function in older adults in Korea and identify professional intervention methods and evaluation indicators that can be applied to elderly hospitalized patients.

## Methods

A literature search was performed using the original text provision service (KCI, NANET), and the search scope was oral exercise, oral function program, and intervention studies of oral function exercise. Papers published between 2013 and 2023 were selected. The selection criteria were as follows: 1) adults over 19 years of age and 2) studies describing oral muscle function management methods. The exclusion criteria were: 1) studies that satisfied the keywords but had different dictionary meanings and 2) studies without full text. Twenty-one out of a total of 389 articles were used for analysis. The main contents of the thesis consisted of general characteristics and oral function evaluation indicators.

## Results

The study subjects conducted at the Department of Dental Hygiene were community elderly (n=10), most practitioners were dental hygienists, and the study location was a senior welfare center or nursing home. The intervention period was 3 to 12 weeks (n=10), and the intervention methods

were an oral exercise program (n=5) and oral physical exercise (n=2). The evaluation indicators were salivary secretion amount (n=7) and mouth opening amount (n=5). The study subjects conducted in occupational therapy were mainly stroke patients (n=10), most practitioners were occupational therapists, and the study location was hospitals. The intervention period was 3 to 8 weeks (n=10), and the intervention methods were an oral-facial muscle exercise (n=3) and a swallowing treatment program (n=2). The evaluation indicators were VFSS (n=5) and tongue muscle exercise (n=3).

## Conclusions

In intervention studies to improve oral function in older adults, the academic fields were divided into dental hygiene and occupational therapy, and there were differences in the location and content of the intervention depending on the research field. In the future, additional research will be needed to enable dental hygienists to perform oral function interventions in dental clinics or hospitals.

## Studies in Progress

The results of the study will be submitted to academic journal soon.

## Learning Outcomes

Through this study, we found that research on developing and applying interventions that can improve the oral function of elderly patients in dentistry needs to be carried out. For future research, we would like to share intervention methods and indicators for improving oral function in the field of other studies.

## Presenting Author Brief CV

Education

-2017.09.~ 2020.06. Yonsei University Graduate School, MSDH (Master Science in Dental Hygiene)



-2020.09.~ present. Yonsei University Graduate School, PhD course

Scholarship and Honors

-(Poster Award): 45th General Academic Conference and KDHEX 22nd Dental Hygiene Day. July 2023 Effect of Cognitive Function on Oral Health in Middle aged and Older Adults (KDHA)

Research papers (2023yr)

-Kim SM, Noh HJ, Mun SJ, Han SY. Differences in Korean adult inpatients' oral care behaviour in daily life and hospitals. International Journal of Dental Hygiene, 2023;21(1):272-279.

-Kim SM, Lee YS, Park HJ, Park SC, Han SY. Recognition of Elderly-friendly Foods and Need for Education among Clinical Dental Hygienists. Korean J Clin Dent Hyg. 2023;11(1)23-30.

-Kim SM, Kim SH, Han SY. Effect of Cognitive Function on Oral Health in Middle aged and Older Adults: Data from the Korean Longitudinal Study of Aging. Korean J Clin Dent Hyg. 2023;11(1),



# Assessment of age-specific dysphagia, Independence of daily living, and oral frailty items among community-dwelling older adults in Korea

**Hye-Jin Park<sup>1</sup>, Eun-Ha Jung<sup>1</sup>, Sun-Young Han<sup>1\*</sup>**

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## Problem Statement

In Korea, the number of older adults aged 65 years and over is expected to become a super-aged society when this number reaches 20.3% in 2025. Other countries with rapidly aging populations have shown interest in oral rehabilitation and cleanliness to ensure older adults can lead healthy lives. However, research on the oral function of older adults in Korea is still scarce, and the Korean Academy of Geriatric Dentistry (KAGD) recently published the Korean diagnostic criteria for oral frailty. Since aging and frailty may reflect the characteristics of the population, it is necessary to identify the level of oral frailty in Korean community-dwelling older adults and develop appropriate interventions.

## Purpose

This study aimed to assess the age-specific levels of dysphagia, Independence of daily living, and oral frailty items among community-dwelling older adults in Korea to provide a basis for developing an oral function rehabilitation program based on the characteristics and age of Korean older adults.

## Methods

The study participants were 217 seniors aged 60 or older who visited senior centers in Wonju, Gangwon State. The research team visited senior centers and spoke with the person in charge, and seniors who visited the senior center provided written consent and conducted the study. Ultimately, data from 206 people were used for analysis. Dysphagia was Dysphagia Handicap Index (DHI) and the Korean version of Eating Assessment Tool-10. Independence of daily living was the Korean version of the Modified Barthel Index. Oral frailty items were chewing ability, occlusal pressure, number of remaining teeth, tongue pressure, oral dryness, and oral cleanliness.

## Results

DHI increased significantly with age, with those in their 80s reporting the most difficulty swallowing. All age groups said complete Independence in their daily activities. In Oral frailty, chewing ability, occlusal pressure, number of remaining teeth, and tongue pressure declined with age. However, Oral dryness and oral cleanliness did not differ significantly by age; according to the judgment criteria, participants in their 80s had a dry mouth, and their oral cleanliness was close to the degree of oral frailty requiring caution.

## Conclusions

In Korean community-dwelling older adults, the level of dysphagia and Independence of daily living were all in the normal range in all age groups. Nevertheless, it was investigated that there was a risk of oral frailty in the chewing ability, occlusal pressure, number of remaining teeth, and tongue pressure in the group over the 80s group.

## Studies in Progress

The results of this study have been submitted to an academic journal and are currently undergoing peer review.

## Learning Outcomes

This study was conducted on older adults living in the community immediately after the Korean diagnostic criteria for oral frailty were pronounced. It is significant because it reports the risk of oral frailty observed in generally healthy older adults.

## Presenting Author Brief CV

Education

- 2017.03.~2022.02. Yonsei University, Wonju, Republic of Korea, Bachelor's degree

- 2022.03.~present. Yonsei University Graduate School, MS/



PhD Combined course

Professional organization

- 2022.1.~present. Society of Infection Control and Prevention in Dental Hygiene

Publications

- Park HJ, Han SY, Kim SH, Jung EH. Evaluation of antimicrobial activity of several commercial oral rinses against aspiration pneumonia-inducing microorganisms. Korean Journal of Clinical Dental Hygiene 2023;11(1):39-46.
- Park HJ, Kim TW, Kim SH, Han SY. Antibacterial Effect of Alcohol-free Oral Rinses on Aspiration Pneumonia-inducing Microorganisms. Korean Journal of Clinical Dental Hygiene 2023;11(3):209-216.
- Park HJ, Lee YR, Jeon YR, Lee ES. Perception and Satisfaction with Non-face-to-face Lectures among Dental Hygiene Learners. Korean Journal of Clinical Dental Hygiene 2021;9(3):127-135.



# Changes in oral frailty diagnosis in Korean elderly by 5-year unit age group and gender

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<sup>1</sup> Department of Dental Hygiene, College of Software and Digital Healthcare Convergence, Yonsei University, Wonju 26493, South Korea

## Problem Statement

South Korea is reportedly the most rapidly aging country worldwide. Statistics Korea revealed that individuals aged  $\geq 65$  years will constitute 17.5% of the total population by 2022. Oral frailty has garnered considerable interest following its identification as a risk factor for physical frailty.

## Purpose

Since oral frailty has not been defined and introduced in Korea for a long time, various studies on oral frailty diagnosis items and interventions are needed. Therefore, this study attempted to identify and report the level of change in oral frailty diagnosis of the elderly in Korea according to the segmentation of age groups and gender.

## Methods

The study participants were 217 seniors aged 60 or older who visited senior centers in Wonju, Gangwon State. The final analysis was 100 people with all the data on the diagnosis items of oral frailty. After subdividing the age groups into 5-year-old units, the average of each age group for diagnostic items was analyzed. If none of the total six measurement items corresponded, it was judged as robust; if one reached pre-oral frail, and if there were two or more, it was judged as oral frail, and the change in the level of oral frailty diagnosis according to age stratification was confirmed. And the differences in oral frailty diagnosis patterns by age group according to gender were compared.

## Results

The general characteristics of the study subjects were 68% for female and 32% for male, and the average age was  $77.97 \pm 7.38$  years. Chewing ability, occlusal force, and tongue pressure decreased statistically significantly with age ( $p < 0.05$ ). Except for 60-64 years ( $N=4$ ), the items with oral hypofunction tended to increase sequentially with oral dryness, tongue pressure, occlusal force, and chewing

ability as the age group increased. It was determined that the pre-oral frail was 65-69 years old, and all over 70 years old were determined as oral frail. Overall, the diagnosis of oral frailty and decline in oral function in females were observed much faster than in males.

## Conclusions

This study confirmed that the number of items with decreased oral function increased sequentially by comparing the results of the community-dwelling elderly by dividing the age in detail and confirmed that these characteristics also differ according to gender. It is believed that it is used to prevent deterioration into oral hypofunction and to use it as primary data for the phased early selection of oral frailty.

## Studies in Progress

The results of this study will be submitted to an academic journal.

## Learning Outcomes

This study is the result of analyzing data from 100 people who were surveyed on six indicators immediately after Korea's oral frailty diagnostic criteria were announced. We sought to identify differences when subdivided by age and gender according to the criteria for diagnosing oral frailty when two or more of the six indicators were judged to be at risk. As a result of the study, there was a tendency for oral frailty diagnostic items to be added gradually, so it was necessary to prepare an intervention program according to age and gender.

## Presenting Author Brief CV

Education

- 2019.03.~2023.02. Yonsei University, Wonju, Republic of Korea, Bachelor's degree

- 2023.03.~present. Yonsei University Graduate School, MS/PhD Combined course



## Publications

- Jo MJ, Kim SM et al. Comparison of the Tongue-Palate Pressure Patterns According to the Tongue Pressure in Community-Dwelling Older Adults. J Dent Hyg Sci 2023;23:320-9.
- Kim KS, Mun HY, Jo MJ et al. An empirical study on factors influencing the admission competition rate for the department of dental hygiene. J Korean Soc Dent Hyg 2023;23(4):303-309.

## Poster Presentation

- Jo MJ. J Korean Acad Oral Health. Poster presented at: Analysis of tongue pressure types in community-dwelling elderly people; 2023 Oct 28; Seoul.



# Connecting the dots: Exploring the intersection of HIV and Oral Health

**Andrew Terry<sup>1\*</sup>**

<sup>1</sup> School of Dentistry, Senior Lecturer, Australia

## Problem Statement

Historically, in the early wave of the HIV pandemic there was significant fear associated with managing patients living with HIV in a dental environment. The coexistence of HIV and oral health issues presents a complex challenge, necessitating a comprehensive understanding of the interplay between these factors. A regular update in the understanding of the types of medical treatment options available to patients and how they could potentially affect the oral cavity is of benefit to oral health professionals.

## Purpose / Goals / Objective

The purpose of this presentation is to provide an evidence-based update to oral health professionals on the appropriate way to both manage and engage with patients living with HIV from both a treatment and human perspective

## Key Features

This presentation will explore the relationship between HIV and oral health, discussing potential oral manifestations of undiagnosed HIV and/or a failing treatment regime and identifying the effects of treatment regimens on the oral cavity using relevant research, findings, identify gaps in understanding, and strategies to enhance oral health outcomes for individuals with HIV. The presentation aims to foster awareness, tolerance, promote a holistic approach to healthcare, and encourage an increased understanding and acceptance for patients with HIV.

## Impact

This evidence-based update can drive positive change in healthcare practices by increasing awareness of the connection between HIV and oral health, and seek to inspire collaboration and understanding within the dental community.

## Conclusions

This presentation will raise awareness and highlight

the various, current evidence-based medical treatments available to patients living with HIV to best manage their condition. Further, providing the clinician a set of standardized questions to ask when treating patients with HIV to provide safe and effective care for the patient whilst being aware of infection control impacts. The discussion will help attendees to enhance their clinical practices and understanding of the conditions related to oral health among dental professionals, and ultimately improve the well-being of individuals living with HIV.

## Learning Outcomes

1. Gain comprehensive understanding of the complex interplay between HIV and oral health.
2. Identify awareness gaps of participants in their knowledge and healthcare practices.
3. Instill a collaborative mindset, encouraging healthcare professionals to work together to address the multifaced issues of HIV and oral health

## Presenting Author Brief CV

Andrew Terry is a Senior Lecturer working for the School of Dentistry at The University of Sydney. He works with both the Bachelor of Oral Health (BOH) and the Doctor of Dental Medicine (DMD) programs since August 2015.

He is responsible primarily for the education of Periodontal instrumentation/screening and Oral Hygiene instruction education for both the BOH1 and DMD1&2 year levels. He supervises clinical practice of the initial Clinical Periodontal treatment provided by DMD2 students. Andrew has approximately 30 years' clinical experience first qualifying as a Dental Therapist in QLD, Australia in 1993 and as a Dental Hygienist in London, U.K in 1998. He ratified his Australian and U.K education in Switzerland with the Swiss red cross and attained the protected title of "Dip. Dental Hygienist of Higher Education". He completed his Master in Education in 2019 and accepted as a member of the Higher Education Academy in 2021.

# A case report on the effect of oral muscle function strengthening training on denture wearers among visiting oral health care intervention program

**Ji-Won Park<sup>1</sup>, Hye-Jin Na<sup>1</sup>, Jong-Hwa Jang<sup>1,2\*</sup>**

<sup>1</sup> Department of Public Health Science, Graduate School, Dankook University, South Korea

<sup>2</sup> Department of Dental Hygiene, College of Health Science, Dankook University, South Korea

## Problem Statement

As the elderly population grows, oral health is becoming increasingly important for longevity, and the elderly lose teeth for a variety of reasons, including tooth fracture and periodontitis. Tooth loss cause functional problems, especially a decrease in mastication, which can lead to poor nutritional intake, and furthermore, swallowing difficulties, which can lead to aspiration pneumonia in the long run. As such, oral health and systemic health are closely related.

## Purpose

To explore ways to provide effective visiting oral health care for the elderly in an increasingly aging society, we aimed to evaluate the effects of oral muscle strengthening training during the intervention program on oral mucosal moisture, tongue pressure, and subjective dry mouth sensation after providing visiting oral health care to denture wearers based on the community care in Cheonan.

## Methods

During visiting oral health care intervention, two dental hygienists visited the elderly participants' home for 10 weeks to provide personalized oral health care. The subjects were two denture wearers, and the study tools included oral mucosal moisture measurement using MUCUS (ICST, Japan), tongue pressure measurement using JMS tongue pressure meter (Japan Medical Supply Co., Ltd. Japan), and a questionnaire interview to assess the degree of subjective dry mouth. Oral mucosal moisture and tongue pressure measurements were taken three times and the average of the three measurements was calculated. Subjective dry mouth was measured on a 6-item, 10-point scale and summed, with lower scores indicating less subjective dry mouth. The collected data were analyzed using IBM SPSS 23.0 (IBM SPSS Statistics 23.0 for window, SPSS Inc,

Chicago, USA) for descriptive statistics.

## Results

- (1) After 8 weeks of once-a-week oral muscle strengthening training, oral mucosal moisture increased from 20.4 pre-intervention to 25.4 post-intervention in subject 1 and from 25.3 to 26.8 in subject 2.
- (2) For tongue pressure, subject 1 increased from 18.8 kPa pre-intervention to 20.9 kPa post-intervention, and subject 2 increased from 5.7 kPa to 20.4 kPa.
- (3) For the subjective dry mouth questionnaire interview, subject 1 decreased from 56 points pre-intervention to 49 points post-intervention and subject 2 decreased from 19 points to 10 points.

## Conclusions

Oral muscle function strengthening training during the visiting oral health care intervention program contributed to the improvement of oral health in the elderly denture wearers. Therefore, in the development of future visiting oral health care programs should include customized oral muscle function strengthening training based on the condition of each elderly person.

## Learning Outcomes

In addition to professional oral hygiene management, oral muscle strengthening exercises should be included in the visiting oral health care program.

## Presenting Author Brief CV

I am a researcher in the master's course at Dankook University.





# ISDH 2024

## International Symposium on Dental Hygiene 2024

July 11 – 13, 2024 | COEX, Seoul, South Korea

*Dental Hygienists, the Center of Oral Health*



# ISDH 2024

International Symposium  
on Dental Hygiene 2024

July 11 - 13, 2024

COEX, Seoul, South Korea

# Commercial Presentations



## The magical powers of creating oral health interventions: Justice over equity I

### Speaker 1

**Ron Knevel**

DHAA, Australia

### Speaker 2

**Mário Rui Araújo**

Health School of Portalegre Polytechnic University, Portugal

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### Abstract

The presentation “The magical powers of creating oral health interventions: justice over equity” will delve into the complexities of oral health behaviour change, emphasising that there is no one-size-fits-all solution.

The first session will highlight the importance of the form of delivery over the specific behavioural techniques applied, drawing on examples of different models i.e. the COM-B model’s capability, opportunity, and motivation components, as well as the 4D model from Kings College London and the Health Action Process Approach (HAPA).

The divide between messaging for caries and periodontal diseases will be questioned, advocating for a more integrated approach to improve oral well-being. It will be argued that oral health is a continuous process requiring ongoing support and maintenance. The presentation will call for more innovative solutions that move away from standardised approaches and prioritise individualised care and instil curiosity in people that motivates them to explore, learn and get involved. The importance of justice over equity will be introduced as an important focus for future advocacy efforts.

In the second session the participants together will explore the significance of sustainable and efficient solutions and relationship building in promoting oral well-being. Participants are invited to start the process of sharing and developing effective options to promote oral health and are encouraged to engage curiosity, appropriate messaging, and discuss how we can prioritise justice over equity in our health promotion efforts. Are we able to formulate new ideas whilst discussing the complexities of oral health interventions in fast changing inequitable situations? Are we able to “re-invent” ourselves?

Overall, the presentation aims to inspire attendees to embrace innovation and collaboration in their approach to oral health behaviour change for all people.

Funding for this session is supported by Curaden AG.

### Learning Outcomes

1. Understand and discuss the basic challenges of behavior management for oral health professionals
2. Educate/communicate with the purpose of behavioural change
3. Design effective oral health interventions based on sustainable and efficient solutions and relationship building in promoting oral well-being.
4. Understand the importance of justice over equity.



## Presenting Author Brief CV

### Speaker 1

Ron Knevel is a dedicated lecturer with a career spanning over three decades. He has held various roles at the Academic Centre of Dentistry Amsterdam, La Trobe University, Bendigo and now serving as Associate Professor and Discipline Lead Oral Health at Curtin University in Perth. He is a Senior Fellow of the Higher Education Academy and the International Education Association of Australia. His PhD thesis was a critical analysis of the introduction of dental hygiene education in Nepal and implications for human resources in oral health. He has received multiple awards for his contributions to oral health promotion and education. Ron is a strong advocate for international cooperation and respectful communication.

### Speaker 2

Mario has PhD in Psychology by the University of Lisbon (Psychology School) and a master degree in Health Psychology.

His research in the area of behavior change, focuses in the joint role of self-regulatory processes to enhance the oral health of patients.

He is a graduate of the Dental Hygiene Program at the University of Lisbon and earned a bachelor's degree in Science (Dental Hygiene) from the University of Washington, Seattle.

International speaker in oral health behavior modification and communication skills.

He is an Adjunctive Professor and Coordinator of the Dental Hygiene Program at Health School of Portalegre Polytechnic University.



## The magical powers of creating oral health interventions: justice over equity II

### Speaker 1

**Ron Knevel**

DHAA, Australia

### Speaker 2

**Mário Rui Araújo**

Health School of Portalegre Polytechnic University, Portugal

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### Abstract

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International speaker in oral health behavior modification and communication skills.

He is an Adjunctive Professor and Coordinator of the Dental Hygiene Program at Health School of Portalegre Polytechnic University.



CS-03

## Dentine hypersensitivity: pathogenesis, prevalence, and the patient

### Speaker 1

**Joon Seong**

University of Bristol, UK

### Speaker 2

**Charlie Parkinson**

Haleon, UK

### Speaker 3

**Rhiannon Jones**

British Society of Dental Hygiene and Therapy, UK

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### Abstract

Dentine hypersensitivity (DH) is a very common condition that can have a significant impact on people's lives. It is a condition that is under-reported by patients and underdiagnosed. This symposium will present and discuss the prevalence, pathogenesis, diagnosis and treatment of DH.

In 2023, in one of the largest studies of its kind exploring the prevalence of dentine hypersensitivity, erosive tooth wear, periodontal health status and associated risk factors it was reported that DH affects 1 in 2 adults<sup>1</sup>. Moreover, the prevalence of erosive toothwear and periodontal disease was reported to be surprisingly high, particularly in the young adults. These unique data demonstrate significant positive associations between DH, erosive tooth wear and gingival recession, and between gingival recession and periodontal status with high prevalence of all conditions. Dr. Joon Seong will present the findings of this large multi-country study.

DH is defined as a 'short, sharp pain arising from exposed dentine in response to stimuli typically thermal, evaporative, tactile, osmotic or chemical, which cannot be ascribed to any other form of dental defect or pathology'. It is an adult-condition typically associated with enamel wear and/or gingival recession. DH is often referred to as "an enigma". In this talk, Dr. Charlie Parkinson will present an overview of the pathogenesis of DH, its impact on people's day to day lives and treatment options by way of patient stories.

Although dentine hypersensitivity is widespread, and it can cause substantial pain and impact quality of life, it is not routinely discussed during dental consultations. In 2023, researchers from Kings College London, Bristol Dental School and Haleon, published a study in the Journal of Clinical Periodontology in 2023<sup>2</sup>, exploring why dental teams don't routinely discuss DH. The findings from this research will be reviewed in panel discussion led by Rhiannon Jones

Funding for this session is supported by Haleon

IIADR, Bogota 2023. Academic Symposium

2 Asimakopoulou K, West N, Davies M, Gupta A, Parkinson C, Scambler S. Why don't dental teams routinely discuss dentine hypersensitivity during consultations? A qualitative study informed by the Theoretical Domains Framework. J Clin Periodontol. 2024 Feb;51(2):118-126.



## Learning Outcomes

1. Understand DH pain, and recognise the impact of DH on individuals' day to day lives, and what it means for patients.
2. Understand the latest information on the wide prevalence of DH and associated conditions.
3. Understand why DH is potentially underdiagnosed and explore the role of the dental team in initiating conversations on DH for the successful management of the condition.

## Presenting Author Brief CV

### Speaker 1

Dr Joon Seong is a member of the Clinical Trial Unit (CTU) at Bristol Dental School, UK. The research that Dr Seong is involved in within the Clinical Trials Unit involves includes toothwear (erosion, attrition, abrasion and abfraction), tooth bleaching, tooth staining, dentine hypersensitivity, prevention of plaque and gingivitis and treatment of diseases of the periodontium, and soft and hard tissue regeneration in periodontology and implantology. The studies are carried out both within the Clinical Trials Unit in dedicated laboratories and in the clinical environment, and in General Dental Practice in the UK.

### Speaker 2

Dr Charlie Parkinson is Global Medical & Scientific Affairs Director, Oral Health at Haleon. He has twenty years' experience in oral care research, product development and clinical evaluation. His research has included in vitro and in situ modelling of oral diseases and conditions, fMRI of oral conditions, therapeutic approaches in the management of dentine hypersensitivity and erosive toothwear, and the impact of oral conditions on oral health related quality of life. He is a Fellow of the Royal Society of Chemistry and Associated Editor for the Journal Preventative Dentistry, with over 70 peer-reviewed publications in the field of oral care.

### Speaker 3

Rhiannon has worked as a dental hygienist for 24 years in both private and NHS practices. She also works with the Cleft lip and palate team in Bristol Dental Hospital providing pre and post op care and a weekly clinic. She was, until recently, a clinical lecturer at Cardiff University working with the Diploma and BSc courses.

She graduated as a dental therapist in March 2015 from Bristol University.

Rhiannon is passionate about highlighting the importance of patient communication and why it's so important to talk to patients with regards to a range of subjects.

In her latest role as President Elect for the British Society of Dental Hygiene and Therapy, she focusses on promoting the profession for the good of patients and dental colleagues.



## Teaming up for healthy smiles – a Swedish approach

### Speaker 1

**Lina Kanters**

Tepe, Sweden

### Speaker 2

**Sanjay Haryana**

Tepe, Sweden

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### Abstract

The members of a dental team can vary between countries, but the importance of a functional, happy, efficient team is global. An effective team where everyone feels they have a vital role is beneficial not only for the team members but also for the patients in their care.

Sweden is well-known for focusing on prevention and all members of the dental team working closely with the patients. In this presentation, we will meet dental technicians, dental assistants, dentists, and dental hygienists who have taken teamwork to their hearts. Join this session to get inspired and take your teamwork to the next level.

Funding for this session is supported by the Swedish company TePe Oral Hygiene Products.

### Learning Outcomes

1. Understand the different functions of the dental professionals in a Swedish dental team
2. Understand the benefits of working together as a team and how this can help create a patient centred approach and a good working environment
3. Be aware of delegation as a concept

### Presenting Author Brief CV

#### Speaker 1

Graduated from Malmö University, Sweden, in 2006. Clinical experience from general dentistry and periodontics specialist clinic. Worked as junior lecturer at the Dental Hygiene Program and has a Master degree in Oral Health. Outside of her work at TePe, Lina is the chairperson for the southern branch of the Swedish Dental Hygiene association, and a writer for the Swedish Dental Hygiene Journal. Joined the TePe head office in 2015 with a focus on education and product knowledge in relation to clinical dentistry.

#### Speaker 2

Graduate from Malmö University, Sweden, with 20 years of experience in clinical dentistry with a Master degree in Aesthetic dentistry and Business administration. Spent most of his clinical career in London, where he also served as the clinical director for a small dental corporate before joining TePe. Previously responsible for education in the Nordic subsidiary, then regional support in Singapore and now back at the head office in Malmö, Sweden.

## Reimagining oral antisepsis and tooth remineralization: protocols and clinical cases

### Fabia Profili

Curasept, Italy

#### Abstract

Therapies of periodontal and relating to implants problems have in the past been associated with the concept of removal and destruction of periodontal pathogens, as a necessary prerequisite for obtaining satisfactory results.

More recently, the concept of bacterial biofilm control has been adopted: in respect to the blind destruction of all microorganisms and their complete elimination (which is also impossible), it is preferred to act with “modulation” and “interaction”, increasing the amount of less pathogen species.

It is only recently, however, that the evolution of medicine and biology allowed the development of some substances that have an easy clinical use, able to stimulate natural processes of cells and hard tissues of the teeth, both during the healing processes of inflammatory phases and in the maintenance period, opening up incredible synergies with antiseptic, antibiotic and chemotherapeutic principles.

These synergies are now considered indispensable for a medicine that can be defined as “modern” and widely customized on the patients’ needs.

Funding for this session is supported by Curasept Spa, Saronno, Italy.

#### Learning Outcomes

1. Review the modern approaches to the use of local antiseptics and their different influences on oral microbiota, distinguishing the ideal role in therapy and maintenance.
2. Practical suggestions for the best application of antiseptics and remineralizing agents, depending on the clinical situation through presentation of different clinical cases.
3. Achieving optimal job performance of dental hygienists through the correct choice and combination of science and expertise.

#### Presenting Author Brief CV

Born on the 18th of July 1989 in Italy, in the city of Ancona.

She obtained a Bachelor Degree in Dental Hygiene, with Honors at University Polytechnica of Marche. Later on She obtained a Specialized Master’s Degree in Health Career Professions Sciences at the Marche Polytechnic University with honors. She had the chance to be a Visiting RDH at University of Otago (New Zealand, 2014).

She regularly organizes social and active meetings for adults and children (also in English) aimed at preventing oral pathologies.

She is member of the board of AIDI (Italian Dental Hygienists Association) as National Deputy Secretary. At the same She works in a private practice, carrying out the tasks provided by the profession of Dental Hygienist.

In the past, She worked for three years as a Tutor for the Bachelor of Oral Hygiene at the University Politecnica delle Marche. Moreover She was lecturer for the Master of Science Students, teaching medical technical sciences applied to oral hygiene.

Currently she is a PHD student in Science and Technology for sustainability and development at Ud’A University.

She is a Speaker and scientific consultant for CURASEPT in Italy and abroad.



CS-06

## Biofluorescence of oral microbiome detection technology for oral hygiene

### Speaker 1

**Hoiin Jung**

Yonsei University, South Korea

### Speaker 2

**Hanna Jang**

Dentilingual, South Korea & USA

### Abstract

Detection and removal of pathological oral biofilm are essential in hospitalized geriatric patients, as the biofilm can lead to lung infections. Furthermore, with the increasing integration of general medical and dental services for geriatric patients, a straightforward and understandable dental assessment is needed to facilitate collaboration between multidisciplinary teams. Biofluorescence detection technology shows promise in detecting dental biofilm and assessing transitions from healthy (eubiotic) to diseased (dysbiotic) states. Our goal was to verify the effectiveness of biofluorescence detection technology in assessing oral hygiene and evaluating the removal of pathological oral biofilm among hospitalized geriatric patients.

As AI systems transform our society, learning new skills is essential for evidence-based dentistry. Early detection of incipient caries, fractures, cracks and oral biofilm by biofluorescence detection technology can

### Learning Outcomes

1. Learn how biofluorescence detection technology assesses oral hygiene and evaluates the removal of pathological oral biofilm in hospitalized geriatric patients.
2. Discuss strategies how biofluorescence detection technology can be applied to dental hygiene practice.

### Presenting Author Brief CV

#### Speaker 1

Jung, Hoiin D.D.S., Ph.D., serves as an Associate Professor in the Department of Preventive Dentistry & Public Oral Health at Yonsei University College of Dentistry. Her research focuses on oral biofilm and the oral health of the elderly. She currently holds positions as Academic Director at the Korean Academy of Preventive Dentistry and Oral Health, Research Director at the Korean Academy of Geriatric Dentistry, and is a Board Member of FDI Women Dentists Worldwide.

#### Speaker 2

Han-Na Jang, RDH, MSDH received dental hygiene training in South Korea and the United States. She founded DENTILINGUAL, which offers online dental English courses for Korean dental professionals. She currently teaches in the Department of Dental Hygiene at Shingu College in Korea, and has served as a commissioner on the U.S. Joint Commission on National Dental Examinations since 2021. While working as a clinician in Washington D.C. and Korea, she coauthored dental English textbooks. Han-Na is the ADHA 2020 Esther Wilkins Future Leader Award recipient and served as the president of the District of Columbia Dental Hygienists' Association in 2019-2021.

## GBT: the easiest way to extend a healthy life span

### Junghyun Park

Boa Dental Clinic, South Korea

#### Abstract

Back in 2013, Listl and Birch quoted “If integration of a new therapy is to be considered, it either has to be superior in therapy outcome or has to show other relevant advantageous aspects such as patient preference or operator convenience or economy of time or other resources.”

Clearly today focusing on oral hygiene, which forms the gateway to maintaining good oral and systemic health, is the need of the hour.

Guided Biofilm Therapy is the modular, systematic, predictable solution for dental biofilm management in professional prophylaxis using state-of-the-art technologies.

“Guided Biofilm Therapy” (GBT) protocol follows the recommendations of the European Federation of Periodontology (EPF), which quote that a successful treatment outcome is a combination of professional prophylaxis and equally good oral hygiene at home.

It has been proven in scientific literature to overcome all the challenges that exist today when it comes to professional teeth cleaning (prophylaxis).

GBT protocol can be adapted to every clinical situation in the dental practice - from prevention for early decay and periodontal disease to maintenance and, in many cases, treatment of periodontitis and mucositis.

This protocol can be applied to all patients in supportive periodontal therapy (SPT) and forms the basis of treatment for patients in initial / non-surgical periodontal therapy.

GBT comprises 8 steps that can be modified depending on the clinical situation. The aim of this protocol is to be minimally invasive, preserve hard and soft tissues, and, at the same time, meet patient expectations.

Like any innovation that comes into being in this day and age, when recommendations on correct usage are followed, this protocol has been proven to be highly efficacious, safe and comfortable, not only for the clinician but also in all patient groups.

Today, Guided Biofilm Therapy has over 300,000 testimonials from contented patients.

#### Learning Outcomes

1. Understand modern approach to prophylaxis and non-surgical periodontal/peri implant treatment
2. Learn all clinical applications where GBT can be applied
3. Know about scientific evidences supporting GBT with respect to safety, efficacy and comfort

#### Presenting Author Brief CV

periodontics from Seoul National University, serves as the primary speaker for the Swiss Dental Academy in Korea, where he has educated thousands of clinicians on techniques for natural teeth preservation and implant maintenance. His clinic, named “BOA” in Korean, meaning “preserving the teeth”, reflects his commitment to dental health. Actively involved in various dental societies, Dr. Park plays a pivotal role in advancing periodontics and implantology in the country. His dedication inspires not only fellow dentists but also dental hygienists, ensuring comprehensive periodontal treatment and maintenance for the benefit of patients.

CS-08

## Using objective assessment tools in orofacial myofunctional therapy

**Su Na Lee**

MFT Center at Children's Dental Center Cheongdam, South Korea

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### Abstract

As an ultra-aged society is expected, the importance of rehabilitative training for dysphagia is increasingly highlighted with oral health for the elderly. Additionally, orofacial myofunctional therapy can help improve problems of sleep and malalignment by tongue positioning issues. By utilizing objective data such as tongue pressure etc evidence-based training can further enhance the expertise of dental hygienists. Funding for this session is supported by GC KOREA

### Learning Outcomes

1. It is possible to understand oral functions and emphasize their importance.
2. Oral myofunctional disorders can be objectively assessed.
3. Oral myofunctional training can be tailored to the needs of the participants.

### Presenting Author Brief CV

Ph.D. in Dentistry from Chonnam Univ. ROMT COMPANY Rep. Oral Myofunctional Therapy Speaker

## Advancements in Non-Surgical Periodontal Therapy: The Efficacy of Guided Biofilm Therapy for Treatment, Prevention, and Maintenance II

**Neha Dixit**

Clinical Affairs & Medical Education, E.M.S, Switzerland

### Abstract

Back in 2013, Listl and Birch quoted “If integration of a new therapy is to be considered, it either has to be superior in therapy outcome or has to show other relevant advantageous aspects such as patient preference or operator convenience or economy of time or other resources.”

Clearly today focusing on oral hygiene, which forms the gateway to maintaining good oral and systemic health, is the need of the hour.

Guided Biofilm Therapy is the modular, systematic, predictable solution for dental biofilm management in professional prophylaxis using state-of-the-art technologies.

“Guided Biofilm Therapy” (GBT) protocol follows the recommendations of the European Federation of Periodontology (EPF), which quote that a successful treatment outcome is a combination of professional prophylaxis and equally good oral hygiene at home.

It has been proven in scientific literature to overcome all the challenges that exist today when it comes to professional teeth cleaning (prophylaxis).

GBT protocol can be adapted to every clinical situation in the dental practice - from prevention for early decay and periodontal disease to maintenance and, in many cases, treatment of periodontitis and mucositis.

This protocol can be applied to all patients in supportive periodontal therapy (SPT) and forms the basis of treatment for patients in initial / non-surgical periodontal therapy.

GBT comprises 8 steps that can be modified depending on the clinical situation. The aim of this protocol is to be minimally invasive, preserve hard and soft tissues, and, at the same time, meet patient expectations.

Like any innovation that comes into being in this day and age, when recommendations on correct usage are followed, this protocol has been proven to be highly efficacious, safe and comfortable, not only for the clinician but also in all patient groups.

Today, Guided Biofilm Therapy has over 300,000 testimonials from contented patients.

### Learning Outcomes

1. Understand modern approach to prophylaxis and non-surgical periodontal/peri implant treatment
2. Learn all clinical applications where GBT can be applied
3. Know about scientific evidences supporting GBT with respect to safety, efficacy and comfort



## Presenting Author Brief CV

Dr. Neha Dixit has been representing the Swiss Dental Academy (SDA) and Electro Medical Systems (E.M.S) since 2009. A periodontist by training, she is a passionate academician and clinician who has been actively providing education to practicing and university dentists, periodontists and dental hygienists globally backed by scientific evidence. Dr. Dixit has received specialty training in advanced non-surgical periodontology and hospital administration and has been a staunch advocate of adopting a minimally invasive clinical approach right from her graduation days, even before she was associated with E.M.S. She has been a regular speaker at numerous international congresses in Europe, Asia, USA and Australia. Currently, she leads the professional education initiatives and clinical affairs programs at E.M.S. Headquarters in Switzerland.

# The role of dental hygienists in coaching patients for Oral Health Management

**Byoungjin Lee**

Kongsaeg Oral Health Research Institute, Denomics Inc., South Korea

## Abstract

During dental treatment, patient coaching is a big part to enhance patients' awareness and abilities in managing their oral health.

The ability of patients to manage their oral health is an important factor not only in the success of dental treatments but also in improving their quality of life, and its importance is getting more recognized. Therefore, dental visits provide an excellent opportunity for patient coaching, but the effectiveness varies depending on the teamwork between the dentist and the dental hygienist.

Dental hygienists play a key role in patient communication and oral health education, and the outcomes of coaching depend on their skills.

This lecture will review the necessary knowledge of a dental hygienist to be able to coach efficiently in dental practice.

This session is sponsored by TePe.

## Learning Outcomes

1. Understand the concept and practice of patient oral health management coaching.
2. Learn the competencies required for dental hygienists in patient coaching and training.
3. Understand the actual models of patient coaching and training that can be performed in the dental office.

## Presenting Author Brief CV

- Graduated from the Department of Preventive Dentistry
- College of Dentistry and Graduate School of Dentistry at Seoul National University (Doctor of Dental Surgery)
- Former Professor of Preventive Dentistry at Chosun University College of Dentistry
- Director of Planning at the Korean Academy of Preventive Dentistry & Oral Health
- Co-Representative of the Dental Caries Prevention Study Group
- Director of the Denomics Life Sciences Research Institute.

## Implant Maintenance that Dental Hygienists Must Know

### Chaeyeon Lee

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### Abstract

Implant Maintenance that Dental Hygienists Must Know” delves into the intricacies of caring for dental implants. The abstract emphasizes the importance of proper maintenance routines and the role of dental hygienists in preventing peri-implant diseases. Through a detailed exploration of cleaning protocols, risk assessment, and patient instruction strategies, this session aims to equip hygienists with the knowledge to extend the lifespan and functionality of dental implants. It also addresses the need for collaborative patient-hygienist relationships to facilitate ongoing care and the successful integration of implants into the oral hygiene framework.

“Funding for this session is supported by Neobiotech.

### Learning Outcomes

1. Learn how to clean and maintain dental implants properly.
2. Understand how to teach patients about daily implant care.
3. Recognize and respond to early signs of implant complications.

### Presenting Author Brief CV

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## The Utilization and Future of EDR for Dental Hygienists

### Speaker 1

#### Kim Doo Yong

Haeon Dental Clinic, South Korea

### Speaker 2

#### Hong Sun A

Erumi Dental Clinic, South Korea

### Speaker 3

#### Kang Ho Duk

Bangbae Bon Dental Clinic, South Korea

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### Abstract

Recently, there has been a growing interest in electronic charts in the dental field.

Electronic charts make it easier to store and manage vast amounts of medical records, so there is no need to find a chart and worry about losing it compared to using a conventional paper chart. Electronic charts also provide efficient records because they can be entered with a simple click compared to paper chart writing, and because they notify you of various precautions related to dental health insurance calculation standards at the charting stage, it is very helpful in accurate health insurance claims.

In addition, the current electronic chart plays an important role in intra-dental communication beyond the unique area of storing and managing medical records on a computer. It enables efficient collaboration between dental hygienists and dentists and helps smooth communication between patients and medical staff.

Currently, new digital-based technology is rapidly being introduced in all dental processes from diagnosis to treatment. All information related to the patient's oral cavity is digitized using equipment such as CT or oral scanners and used for treatment through CAD-CAM or 3D printing. The electronic chart program is also performing a PMS (Practice Management System) function that integrates and manages the beginning and end of digital dentistry through organic linkage with various software required for such digital dentistry. The use of electronic charts enables office automation of hospital work to efficiently handle patient management and hospital work throughout the dental work, from patient reception and counseling, payment and insurance claims.

The ability to use electronic charts is essential to optimally perform the task of dental hygienists. Therefore, in this lecture, we will also look into how to use electronic charts for various dental tasks.

“Funding for this session is supported by Osstem”.

### Learning Outcomes



## Presenting Author Brief CV

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Ph.D, Hanyang University, College of Medicine  
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### Speaker 2

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### Speaker 3

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Note.





# ISDH 2024

## International Symposium on Dental Hygiene 2024

July 11 – 13, 2024 | COEX, Seoul, South Korea

*Dental Hygienists, the Center of Oral Health*



# ISDH 2024

International Symposium  
on Dental Hygiene 2024

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COEX, Seoul, South Korea

# Index of Authors





## Index of Authors

Author name	Program Codes*	Author name	Program Codes*
A-Hyun Jo	P-107	Arem Kim	O-064
A-Young Chun	O-040, O-069, P-109, P-113	Ashleigh Ayo	O-017
Abdur Rehman	O-034	Atsuhiko Kinoshita	O-013
Ae-ri Shin	P-011	Ayaka Isobe	P-057
Aein Mon	P-076	Ayako Edahiro	P-044, P-057
Ai Sakuma	P-006	Ayako Kubota-Miyazawa	P-101
Aiko Hoshiai	P-031, P-064	Ayako Miyazawa	P-102, P-108
Aiqin Lv	O-061	Ayari Furuie	P-035
Aki Nishiyasu	P-102	B.W.M. Van swaaij	O-012
Ali Sadiq	O-038, P-112	Baek Il Kim	O-001, O-049, O-059, O-064, P-068, P-092
Alina Puriene	P-030	Bo Danielsen	O-018
Alwina Ghazi	O-038, P-112	Bo-A Lee	O-075
Amir Raza	O-034	Bo-Mi Shin	O-062, P-024, P-026, P-088
Amy Destaffany	O-002	Bo-Ram Lee	P-123
An-na Yeo	O-006	Bo-Ram Shin	O-055
Ana Cristina Rodrigues	O-030	Bo-Young Lee	P-069
Anders Broström	O-004, P-012	Bongju Kim	P-060
Andrea S. Aspås	P-015	Boo Keun Choi	P-074
Andrew Terry	O-060, P-145	Boon Keng, Alvin Yeo	O-063
Anna Antonacci	P-019, P-051	Boram Lee	O-046
Annsofi Brattbäck Atzori	O-070	Bregje van Swaaij	O-023
Anouk Loeffen	O-028	Brian Wilkinson	O-008
Anthea Cochrane	O-042	Brittmarie Jacobsson	O-073
Antonia Abbinante	P-019, P-051	Byoung Jin Lee	P-074



Author name	Program Codes*	Author name	Program Codes*
Cecilie Y. Robertsen	P-015	Dagmar Else Slot	O-003, O-010, O-015, O-029, P-077, P-111
Cha young Lim	P-100	Danielle Rulli	O-053
Chae-Hyun Lee	O-049	Dianne Sefo	P-007
Chang Oh Kim	O-059	Do Yeon Kim	P-091
Chang-Hee Kim	P-061, P-065	Do-Yeon Kim	P-105
Chanyoung Park	P-096	Dokyeong Kim	P-056
Charn Dhami	P-070	Dong-Yun Gang	P-096
Chiaki Matsubara	P-044, P-055, P-057, P-111, P-125	Dr. Ali Sadiq	O-058
Choi Mi-Sook	P-008	Dr. Asim Belgaumi	P-021
Choi Yu-Ri	P-008	Dr. Farhan Raza Khan	O-058
Christine Kvarnvik	P-012	Dr. Naureen Mushtaq	P-021
Chunli Wang	P-087	Dr. Sadaf Altaf	P-021
Cinzia Bizzoca	P-019	Dr. Zehra Fadool	P-021
Claire Mccarthy	O-050	Elena Shmarina	O-073
Cleopatra Matanhire	O-014	Eleonor I Fransson	O-004
D. Slot	O-012	Ella Peshkova	P-058
Da Hyeon Yoon	O-025	Emmy Rowan Windhorst	O-029
Da Jeong LEE	P-018	Esther Tingue	P-007
Da-Hye Kim	P-078	Eui-jeong Noh	P-048
Da-Jeong Kim	O-065	Eun Kyoung Kim	P-122
Da-mi Kim	O-033	Eun song Lee	O-059, P-092
Da-Young Ryu	P-089	Eun-Ae Kim	P-037
Daeun Kim	O-054	Eun-Ah Go	P-116
Dagmar Slot	O-023	Eun-Bi Cho	P-096



Author name	Program Codes*	Author name	Program Codes*
Eun-Chae Kim	P-043	Gloria Kim	O-014
Eun-Ha Jung	P-014, P-137	Go-eun Lee	P-093
Eun-Ji Kim	P-090	Gum-ju Sun	P-011
Eun-joo Park	O-019	Gyu-Min Jung	P-093
Eun-mi Kim	P-011	Ha-Yeon Choi	P-096
Eun-Song Lee	O-049, O-064	Hadas Goldberg	O-039
EunBi Sim	P-053	Hae-Eun Choi	P-096
Eung-Song Lee	O-001	Hae-Sil Oh	O-035
EunJi You	O-066	Hae-Soo Yoon	O-055, P-114
Eunsuk Ahn	P-104	Haekyoung Kim	P-023
Eveline van der Sluijs	O-029	Han-ul Cha	P-093
Farhan Raza Khan	P-112	Hanna Ahonen	O-004, P-012
Fridus van der Weijden	O-010, O-023	Harumi Sakamoto	P-111
Fumiko Uehara	P-126	Haruna Ozawa	P-009
G.A. Van der Weijden	O-012	Hee-Eun Kim	P-113, P-107, P-109, P-124, P-120
Ga-Hye Seo	O-065	Hee-Kyoung Kim	P-089
GaHye Seo	O-071, P-017	HeeHong Min	O-066
Germano Orrù	P-019	HeeJa Na	P-003
Geum-Chae Youn	O-044, O-065	Henrique Luis	P-010, O-030
Geumchae Youn	P-016	Hideo SHIGEISHI	P-005
Geun-Yeong Kim	O-065	Hie-jin Noh	P-041, P-066, P-098, P-053, P-036
Gi-Yun Jang	O-031	Hinako Takano	P-126
Gianfranco Favia	P-051	Hirohiko Hirano	P-044, P-057
Gitana Rederiene	P-030	Hiromi Ezaki	P-102, P-108



Author name	Program Codes*	Author name	Program Codes*
Hiromi Izuno	P-126	Hye Wook Kim	P-036
Hiromi Nakae	P-111, P-125	Hye Young Mun	O-068, P-091
Hiromi NISHI	P-005	Hye-eun Jo	O-044
Hiromi Otsuka	P-064	Hye-In Song	P-096
Hiroto Tatsumi	O-048	Hye-Jin Na	P-114, P-149
Hiroyuki KAWAGUCHI	P-005	Hye-Jin Park	P-135, P-137
Hiroyuki Sasai	P-044, P-057	Hye-Lim Hong	P-090
Hisako Hikiji	P-057	Hye-min Ku	P-068
Hisashi Kawai	P-044, P-057	Hye-Su Moon	P-043
Hitomi Suzuki	P-101, O-013	Hye-Sung Kim	P-084
Ho seon Kim	O-056	Hye-Young Yoon	P-024, P-088
Ho-Beom Kwon	P-076	Hyeeun Cho	P-032
Hoi In Jung	O-059	Hyeon-Bin Lee	O-031
Hoi-In Jung	O-064, O-049	Hyeon-Seon Choi	P-105
Hong Soomi	P-027	Hyeon-Sook Kwun	P-069
Hui Jeong	P-097	Hyeongmi Kim	P-061, P-065
Hui Jia Sophia Choo	O-063	Hyeran Eun	P-094
Huijeong Kim	P-042, O-046	Hyerim Jeon	P-130
Hwa Jin Han	P-074	Hyewon Cheon	P-054
Hwa- Young Lee	P-124	Hyewon Lee	O-014
Hwa-Young Lee	P-120	HyeWook Kim	P-053
Hye Eun Cho	P-047	Hyo Jung Kim	P-092
Hye Jin Lee	P-082	Hyo-Jin Kim	P-096
Hye Won Cheon	P-063	Hyo-Jin Lee	P-088, P-024, P-130



Author name	Program Codes*	Author name	Program Codes*
Hyo-Lim Sun	P-096	Jessica Persson Kylén	O-070
Hyobin Park	P-036	Ji Yeon Lee	P-047
Hyun Kyung Kang	P-073	Ji Youn Han	P-074
Hyun-Do Jang	P-090	Ji Young Jung	O-026
Hyun-Joo Kang	P-059	Ji-Eun Byun	P-061
Hyun-Kyung Kang	O-065	Ji-Hye Kim	P-062
Hyun-Suk Kim	P-116	Ji-Hyoung Han	P-104
Hyung-Min Kang	P-090	Ji-Hyun Min	P-045, P-083
Hyung-Soon Shim	P-011	Ji-Na Lim	P-117
Hyung-Suk Lee	O-001, O-049	Ji-won Han	O-019
Hyunjoo Kang	P-032	Ji-Won Lim	P-113, P-107
Il-Soon Park	P-097	Ji-Won Park	O-055, P-149, O-035
In Young Ku	P-074	Ji-yeon Choi	P-093
Inseong Hwang	P-084	Ji-Yeon Lee	P-107
Itsuki Takazawa	P-064, P-101	Ji-Young Jung	O-011
Itsuski Takazawa	P-031	Ji-Young Lee	O-065
Jacqueline Biggar	O-017	Ji-Yun Ki	O-037, O-055
Jae Kook Cha	O-027, O-033, P-092	Jiaming Joshua Xie	O-063
Jae-young lee	P-117, P-094, P-037	Jiho lee	O-999
Jane Choi	O-047	Jin Ah Jung	P-063
Jeong Hwan Kim	O-025	Jin Ah Park	P-046
Jeong-Hee Park	P-069	Jin Young Park	O-026
Jeong-hyeon Kim	P-093	Jin-gyeong Jung	P-093
Jeongmin Heo	O-007	Jin-Sun Choi	P-088, P-024



Author name	Program Codes*	Author name	Program Codes*
Jin-Young Jeong	P-120, P-124	Jungwon Lee	P-060
Jin-Young Park	O-033	Junhewk Kim	O-011
Jina Lim	P-037	Kanade Ito	P-009
Jingying Hu	P-067	Kanae WADA	P-072
Jinju Yang	P-032, O-046	KANAKO Yano	P-005
Jinsun Jeong	O-025	Karo Parsegian	O-002
Jocelyn Harding	P-020	Kayoko Shinada	O-013, O-053
Johanna Manninen	P-001	Kazuhiro Hori	P-126
Jong-Hwa Jang	O-055, P-149, P-004, O-035, O-040, P-114, O-037	Kazuki Ueda	P-055
Jong-Seok Kim	P-048	Keiko Motokawa	P-044, P-057
JongWha Jang	O-069	Keisuke Nishigawa	P-125
Joo Yeon Lee	O-027, P-092	Keisuke Yamashiro	P-108
Joo Young Lee	P-074	Kelley Graydon	O-042
Joo-Young Lee	P-113	Kenji Wakai	P-035
Ju Hui Jeong	P-041	Kenneth Eaton	O-014, P-020
Jun-Hyuk Choi	O-049	Kentaro Igarashi	P-057
Jung Hwa Lee	P-022	Ki Rim Kim	P-049
Jung Seok Lee	O-026	Ki-Eun Kim	P-097
Jung Yun Kang	O-068, P-091	Ki-Rim Kim	P-045
Jung-Hee Bae	P-078	Kim Youngim	P-027
Jung-Hee Kang	P-116	Kimi Matsumoto	P-077
Jung-Seok Lee	O-011, O-075	Kiran Aslam	O-034
Junhui Son	P-132	Koji OHTA	P-005
Junghwa Lee	P-034	Kojima Masaaki	P-035



Author name	Program Codes*	Author name	Program Codes*
Kristen Simmons	O-043	LEE Bo ram	P-050
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Kumiko Sahara	P-077	Leigha Rock	P-028
Kumiko Sugimoto	O-013, P-101	Lene Madsen	O-018
Kwang Joon Kim	O-059	Leonardo Vincenti	P-019
Kyeong-Hee Lee	P-086	Leonie Short	O-014
Kyeong-ran Park	P-093	Liao Shin-ru	P-009
Kyeong-Seop Kim	O-025	Linda Stein	O-057
Kyle Cheng	O-017	Lindsay Macdonald	P-028
Kyoung-Mi Kang	P-116	Line Cathrine Nymoen	P-015
Kyoung-Yeon Kim	O-031	LING WANG	O-025
Kyung A Ko	O-026, O-011, O-075	Lotte Weijdijk	O-036
Kyung Yi Chung	P-122	Luis Soares Luís	O-030
Kyung-hee Kang	P-056	Lum Peng Lim	O-063
Kyung-Mi Park	O-065	Lynn Bethel-Short	O-014
Kyung-Yi Chung	P-118	M Mguni	O-076
Kyung-Mi Kim	P-075	M. Joosstens	O-012
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Mariko Naito	P-035	Mi-Hye Kim	O-065
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Masami Yoshioka	P-077, P-125, P-111, P-044, P-057	Mihye Kim	O-052
Masanori Nakano	P-125	Miki Nakamura	P-102
Masayo Fukuda	P-126, P-108, P-102	Min Hee Hong	P-013
Masayo Nakamura	P-079	Min-Ji Jo	P-141
Masayo Sunaga	O-013	Min-Ji Kim	P-043, P-089
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Author name	Program Codes*	Author name	Program Codes*
Min-Young Song	P-096	Naoko Adachi	O-053, O-013
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Miyuki NAKAOKA	P-005	Nobuhiro Hanada	P-035
Mizuki Mitsui	P-035	NOBUKO Kashiwai	O-045
Mu-Yeol Cho	P-084	Norifumi Moritani	P-108
Myeong-Hwa Park	P-114, O-040, O-069, O-035	Nurit Tinsky	P-052
Myoung Ok Jeong	O-069, O-040	Ok-Seong Han	P-122, P-118
Myoung-Hee Kim	P-089	Ola Sunnergren	P-012
Myung-Jin Lee	P-085, O-021	Omar M. M. Rodis	O-015
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Na-yeon Kim	P-065	Patrick Westhoff	O-017
Naho Suzuki	P-092	Puneet Gupta	O-014
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Naoki Yoshida	P-055	Rumi Nishimura	P-035
		Ryo Horikoshi	P-092



Author name	Program Codes*	Author name	Program Codes*
Sae hee Cheon	P-082	Seonyoung Kim	P-032
Salima Alibhai	P-070, P-021	Seoul-Hee Nam	P-119, P-025
Sanae Miyoshi	P-129	SeoulHee Nam	P-128
Sang Eun Moon	P-050, P-063, P-054, P-123, O-052, P-043, O-046, O-071, O-072, P-042, P-032	Septika Priskasari	O-068
Sang-Hee Yoo	P-089	Seul-ah Lee	P-114
Sang-Kyeom Kim	P-074	Seung Hyun Park	O-027
Sang-Sun Han	P-097	Seung Joo Kim	P-091
Sara Sheikh	O-034	Sharon Compton	P-028
Satoe Okuma	O-048	Shazia Taimoor	P-021, O-058
Se-Rim Jo	O-037, O-055, P-004	Shelina Bhamani	O-034
Se-Youn Ahn	P-075	Sherry Priebe	O-009
Se-Young Park	P-096	Shiho Morishita	P-057
Seema Kumar	O-014	Shino Yamaguchi	P-057
Seiko Toraya	P-031	Shogo Yoshimura	P-126
Seo Young Jeong	P-018	Shoko Hori	P-126
Seo-Ye Park	P-048	Shuichi Obuchi	P-057, P-044
Seo-yeon Hong	P-093	Shulamit Weiss	P-052
Seol-Hee Kim	O-077	So-hyun Nam	P-093
Seon Yeong Kim	P-127, P-046, P-115	So-Yeon Ju	P-105
Seon-mi Park	O-065	So-Youn Lee	P-105
Seon-Rye Kim	O-074	Sojung Mun	P-040, P-034, P-018
Seong-Chan Park	P-083	Sol Park	O-064, O-059
Seong-Min Lim	O-031	Soo-Auk Park	P-002, O-022
		Soo-Min Kim	P-135



Author name	Program Codes*	Author name	Program Codes*
Soo-Myoung Bae	P-088, O-062, P-130, P-026, P-024	Tae-Hee Go	P-037
Soyeong Park	P-071	Takahiro Kanno	O-048
Su Cheng-yih	P-095	Takakazu Yagi	P-108
Su Jin Han	P-074	TAKAKO Ujishashi	P-126, P-102
Su Na Lee	P-122	Takako Yodogawa	P-079
Su-Kyung Park	P-089, P-133	Tatsuji Nishihara	P-057
Su-Wan Park	P-096	Tatsunosuke Gomi	P-057, P-044
Su-young Lee	O-006	Tatsuo Okui	O-048
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Sue-Hyang Lee	P-089, O-062, P-026	Therese Elkerbout	O-010
Sun Hwa Hong	P-063, P-050	Tim Thomassen	O-010
Sun mi lee	P-103, P-074	Tokiko Doi	P-077
Sun-Hee Hwang	O-069, O-040	Toru Naito	P-035
Sun-Hwa Hong	P-123	Toshinobu Takemoto	P-035
Sun-Jung Shin	P-026, P-120, P-024, P-089, P-124, P-088, O-062	Tsutomu IWAMOTO	P-072
Sun-Young Han	P-141, P-135, P-137, P-110, P-083	Ui Won Jung	P-092, O-027
Sun-Young Lee	O-001	Ui-Won Jung	O-033
Sung Ki Lee	P-048	Ulrika Lindmark	P-012, O-004
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Sven Persson Kylén	O-070	Valeria Lorusso	P-019
Sviatlana Anishchuk	O-005	Veronika Chuchmová	O-032
Sylvie Martel	O-020	Victor Assunção	P-010
Tabitha Acret	O-078, O-017	Victoria Benvenuto	P-007



Author name	Program Codes*	Author name	Program Codes*
Wei Ming Clement Lai	O-063	Yoshinori Fujiwara	P-057, P-044
William Carlson-Jones	P-081, O-067, O-017	Yoshizo Matsuka	O-015
Woo Jung Noh	P-122, P-127	You-jin Cho	P-099
Xiao-Qing Fung	P-007	Youmi Kim	P-040, P-034, P-018
Xiaohui Liu	O-061	Young Hee Lee	P-122
Xiaotong, Jacinta Lu	O-063	Young Ran Jung	P-074
Xiue Li	P-106	Young Sun Kim	P-022
Yasushi Okuda	P-092	Young-Eun Jang	P-133, P-089
Yasuyuki Tanahashi	P-031	Young-Sun Kim	O-069, O-040
Ye Bin Cho	P-091	Young-Taek Kim	O-075
Ye-Seul Han	P-116	Young-Youn Kim	P-084
YeJi Kim	P-041, P-036	Youngyuhn Choi	P-097
Yeon Kyung Lee	P-074	Yu Min Kang	O-006
Yeon-Ji Cho	O-049	Yu-jin Cho	P-093
Yeon-Ji Lee	P-105	Yu-Mi Kim	O-040, P-096, O-069
Yoko Mizumura	P-108	Yu-Na Hwang	P-105
Yoon Seon Choi	P-074	Yu-Rim Lee	O-031, P-105
Yoon-ah Won	P-066	Yu-Rin Kim	P-073, P-119, O-065, O-069, O-074, P-025
Yoona Won	P-036	Yuan Park	O-026
Yoonjoo CHOI	O-019	Yuhei Matsuda	P-009, O-048
Yoshie NITANI	P-005	Yujeong Shin	P-072, P-064, P-031
Yoshie Usui	P-079	Yuji Kabasawa	P-009
Yoshifumi Okamoto	P-077	Yuka Sogawa	P-111, P-125
Yoshino KANEYASU	P-005	Yuki Noguchi	P-055





Author name	Program Codes*
Yuki Sawada	O-053
Yukie Hama	P-102
Yukie Yoshida	P-102, P-108
Yukiko Takahashi	P-108
Yukiko Yamamura	P-031, P-064
Yuko Kurawaki	P-035
Yumeno Kato	P-009
Yumi Ishikawa	P-031, P-064
Yun Jeong Kim	P-131
Yun-Seon Lee	P-110
Yunjeong Kim	P-032
Yunsook Jung	P-121
YuRi Choi	P-128
Yvonne Buunk-Werkhoven	P-030
Yvonne Howell	O-005
Zul Kanji	P-028, P-070



Note.





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