真の強さを学ぶ。
新潟大學
NIIGATA UNIVERSITY

UNIVERSITI
KEBANGSAAN
MALAYSIA
The National University
of Malaysia

PROGRAM BOOK

International Collaborative Symposium on

Development of Human Resources in Practical Oral Health and Treatment

Organised by
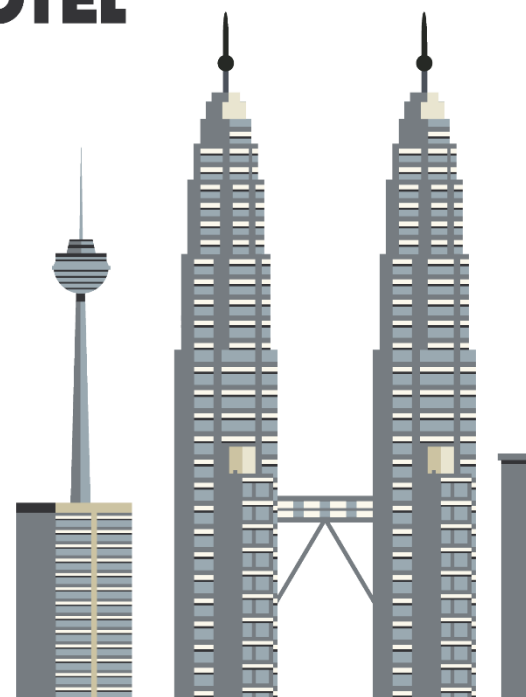
Faculty of Dentistry, Niigata University, **Japan**

&

Faculty of Dentistry, Universiti Kebangsaan Malaysia, **Malaysia**

8-9
February 2026

ROYALE CHULAN HOTEL
Kuala Lumpur, Malaysia

International Collaborative Symposium on

Development of Human Resources in Practical Oral Health and Treatment

PROGRAM BOOK

February 8 – 9, 2026

Royale Chulan Kuala Lumpur Hotel

Kuala Lumpur, Malaysia

Welcome to International Collaborative Symposium 2026

We are honored to host the International Collaborative Symposium on the Development of Human Resources in Practical Oral Health and Treatment in Kuala Lumpur, Malaysia, on February 8 and 9, 2026.

In the context of increasing globalization, the Japanese government strongly encourages the promotion of a global mindset among the younger generation. To this end, the Faculty of Dentistry at Niigata University has been actively working to build international networks at both the student and faculty levels.

For the past 10 years, the Faculty of Dentistry has collaborated with dental schools in Asian countries to host an annual international collaborative symposium. These symposia focus on the latest trends in dental research and beyond. This year, we are proud to co-host the symposium with the Faculty of Dentistry, Universiti Kebangsaan Malaysia.

The symposium will cover a wide range of oral health topics, including Oral Biology, Periodontology, Oral and Maxillofacial Surgery, Preventive Dentistry, Geriatric Dentistry and Rehabilitation, as well as the Current Trends in Dental Research—all of which are critical to addressing the needs of modern society. One of the primary aims of this symposium is to inspire outstanding PhD students and young faculty members to become future leaders in dental research by providing them with exposure to a competitive international environment.

Japan is currently experiencing a super-aged society, and this demographic trend is also becoming increasingly prevalent in other Asian and European countries. The challenges of an aging society demand improvements in the dental education system to meet new demands. Thus, it is crucial to share clinical and social challenges faced by super-aging societies in order to develop innovative medical and dental treatments, enhance social services, and establish new research domains. Through collaboration and strengthening our professional ties, we can accelerate progress in dentistry at all levels, from faculty members to students.

Niigata University is currently investing heavily in attracting graduate students, including international students, and promoting research. We are fortunate that our Faculty has recently been selected for the Japanese Government (MEXT) Scholarship Program. We are confident that this symposium will serve as a catalyst for further advancing the internationalization of the Faculty of Dentistry at Niigata University.

We look forward to engaging in fruitful academic exchanges and establishing meaningful collaborations during the symposium.

Professor Makoto Inoue
Dean of the Faculty of Dentistry
Niigata University, Japan

Welcome to International Collaborative Symposium 2026

Assalamualaikum wbt. and greetings.

It gives me great pleasure to welcome delegates, speakers, and guests to the International Collaborative Symposium on Development of Human Resources in Practical Oral Health and Treatment, convened on 8–9 February 2026 in Kuala Lumpur.

Universiti Kebangsaan Malaysia (UKM) is honoured to be selected by the Faculty of Dentistry, Niigata University, as the co-host for this symposium. I would like to express UKM's sincere appreciation to Niigata University for their confidence, trust, and valued partnership. We are pleased to welcome participants from Niigata University and its partner institutions to Kuala Lumpur for this important academic gathering.

At UKM, we regard academic collaboration and knowledge exchange as central to the advancement of higher education and the strengthening of professional capacity. This symposium exemplifies these values by focusing on the development of human resources in oral health—an area that is fundamental to the sustainability, quality, and equity of healthcare systems. Through dialogue and shared expertise, this platform contributes meaningfully to the preparation of a competent and future-ready oral health workforce.

I would like to extend my congratulations to the Faculty of Dentistry, UKM, on the celebration of its 30th Anniversary in 2026. Over the past three decades, the Faculty has demonstrated consistent leadership in education, research, and community service, while nurturing strong international partnerships. Hosting this symposium in its anniversary year reflects the Faculty's maturity, credibility, and continued commitment to excellence at both national and global levels.

I commend the Faculty of Dentistry and the organising committee for their vision and dedication in bringing this symposium to fruition. I am confident that the exchanges over the course of this meeting will inspire new perspectives, strengthen institutional ties, and contribute to lasting professional advancement.

I wish all participants a successful and intellectually enriching symposium.

Thank you.

Professor Sufian Jusoh
Vice-Chancellor
Universiti Kebangsaan Malaysia, Malaysia

Welcome to International Collaborative Symposium 2026

Assalamualaikum wbt. and greetings.

On behalf of the Faculty of Dentistry, Universiti Kebangsaan Malaysia (UKM), it is my great pleasure to welcome all delegates, speakers, and guests to the International Collaborative Symposium on Development of Human Resources in Practical Oral Health and Treatment, held on 8–9 February 2026 in Kuala Lumpur. I extend a warm welcome especially to our international delegates and visitors joining us from abroad.

This symposium provides an important platform for academic exchange and professional discussion in advancing oral health education, clinical practice, and human resource development. We are deeply honoured and sincerely appreciative of the Faculty of Dentistry, Niigata University for choosing the Faculty of Dentistry, UKM as their collaborator and host for this year's symposium. This collaboration reflects the strong academic trust and shared commitment between our institutions.

The year 2026 is especially significant for both the nation and our Faculty. As Malaysia celebrates Visit Malaysia Year 2026, we hope our guests will take the opportunity to experience the country's rich cultural heritage, diversity, and renowned hospitality. At the same time, the Faculty of Dentistry, Universiti Kebangsaan Malaysia proudly marks its 30th Anniversary. This is an important milestone that reflects three decades of dedication to excellence in education, research, and service.

As we come together over these two days of discussion and collaboration, I extend my appreciation to the organising committee for their commitment and careful planning, and to all participants for your presence and engagement. It is my hope that this symposium will foster fruitful exchanges, strengthen professional relationships, and leave all attendees with lasting academic and personal enrichment. I wish you a rewarding symposium and a pleasant stay in Kuala Lumpur.

Thank you.

Professor Tuti Ningseh Mohd Dom
Dean of the Faculty of Dentistry
Universiti Kebangsaan Malaysia, Malaysia

Faculty of Dentistry, Niigata University, Japan

1. Professor Makoto Inoue (Dean)
2. Professor Hiroshi Ogawa (Vice Dean)
3. Assistant Professor Kaung Myat Thwin
4. Dr. Natcha Tassanapong
5. Dr. Phue Wai Han
6. Mr. Seiji Yoshida
7. Mr. Mitsuru Konishi
8. Ms. Aina Minami

Faculty of Dentistry, Universiti Kebangsaan Malaysia

1. Professor Tuti Ningseh Mohd Dom (Dean)
2. Associate Professor Yew Hsu Zenn (Deputy Dean)
3. Associate Professor Haslina Rani
4. Associate Professor Tew In Meei
5. Associate Professor Jasmina Qamaruz Zaman
6. Dr. Muhammad Aiman Mohd Nizar
7. Dr. Muhammad Syafiq Asyraf Rosli
8. Dr. Al Imran Shahrul Naing
9. Dr. Amirul Faiz Luai
10. Dr. Nik Madihah Nik Azis
11. Dr. Beh Yew Hin
12. Dr. Hetal Ashvin Kumar Mavani
13. Ms. Jane Kalang
14. Mr. Zainal Asnawi Asyraf Bin Zainal Abbidin
15. Ms. Norfarhatul Huda Binti Kharunna'im
16. Ms. Nurul Amirah Binti Johar

February 8, 2026 (Sunday)

08:00 – 09:00   **Registration**

09:00 – 09:30   **Opening Ceremony**

Opening Remarks by

Prof. Makoto Inoue, Dean of Faculty of Dentistry, Niigata University, Japan

Prof. Sufian Jusoh, Vice-Chancellor, Universiti Kebangsaan Malaysia, Malaysia

09:30 – 10:30   **Special Lectures**

Chair:

Prof. Makoto Inoue, Niigata University, Japan

Speakers:

(09:30 – 10:00)   DEL-1-Mediated Restoration of Regenerative Capacity in Aged Oral Tissue: From Basic Science to Clinical Applications

Assoc. Prof. Tomoki Maekawa

Niigata University, Japan

(10:00 – 10:30)   Biofluorescence-Guided Dentistry: Innovative Oral Disease Detection

Prof. Baekil Kim

Yonsei University, Republic of Korea

10:30 – 10:45   **Coffee Break**

10:45 – 12:15   **Symposium 1: New Technologies in Geriatric Dentistry**

Chairs:

Prof. Kazuhiro Hori, Niigata University, Japan

Assoc. Prof. Tew In Meei, Universiti Kebangsaan Malaysia, Malaysia

Speakers:

(10:45 – 11:05)   **S1-1:** Measurement of Tongue Muscle Activity Related with Chewing and Swallowing Function in Geriatric Dentistry

Dr. Jin Magara

Niigata University, Japan

(11:05 – 11:25)   **S1-2:** AI-based Tongue Image Analysis for Oral Health Management in Older Adults

Dr. Jumpei Okawa

Niigata University, Japan

(11:25 – 11:45)	**S1-3:** Chewing Smarter, Aging Better: The Role of Mastication in Brain Function and Cognitive Health
	Dr. Ma. Therese Blanche O. Sta. Maria
	Manila Central University, Philippines
(11:45 – 12:05)	**S1-4:** Precision-driven Geriatric Prosthodontics: The Role of Dual-scan Protocol in Static Guided Implant Surgery
	Assoc. Prof. Tew In Meei
	Universiti Kebangsaan Malaysia, Malaysia
(12:05 – 12:15)	Discussion

12:15 – 13:00	**Lunch Break**

13:00 – 14:50	**Oral Presentation Session 1**
(Parallel Sessions)	**Chairs:**
	Prof. Tuti Ningseh Mohd Dom, Universiti Kebangsaan Malaysia, Malaysia
	Prof. Hiroshi Ogawa, Niigata University, Japan
	Presenters:
(13:00 – 13:10)	**O1-1:** Oral Health–Related Quality of Life of Filipino Adults Before and After Multi-Disciplinary Complete Oral Rehabilitation
	Ma. Therese Sta. Maria, Richa C. Marcos, Ma. Leonor M. Tianco, Maria Leah M. Ragadio, Divina B. Cadahing, Jaime F. Mandapat, Jr., Ma. Cristina Aurea G. Garcia
	Manila Central University, Philippines
(13:10 – 13:20)	**O1-2**: Bridging Knowledge to Action: The Role of Oral Cancer Education in Enhancing Routine Oral Examination in Makassar, Indonesia
	Andi Anggun Mauliana Putri, Miftah Raodatul Ramdhani, Erni Marlina, Ali Yusran
	Hasanuddin University, Indonesia
(13:20 – 13:30)	**O1-3**: Schoolchildren's Oral Health in Romania: Major Factors Affecting Care and Outcomes
	Anca-Cristina Perpelea, Ruxandra Sfeatcu, Andreea Didilescu, Silviu Pițuru
	Carol Davila University of Medicine and Pharmacy, Romania
(13:30 – 13:40)	**O1-4**: The Effectiveness of a Metaverse-Based Oral Health Education (Meta-OHE) among Malaysian Adolescents
	Amirul Faiz Luai, Nawwal Alwani Mohd Radzi, Eddy Hasrul Hassan, Budi Aslinie Md Sabri
	Universiti Kebangsaan Malaysia, Malaysia
(13:40 – 13:50)	**O1-5**: Depressive Symptoms and Oral Health in Japanese Older Adults
	Tin Zar Tun, Kaung Myat Thwin, Sachiko Takehara, Hiroshi Ogawa

University of Dental Medicine, Mandalay, Myanmar

(13:50 – 14:00)   **O1-6**: Association between Multiple Psychological Symptoms and Multi-Dimensional of Oral Health-Related Quality of Life in Myanmar Adults

Natcha Tassanapong, Kaung Myat Thwin, Phue Wai Han, Hiroshi Ogawa

Niigata University, Japan

(14:00 – 14:10)   **O1-7**: Association between Snacking Behaviors and Early Childhood Caries among Myanmar Preschool Children: A Cross-Sectional Study

Phue Wai Han, Kaung Myat Thwin, Wa Than Lin, Sachiko Takehara, Hiroshi Ogawa

Niigata University, Japan

(14:10 – 14:20)   **O1-8**: Effect of potassium on involuntary swallowing performance in normal adults

Namon Phetnin, Chisato Aizawa, Reiko Ita, Jin Magara, Takanori Tsujimura, Makoto Inoue

Niigata University, Japan

(14:20 – 14:30)   **O1-9**: Exploring the Effects of Neuromuscular Electrical Stimulation Frequency on Displacement of Hyoid and Perceived Discomfort

Ho Yin Leung, Jin Magara, Chisato Aizawa, Reiko Ita, Takanori Tsujimura, Makoto Inoue

Niigata University, Japan

(14:30 – 14:40)   **O1-10**: Effects of Resistance Training on Handgrip Strength, Masticatory Performance, and Maximum Tongue Pressure in Healthy Adults Pilot Observational Study

Titi Chotirungsan, Makoto Inoue, Pavarit Saelao, Pranwut Klaichinda, Supakit Techavijitchai, Taratorn Fainanta

Naresuan University, Thailand

(14:40 – 14:50)   **O1-11**: Efficiency in Motion: Leveraging Human Resource Strategies for High-Volume Preventive Dental Care

Jan Franchesca Louise F. Darnayla, Angeleica Faith N. Chu, Kyla Jelyn S. Agcaoili, Kyle Andrei P. Antonio, Mikca Charlene O. Arbis, Patricia Ann D. Baylon, Hannah Lane C. Cheng, Andrea May N. Culminas, Kyla Crissia D. de Guia, Christine Joyce S. Gumiran, Joemel F. Malgapo, Lyra Dhenneze I. Quiacos, Louise Marie R. Reyes, Angelika D. Robles, Ranee Nicole O. Sedilla, Clareese Rosette A. Urriquia

University of the Philippines Manila, Philippines

14:50 – 16:30   **Oral Presentation Session 2**

(Parallel Sessions)   **Chairs:**

Prof. Pornchai Jansisyanont, Chulalongkorn University, Thailand

Prof. Alexandra Ripszky, Carol Davila University of Medicine and Pharmacy, Romania

Presenters:

(14:50 – 15:00)   **O2-1:** A Simple Technique to Ensuring Esthetic Results in Restoring Extensive Carious Lesions in Anterior Teeth

Armin G. Segarra, Michelle S. Segarra

University of the Philippines Manila, Philippines

(15:00 – 15:10)   **O2-2**: Influence of Denture Materials on Trueness of Complete Denture Digitalization Using an Intraoral Scanner

Nareudee Limpuangthip, Veerit Tanvarasethee, Jae-Hyun Lee

Chulalongkorn University, Thailand

(15:10 – 15:20)   **O2-3**: Comparative Evaluation of Marginal Adaptation and Microbial Leakage in Class II Restorations with Alkasite Material: In Vitro Study

Chew Kah Hup, Norhayati Yusop, Kasmawati Norhidayati Mokhtar, Hafizah Ibrahim

Universiti Sains Malaysia, Malaysia.

(15:20 – 15:30)   **O2-4**: Siglec9 Defines a Myeloid-Driven Immunosuppressive Microenvironment in Head and Neck Squamous Cell Carcinoma

Yihan Guo, Kei Tomihara

Niigata University, Japan

(15:30 – 15:40)   **O2-5**: Beyond Thrombocytosis: Role of Platelet Phenotype and Activation Status in Predicting Outcomes to Systemic Therapy in Head and Neck Cancer

Nabina Miya, Sonobe Yu, Aizawa Yuka, Hirai Hideaki, Tomihara Kei

Niigata University, Niigata, Japan

(15:40 – 15:50)   **O2-6**: The Role and Machine Learning Analysis of Perineural Invasion Related Gene Expression in Head and Neck Squamous Cell Carcinoma

Luqing Zhang, Manabu Yamazaki, Hirai Hideaki, Jun-ichi Tanuma, Kei Tomihara

Niigata University, Niigata, Japan

(15:50 – 16:00)   **O2-7**: Extracellular Adenosine Triphosphate affects Oral Squamous Cell Carcinoma Cell Function and Metastasis

Phawilai Prachathai, Sanicha Yaklai, Phoonsuk Limraksasin

Chulalongkorn University, Thailand

(16:00 – 16:10)   **O2-8**: From Mechanics to Biology: DLC-Coated Drills as a Paradigm Shift in Implant Bed Preparation

Dagny Ochoa Escate, Karori Eguchi, Nami Akiba, Yosuke Akiba

Niigata University, Niigata, Japan

(16:10 – 16:20)   **O2-9**: Analyzing Possible Osteocyte Network Formation in New Bone Area after Bone Transplantation using Different Bone Quality Models

Nila Tun, Masako Nagasawa, Katsumi Uoshima

Niigata University, Niigata, Japan

(16:20 – 16:30)   **O2-10**: Novel Age and Growth Estimation (NAGE) Model by Optimizing Inverted Gompertz and Gamma-Type Formula Using Machine Learning and CT Imaging

Beshlina Fitri Widayanti Roosyanto Prakoeswa, Hideyoshi Nishiyama, Taichi Kobayashi, Makiko Ike, Masaki Takamura, Yutaka Nikkuni, Kouji Katsura, Takafumi Hayashi

Niigata University, Niigata, Japan

13:00 – 14:50   **Poster Presentation Session 1**

(Parallel Sessions)   **Chairs:**

Prof. Lisa R. Amir, Universitas Indonesia, Indonesia

Prof. Miho Terunuma, Niigata University, Japan

Presenters:

(13:00 – 13:07)   **P1-1:** HCN2 Channels: A Potential Therapeutic Target for Orofacial Neuropathic Pain after Trigeminal Nerve Injury

Toru Yamamoto, Tomoaki Ujita, Yurie Sato-Yamada, Takako Ichiki, Miho Terunuma, Naotaka Kishimoto

Niigata University, Niigata, Japan

(13:07 – 13:14)   **P1-2**: Fungal Imbalance and Host Hbd-2 Roles in Immune Regulation of Mucosal Autoimmunity on Oral Lichen Planus and Type 2 Diabetes

Israyani, Erni Marlina, Andi Anggun Mauliana Putri, Nur Asmi Usman, Chung-Ming Liu, Iwan Hernawan

Hasanuddin University, Indonesia

(13:14 – 13:21)   **P1-3**: Systemic Disease Manifesting Orally: Primary DLBCL

Nurul Inaas Mahamad Apandi, Nor Nazaliza Basri

Universiti Kebangsaan Malaysia, Malaysia

(13:21 – 13:28)   **P1-4**: Soft Tissue Cephalometric Measurements in Selected Myanmar Adults Using Holdaway Analysis

May Thazin Chit, Aung Moe Lwin, Hla HlaYee

Defence Services Medical Academy, Yangon, Myanmar

(13:28 – 13:35)   **P1-5**: Aesthetic Perception of Malocclusion and Self-Perceived Orthodontic Treatment Need Among Adolescents in Yangon, Myanmar

Ei Ei Hsu Hlaing, Yee Yee Myo, Aung Moe Lwin, Hla Hla Yee

University of Dental Medicine, Yangon, Myanmar

(13:35 – 13:42)   **P1-6**: Morphological Changes in the Temporomandibular Joint after Orthognathic Surgery in Mandibular Prognathism with Jaw Deviation

Takahiro Yamada, Jun Nihara

Niigata University, Niigata, Japan

(13:42 – 13:49)   **P1-7**: Porphyromonas Gingivalis Promote Proliferation, Migration, and Invasion of Oral Squamous Cell Carcinoma by Regulating the Nrf2/SLC7A11/GPX4 Pathway to Suppress Ferroptosis

Chen Rongkun, He Hongbing, Yamazaki Manabu, Tanuma Junichi

Niigata University, Niigata, Japan

(13:49 – 13:56)   **P1-8**: GSK-3β as a Potential Therapeutic Target in Patients with Periodontitis and Diabetes: A Scoping Review

Shivaroobini Rajoo, Putri Ayu Jayusman, Shahida Mohd-Said

Universiti Kebangsaan Malaysia, Malaysia

(13:56 – 14:03)   **P1-9**: Investigating the Roles of Wnt/β-catenin Signalling Pathway in Bone Remodelling and Periodontal Tissue Inflammation: A Scoping Review

Hasif Amir Maeraj, Shahida Mohd-Said, Nurrul Shaqinah Nasruddin, Putri Ayu Jayusman

Universiti Kebangsaan Malaysia, Malaysia

(14:03 – 14:10)   **P1-10**: Current Progress and Emerging Technologies in Umbilical Cord Mesenchymal Stem Cell-Derived Extracellular Vesicles for Wound Healing Applications: A Scoping Review

Nurul Aisya Rozani Affendyf, Zahirrah Begam Mohamed Rasheed, Nurrul Shaqinah Nasruddin

Universiti Kebangsaan Malaysia, Malaysia

(14:10 – 14:17)   **P1-11**: When Normal Becomes Nightmare: Anxiety Triggered by Misinterpretation of Fordyce Granules - A Serial Case Report

Nurhaida Lamlanto, Nur Asmi Usman, Andi Anggun Mauliana Putri, Erni Marlina, Israyani, Indirayani

Hasanuddin University, Indonesia

(14:17 – 14:24)   **P1-12**: Reactive Gingival Lesion Linked to Complex Dentofacial Anomaly in the Anterior Maxillary Gingiva: A Case Report

Indah Faradiba Fitriana, Nur Asmi Usman, Andi Anggun Mauliana Putri, Erni Marlina, Israyani

Hasanuddin University, Indonesia

(14:24 – 14:31)   **P1-13**: Recalcitrant Ulceration in A 9 Years Old Girl: Clinical Correlation between Local Trauma and Systemic Allergic History

St. Aisyah Salma Danto, Nur Asmi Usman, Andi Anggun Mauliana Putri, Erni Marlina, Israyani

Hasanuddin University, Indonesia

(14:31 – 14:38)   **P1-14**: When Recurrence is not a Reactivation: Possible Exogenous HSV-1 Reinfection

A.Rizqi Julianty Abnas, Nur Asmi Usman, Andi Anggun Mauliana Putri, Erni

Marlina, Israyani, Nur Rasdayanti
Hasanuddin University, Indonesia

14:50 – 16:30	**Poster Presentation Session 2**
(Parallel Sessions)	**Chairs:**

Prof. Kei Tomihara, Niigata University, Japan

Assoc. Prof. Hsu Zenn Yew, Universiti Kebangsaan Malaysia, Malaysia

Presenters:

(14:50 – 14:57) **P2-1:** Post Angulation Effects on Fracture Resistance and Bonding Performance with Micro-Ct Analysis of Self-Adhesive Resin Cement and Polyethylene Fiber Posts

Christine Anastasia Rovani, Nurhayaty Natsir, Irfan Fauzy Yamin, Israyani, Chung-Ming Liu
Hasanuddin University, Indonesia

(14:57 – 15:04) **P2-2**: Magnesium-Doped Hydroxyapatite Coating of Ti-Nb Alloy Surfaces for Improved Osteoblastic Response

Alexandra Ripszky, Bianca Voicu Balasea, Radu Radulescu, Florentina Rus, Ana Cernega, Alina Vladescu (Dragomir), Silviu Pituru
Carol Davila University of Medicine and Pharmacy, Romania

(15:04 – 15:11) **P2-3**: Comparative Study on Efficacy of Low Level Diode Laser and Two Desensitizing Agents for Dentin Hypersensitivity

Kalayar Myo Tint, Win Zaw Phone, Aung Thein Tun, Moe Thida Htwe
Dental Specialist Hospital, Thaketa, Yangon, Myanmar

(15:11 – 15:18) **P2-4**: Diode Laser and Conventional Ferric Sulfate Pulpotomy in Deciduous Molars: Comparative Outcomes in Myanmar Children

Moe Myat Noe Phyu, Ei Ei Myo, Soe Naing
University of Dental Medicine, Yangon, Myanmar

(15:18 – 15:25) **P2-5**: Immediate Denture Fabrication Using an Intraoral Scanner in Patients with Compromised Maxillary Dentitions

Yu Yamamoto, Masaru Kaku
Niigata University, Niigata, Japan

(15:25 – 15:32) **P2-6**: Effect of Endodontic Irrigants on Dentine Microhardness: A Literature Review

Hetal Ashvin Kumar Mavani, In Meei Tew, Hsu Zenn Yew, Lishen Wong, Alida Mahyuddin
Universiti Kebangsaan Malaysia, Malaysia

(15:32 – 15:39) **P2-7**: A Clinical Case of Persistent Mucogingival Fenestration Following Root Canal Treatment and Guided Bone Regeneration

Nik Fatin Sarah Nik Mhd Abdul Nasser, Noorharliana Mohamed Zohdi, Nurharnani Harun, Farha Ariffin

Universiti Kebangsaan Malaysia, Malaysia

(15:39 – 15:46) **P2-8**: Oral Pyogenic Granuloma with Maxillary Bone Resorption and Sinus Expansion: A Very Rare Case Report and Review

Fadhlil Ulum Abdul Rahman, Lukman Bima

Hasanuddin University, Indonesia

(15:46 – 15:53) **P2-9**: Reviving Microbial Genomes from Archived FFPE Oral Cancer Tissues: A Metagenomic Approach to Explore Tumor-Associated Microbiota

Somi Kanai, Akihiro Oishi, Tatsuya Abe, Tetsuo Kiguchi, Manabu Yamazaki, Junichi Tamura, Shujiro Okuda, Kei Tomihara

Niigata University, Niigata, Japan

(15:53 – 16:00) **P2-10**: Proteomic Profiling Reveals Distinct Extracellular Matrix Landscapes in Different Bone Types

Hlaing Pwint Phyu, Azusa Dobashi, Mizuki Kobayashi, Yoshiki Ono, Masaru Kaku

Niigata University, Niigata, Japan

(16:00 – 16:07) **P2-11**: Effect of Cookie Structure on Chewing and Swallowing Characteristics: A Pilot Study

Kingkamol Thongthip, Min Thu Ya, Ayaka Yasuno, Kazuhiro Murakami, Sumika Murakami, Makoto Miura, Kazuhiro Hori

Niigata University, Niigata, Japan

(16:07 – 16:14) **P2-12**: Radiographic Analysis of Alveolar Bone Changes in Guided Bone Regeneration

Ding Jingzhe, Nik Madhah NIK AZIS, Azizah AHMAD FAUZI, Noorazrul AZMIE YAHYA

Universiti Kebangsaan Malaysia, Malaysia

(16:14 – 16:21) **P2-13**: Exploring Global Trends in Maxillofacial Trauma for Preventive Strategies in South Asia: A Systematic Review and Comparative Analysis

Anisha Shrestha, Nabina Miya, Chandan Upadhyaya, Philipp Thoenissen, Kei Tomihara

Niigata University, Niigata, Japan

(16:21 – 16:28) **P2-14**: Bioactive Compounds in Chewing Sticks and the Applicability of Chemical Analysis Methods: A Scoping Review

Amanah Pertiwisari, Haslinda Ramli, Tuti Ningseh Mohd Dom, Moh. Dharma Utama, Shahida Mohd-Said

Universiti Kebangsaan Malaysia, Malaysia

16:30 – 18:00	**Symposium 2: Basic Sciences**
	Chairs:
	Prof. Issei Saitoh, Asahi University, Japan
	Assoc. Prof. Masaru Kaku, Niigata University, Japan
	Speakers:
(16:30 – 17:00)	**S2-1:** How the Gut "Tastes" Nutrients: Live Imaging of Gut-Brain Signaling
	Dr. Takako Ichiki
	Niigata University, Japan
(17:00 – 17:30)	**S2-2:** Analyses of Internalization Mechanism and Transporting Pathway of Outer Membrane Vesicles Derived from *Porphyromonas gingivalis*
	Dr. Naoto Okura
	Niigata University, Japan
(17:30 – 18:00)	**S2-3:** Senescence in Organogenesis
	Dr. Finsa Tisna Sari
	Universitas Gadjah Mada, Indonesia
20:00 – 22:00	**Gala Dinner**

February 9, 2026 (Monday)

08:00 – 09:00	**Registration**
09:00 – 10:00	**Special Lectures**
	Chair:
	Prof. Tuti Ningseh Mohd Dom, Universiti Kebangsaan Malaysia, Malaysia
	Speakers:
(09:00 – 09:30)	Reconstructing Oral Surgery: Applications of AI and Bioinformatics in Clinical Practice
	Prof. Kei Tomihara
	Niigata University, Japan
(09:30 – 10:00)	Integrating Oral Health into Primary Care and Universal Health Coverage in Conflict Zones: The Role of Maternal and Child Health (MCH) as a Model
	Prof. Elham Kateeb
	Al-Quds University, Palestine
10:00 – 10:15	**Coffee Break**

10:15 – 11:45	**Symposium 3: Young Leading Researchers (Niigata University Alumni)**
	Chairs:
	Prof. Miho Terunuma, Niigata University, Japan
	Assoc. Prof. Benso Sulijaya, Universitas Indonesia, Indonesia
	Speakers:
(10:15 – 10:35)	**S3-1:** A journey back to where my academic career began
	Asst. Prof. Angela Quispe-Salcedo
	Niigata University, Japan
(10:35 – 10:55)	**S3-2:** Niigata's life and Research paths
	Asst. Prof. Rosa Edith Baldeon Gutierrez
	Asahi University, Japan
(10:55 – 11:15)	**S3-3:** Analysis of Periodontal Parameters and Red Complex Microbial Composition in Periodontitis Subjects Following Mobile Apps-based Education
	Assoc. Prof. Benso Sulijaya
	Universitas Indonesia, Indonesia
(11:15 – 11:35)	**S3-4:** From Niigata to Thailand – My Path in Geriatric Dentistry and Dysphagia Care
	Asst. Prof. Sirima Kulvanich
	Thammasat University, Thailand
(11:35 – 11:45)	Discussion

| 11:45 – 13:30 | **Deans Meeting** |

11:45 – 13:00	**Poster Presentation Session 3**
	Chairs:
	Assoc. Prof. Haslina Rani, Universiti Kebangsaan Malaysia, Malaysia
	Asst. Prof. Kaung Myat Thwin, Niigata University, Japan
	Presenters:
(11:45 – 11:52)	**P3-1:** Correlation between Perceived Academic Stress and Recurrent Aphthous Stomatitis in Dental Students
	Nur Asmi Usman, Andi Anggun Mauliana Putri, Erni Marlina, Israyani, Harlina, Ali Yusran
	Hasanuddin University, Indonesia
(11:52 – 11:59)	**P3-2:** Bridging the Literacy Gap in Periodontal Care: Are Periodontal Disease Leaflets Readable?
	Ahmad Azhar Misran, Alexandra Coleman, Sarah Pollington
	Universiti Kebangsaan Malaysia, Malaysia
(11:59 – 12:06)	**P3-3:** Are We Keeping Up? A Swot Analysis of Dental Advertising Guidelines

Anis Nadhia Roslan, Nor Azlida Mohd Nor, Yasmin Kamarudin, Nurul Syakirin Abdul Shukor
Universiti Malaya, Malaysia

(12:06 – 12:13)   **P3-4:** The Effectiveness of Annual versus Biannual SDF Application on Dentinal Caries among Preschool Children: A Randomised Controlled Trial Protocol

Nurfazlina Rosman, Nor Azlida Mohd Nor, Tengku Nurfarhana Nadirah Tengku Hamzah
Universiti Malaya, Malaysia

(12:13 – 12:20)   **P3-5:** The Interplay of Oral Hygiene (OHIS), Salivary Metagenome Diversity, and Caries in Malaysian School-Children

Erika Norfitriah, Nurrul Shaqinah Nasruddin, Zahirrah Begam Moh. Rasheed, Farinawati Yazid, Deby Kania Tri Puteri
Universiti Kebangsaan Malaysia, Malaysia

(12:20 – 12:27)   **P3-6:** Sea, Salt and Smiles: A Glimpse into The Oral Health Realities of a Stateless Bajau Laut Family

Muhammad Nazmi Bin Abdul Majid, Nur Syareena binti Tajuddin, Jennifer Geraldine Doss
Universiti Malaya, Malaysia

(12:27 – 12:34)   **P3-7:** Association of Out-of-Pocket Expenditures with Continuation and Type of Treatment among New Adult Cancer Cases at Ahsania Mission Cancer and General Hospital in Bangladesh (2023-2024): A Secondary Data Analysis

A K M Shahriar, Pokkate Wongsasuluk, Yin Nyein Aye
Chulalongkorn University, Thailand

(12:34 – 12:41)   **P3-8:** From Classroom to Community: Nurturing Great Smiles with Magallanes Educators

Maria Estela Paz D. Mijares, John Michael G. Acueza, Ivy Lorraine Maxine T. Almoradie, Jodeci Rianne C. Chua, Clarissa Anne M. Cruz, Karl Christian H. Manapil, Angelica C. Napiza, Geleen Joy Marie M. Punzalan, Louise Marie R. Reyes, Regina Camela P. Pengson, Rose Anne Q. Rosanes
University of the Philippines Manila, Philippines

(12:41 – 12:48)   **P3-9:** Benchmarking Large Language Models for Dental Clinical Decision Support: A BERT Score Analysis of Claude Opus 4.5

Achmad Zam Zam Aghasy, Muhammad Lutfan Lazuardi, Hari Kusnanto Yosef
Universitas Gadjah Mada, Indonesia

13:00 – 14:00   **Lunch Break**

14:00 – 15:30   **Oral Presentation Session 3**
(Parallel Sessions)   **Chairs:**

Prof. Jun Nihara, Niigata University, Japan

Prof. Thantrira Porntaveetus, Chulalongkorn University, Thailand

Presenters:

(14:00 – 14:10)   **O3-1:** The Effects of Probiotic and Essential Supplements on Periodontitis-Associated Biofilms

Jutharat Manuschai, Maki Sotozono, Shoji Takenaka, Ryouhei Takahashi, Rui Saito, Daichi Sato, Ryoko Nagata, Takako Ida, Yuichiro Noiri

Niigata University, Japan

(14:10 – 14:20)   **O3-2:** Enamel Formation by Ofd1 Is Via X-Inactivation

Vanessa Utama, Maiko Kawasaki, Alex Kesuma, Makoto Fukushima, Katsushige Kawasaki, Atsushi Ohazama

Niigata University, Japan

(14:20 – 14:30)   **O3-3:** The Role of NF-κB Inhibition by DHMEQ in Periosteal cell-derived Osteoregeneration

Tran Thi Thuy Diep, Naoki Takahashi, Karin Sasagawa, Takahiro Tsuzuno, Shunya Motosugi, Yuta Ueda, Tran Ngoc Anh Khoa, Masaki Nagata[2], Koichi Tabeta

Niigata University, Japan

(14:30 – 14:40)   **O3-4:** Metabolome-Based Identification of Sake Lees-Derived Compounds that Modulate Osteoclast Differentiation

Stephanny Castillo-Quispe, Miho Terunuma, Yoshito Kakihara

Niigata University, Japan

(14:40 – 14:50)   **O3-5:** Microparticle-Delivered Erythromycin Restores Bone Remodeling in Periodontitis-Associated BRONJ

Prasiddha Mahardhika El Fadhlallah, Meircurius Dwi Condro Surboyo, Alex Kesuma, Koga Masayoshi, Andrea Rosenkranz, Maiko Kawasaki, Kei Tomihara, Tomoki Maekawa

Niigata University, Japan

(14:50 – 15:00)   **O3-6:** Targeted Intralesional Delivery of Erythromycin-Loaded Microparticles Promotes Oral Ulcer Regeneration

Meircurius Surboyo, Prasiddha El Fadhlallah, Yurie Sato-Yamada, Yamauchi Mizuki, Nagako Yoshiba, Andrea Rosenkranz, Tomoki Maekawa

Niigata University, Japan

(15:00 – 15:10)   **O3-7:** Pre-conditioning Treadmill Running Attenuates Craniofacial Pain- and Anxiety-like Behaviors and Neural Alterations Induced by Persistent Masseter Muscle Inflammation in Mice

Andi Sitti Hajrah Yusuf, Aditya Anugrah, Yuya Iwamoto, Takumi Kato, Mana Hasegawa, Keiichiro Okamoto, Noritaka Fujii, Kensuke Yamamura

Niigata University, Japan

(15:10 – 15:20)   **O3-8:** Nano-Chitosan Gel from Penaeus Monodon (Black Tiger Prawn) as A Bioactive and High-Bioavailability Antimicrobial Agent against Periodontal Pathogens

Fransisca Jovanka Amadina, Ghaitsa Farah Najla Aidah, Avghea Kasya Putri, Jefferson Christiano, and Ranny Rachmawati

Brawijaya University, Malang, Indonesia

14:00 – 15:30   **Poster Presentation Session 4**

(Parallel Sessions)   **Chairs:**

Assoc. Prof. Tsujimura Takanori, Niigata University, Japan

Assoc. Prof. Nor Azlida Mohd Nor, Universiti Malaya, Malaysia

Presenters:

(14:00 – 14:07)   **P4-1:** Interprofessional Collaboration in Dentistry: Family Medicine Perspective on Oral Health Promotion

Ruxandra Sfeatcu, Anca Perpelea, Andreea Didilescu

Carol Davila University of Medicine and Pharmacy, Romania

(14:07 – 14:14)   **P4-2:** Caries Incidence in First Permanent Molars among Children Exposed to Different Fluoride Levels

Nor Azlida Mohd Nor, Susan Shalani Gnanapragasam,Tengku Nurfarhana Nadirah Tengku Hamzah

Universiti Malaya, Malaysia

(14:14 – 14:21)   **P4-3:** Strengthening the Oral Health Workforce for Filipino Children: Insights from Scotland and Thailand

Julianne Eris N. Navarro, Antoni Plasència, Kenneth A. Eaton

University of the Philippines Manila, Philippines

(14:21 – 14:28)   **P4-4:** Postoperative Pain and Oral Health–Related Quality of Life following Emergency Endodontic Treatment: A Prospective Clinical Study

Chanakarn Sinsareekul, Pantira Thep-Akrapong, Veera Lertchirakarn, Thanomsuk Jearanaiphaisarn

Chulalongkorn University, Thailand

(14:30 – 14:37)   **P4-5:** Investigation of Undergraduate Dental Students' Attitudes Toward Dental Dam Use in Endodontic Treatment: A Cross-Sectional Study

Wong Lishen, Tew In Meei, Paul Arvind A/L Pandian, Jayasree A/P Teerath

Universiti Kebangsaan Malaysia, Malaysia

(14:37 – 14:44)   **P4-6:** Molding Future Dentists Through Community Deployments: Course Learning Outcomes Validated by Dental Students' Experiences

Hannah Patricia Bringas, Denys Angeli Laforteza, Julianne Eris Navarro, Regina Carmela Pengson, Rose Anne Rosanes, Samantha Andrei Samaniego, Ranee Nicole Sedilla
University of the Philippines Manila, Philippines

(14:45 – 14:52)   **P4-7:** Interprofessional Education in a Community-Based Setting: A Reflection Analysis

Denys Angeli Laforteza, Julianne Eris Navarro, <u>Regina Carmela Pengson</u>, Ranee Nicole Sedilla
University of the Philippines Manila, Philippines

(14:52 – 14:59)   **P4-8:** Elicitation of Swallowing Reflex during Laryngeal Thermal Stimulation in Anesthetized Rats

<u>Charng-Rong Pan</u>, Takanori Tsujimura, Hokuto Hamashima, Yuhei Tsutsui, Jin Magara, Keiichiro Okamoto, Makoto Inoue
Niigata University, Japan

(15:00 – 15:07)   **P4-9:** Saliva Swallowing Performance as a Predictor of Eating Function: An RSST-Based Analysis

<u>Syakriani Syahrir</u>, Jin Magara, Takanori Tsujimura, Makoto Inoue
Niigata University, Japan

(15:07 – 15:14)   **P4-10:** Effect of potassium on voluntary swallowing performance in healthy humans

<u>Yoko Kawana</u>, Namon Phetnin, Chisato Aizawa, Reiko Ita, Jin Magara, Takanori Tsujimura, Makoto Inoue
Niigata University, Japan

(15:15 – 15:22)   **P4-11:** Differences in Tongue Muscle Activity during Chewing of Rice with Various Textures

<u>Chisato Aizawa</u>, Jin Magara, Reiko Ita, Anna Sasa, Takanori Tsujimura, Makoto Inoue
Niigata University, Japan

(15:23 – 15:30)   **P4-12:** "Eat Right and Smile Bright" An Oral Health and Nutrition Workshop for the Barangay Nutrition Scholars (BNS) of Maragondon

Lara Michelle B. Cabrera, Kathleen Aira May A. Concepcion, Meriel Kate P. Galo, Che-Ann A. Morales, Therese Jasmine M. Pasco, Fionna Faye G. Quijano, Laila Katherine N. Tonogbanua, Niña Charisma D. Veridiano, <u>Alexsa Casandra D. Wenke</u>, Julianne Eris Navarro, Louise Marie Reyes, Ranee Nicole Sedilla, Regina Carmela Pengson, Juan Rafael Silva
University of the Philippines Manila, Philippines

| 15:30 – 17:00 | **Symposium 4: Strategic Intervention in Oral Healthcare: From Prevention to Damage Limitation** |

15:30 – 17:00   **Symposium 4: Strategic Intervention in Oral Healthcare: From Prevention to Damage Limitation**

Chairs:

Assoc Prof. Trianna Wahyu Utami, Universitas Gadjah Mada, Indonesia

Assoc. Prof. Yew Hsu Zenn, Universiti Kebangsaan Malaysia, Malaysia

Speakers:

(15:30 – 15:50)   **S4-1:** Minimal Intervention Dentistry in Indonesia's Oral Healthcare System

Assoc. Prof. Lisdrianto Hanindriyo

Universitas Gadjah Mada, Indonesia

(15:50 – 16:10)   **S4-2:** The Battle Against Oral Cancer: Are We Strategically Equipped for Early Intervention?

Dr. Muhammad Aiman bin Mohd Nizar

Universiti Kebangsaan Malaysia, Malaysia

(16:10 – 16:30)   **S4-3:** Patient-centered Minimally Invasive Aesthetic Treatment

Dr. Yew Hin Beh

Universiti Kebangsaan Malaysia, Malaysia

(16:30 – 16:45)   **S4-4:** Clinical Application of Carbonated Apatite Bone Graft in Immediate Implant Surgery

Dr. Tan Chuey Chuan

Universiti Malaya, Malaysia

(16:45 – 17:00)   **S4-5:** Jumping Gap in Dental Implant

Assoc. Prof. Syed Nabil

Universiti Kebangsaan Malaysia, Malaysia

17:00 – 17:15   **Awards and Closing Ceremony**

Closing Remarks by

Prof. Tuti Ningseh Mohd Dom, Dean of Faculty of Dentistry, Universiti Kebangsaan Malaysia, Malaysia

Prof. Hiroshi Ogawa, Vice Dean of Faculty of Dentistry, Niigata University, Japan

February 10, 2026 (Tuesday)

09:00 – 15:00   **Campus Tour/ Optional Tour**

February 8, 2026 (Sunday)

09:30 – 10:30   **Special Lectures**

Chair:

Prof. Makoto Inoue, Niigata University, Japan

Speakers:

(09:30 – 10:00)   DEL-1-Mediated Restoration of Regenerative Capacity in Aged Oral Tissue: From Basic Science to Clinical Applications

Assoc. Prof. Tomoki Maekawa, Niigata University, Japan

(10:00 – 10:30)   Biofluorescence-Guided Dentistry: Innovative Oral Disease Detection

Prof. Baekil Kim, Yonsei University, Republic of Korea

February 9, 2026 (Monday)

09:00 – 10:00   **Special Lectures (Innovative Dentistry/ SDG)**

Chair:

Prof. Tuti Ningseh Mohd Dom, Universiti Kebangsaan Malaysia, Malaysia

Speakers:

(09:00 – 09:30)   Reconstructing Oral Surgery: Applications of AI and Bioinformatics in Clinical Practice

Prof. Kei Tomihara, Niigata University, Japan

(09:30 – 10:00)   Integrating Oral Health into Primary Care and Universal Health Coverage in Conflict Zones: The Role of Maternal and Child Health (MCH) as a Model

Prof. Elham Kateeb, Al-Quds University, Palestine

Name: Tomoki Maekawa

Affiliation: Center for Advanced Oral Science, Graduate School of Medical and Dental Sciences, Niigata University, Niigata

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DEL-1-Mediated Restoration of Regenerative Capacity in Aged Oral Tissue: From Basic Science to Clinical Applications

Authors and Co-authors	Tomoki Maekawa
Affiliations	Center for Advanced Oral Science, Graduate School of Medical and Dental Sciences, Niigata University, Niigata
Presentation Summary	Aging of the oral cavity is associated with a decline in tissue flexibility and regenerative capacity. The integrin-binding secreted protein DEL-1 plays a critical role in regulating the initiation and resolution of inflammation in various diseases. We recently demonstrated that the anti-inflammatory action of macrolides is mediated by the upregulation of DEL-1. Induced DEL-1 can promote alveolar bone regeneration during the resolution of experimental periodontitis. DEL-1 also regulates osteoclastogenesis and reduces inflammatory bone resorption. However, while DEL-1 promotes the resolution of inflammation and the removal of senescent cells, its expression declines with aging, leading to a loss of tissue repair and regenerative capacity. We found that the administration of DEL-1 derivatives synthesized based on macrolide antibiotics resulted in increased DEL-1 expression in both young and aged mice. Although regeneration is normally challenging in aged mice, induced DEL-1 successfully resulted in bone regeneration and functioned as a senolytic compound. These findings suggest that DEL-1 may be therapeutically exploited to restore bone loss due to periodontitis and aging. This presentation will introduce several drug candidates currently under development to counteract the age-related loss of regenerative capacity, demonstrating the transition from basic research to clinical application. Specifically, we will provide an overview of developing periodontal pocket-injectable drugs and their clinical potential through the microsphere formulation of macrolide antibiotics.
Keywords	Aging, Bone regeneration; Senolytic; Periodontitis; DEL-1

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Biofluorescence-Guided Dentistry: Innovative Oral Disease Detection

Authors and Co-authors	Baekil Kim
Affiliations	Yonsei University College of Dentistry, Republic of Korea
Presentation Summary	In traditional dentistry, surgical intervention has been mainly performed after using dentist's visual examination and dental radiography as representative diagnostic methods in the clinical phase. However, in medicine, various screening tests have been developed and widely used to easily identify subtle changes in the subclinical phase before the onset of symptoms. This difference is also the reason why there are many diagnostic tests in the medical field, but not in dentistry. Since the cause of oral diseases is oral biofilm, it is an appropriate strategy to target this for screening. In particular, it is necessary to easily detect changes from symbiosis, a state in which oral biofilm is in normal balance, to dysbiosis, which becomes pathogenic. A technology that meets this goal is visualization using biofluorescence. Biofluorescence is a phenomenon in which a biological substance that absorbs light of a specific wavelength emits light of a specific wavelength as its electron orbital is excited and falls back to the ground state. The first advantage of biofluorescence technology used in dentistry is that it uses safe blue visible light instead of radiation. The second advantage is that biofluorescence can be observed in real-time in clinical settings without a separate staining process. The third advantage is that dysbiosis can be easily evaluated, indicating biofilms' pathological transformation. This presentation aims to introduce the latest research results on biofluorescence technology that can be used as an emerging new screening and diagnostic technology in dentistry.
Keywords	Biofluorescence; QLF

Name: Kei Tomihara

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Reconstructing Oral Surgery: Applications of AI and Bioinformatics in Clinical Practice

Authors and Co-authors	Kei Tomihara
Affiliations	Division of Oral and Maxillofacial Surgery
Presentation Summary	The integration of artificial intelligence (AI) into diagnostic systems has become an essential direction in modern healthcare. In the field of oral and maxillofacial surgery, where both image interpretation and surgical decision-making are central, AI offers up-and-coming applications. Among various procedures, surgical extraction of impacted lower third molars remains one of the most frequent yet risk-laden interventions, especially due to the potential injury to the inferior alveolar nerve (IAN). In this presentation, I will introduce our recent work focusing on AI-driven risk prediction models that analyze preoperative CT images to automatically detect radiographic risk factors, such as cortication loss, lingual IAC position, and dumbbell-shaped canal morphology, and visualize them using techniques such as Grad-CAM. These models aim to assist clinicians by providing transparent, evidence-based decision support before surgery. Furthermore, the talk will extend beyond third molar surgery to explore the convergence of oral surgery with bioinformatics. I will highlight ongoing efforts to integrate omics-based data and computational modeling in diverse subfields, including prognostic prediction in oral squamous cell carcinoma using tumor immune signatures, individualized treatment planning for jaw deformities, and development of novel diagnostic algorithms in dental sleep medicine. These interdisciplinary approaches aim to redefine how data, biology, and clinical practice interact, ultimately leading to a more predictive, personalized, and preventive form of dental care.
Keywords	Oral and maxillofacial Surgery; AI; Bioinformatics

Name: Elham Kateeb

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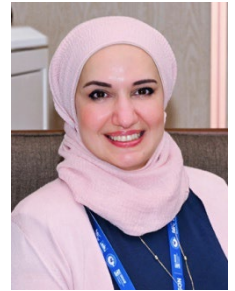
Integrating Oral Health into Primary Care and Universal Health Coverage in Conflict Zones: The Role of Maternal and Child Health (MCH) as a Model

Strengthening Health Systems Through Integrated Care

Authors and Co-authors	Elham Kateeb
Affiliations	Al-Quds University
Presentation Summary	**Objectives:** Oral diseases remain among the most prevalent yet neglected non-communicable diseases worldwide, with a disproportionate burden in conflict-affected and fragile settings. This presentation explores the integration of oral health into primary care and Universal Health Coverage (UHC) in conflict zones, highlighting Maternal and Child Health (MCH) services as a feasible and scalable delivery model. It synthesizes evidence from multiple population-based studies conducted in Palestine to illustrate the magnitude of oral disease, its key determinants, and opportunities for system-level integration. **Methods:** The presentation draws on epidemiological and cross-sectional studies conducted between 2010 and 2024, incorporating clinical examinations and structured questionnaires targeting preschool children, pregnant women, caregivers, and MCH healthcare staff. Analyses examined behavioral, socioeconomic, and psychosocial determinants of oral health, alongside MCH staff knowledge, attitudes, practices, and willingness to provide basic oral healthcare. **Results:** Findings reveal an alarmingly high burden of dental caries, with 93% of preschool children affected by early childhood caries (mean deft = 6.6 ± 4.3) and pregnant women demonstrating a mean DMFT score of 15.5. Oral disease was strongly associated with feeding practices, dietary habits, oral hygiene behaviors, socioeconomic disadvantage, and psychosocial factors. Notably, 89% of MCH staff expressed willingness to deliver basic oral healthcare despite limited formal training, with attitudes, self-efficacy, and perceived institutional support emerging as key predictors. **Conclusions:** Integrating oral health into MCH services represents a cost-effective and equity-oriented pathway to advance UHC in conflict-affected settings. Strengthening training, policy frameworks, and interprofessional collaboration is essential to reduce preventable oral disease and build resilient, people-centered health systems.
Keywords	Oral health integration; Primary healthcare; Universal Health Coverage (UHC); Maternal and Child Health (MCH); Conflict-affected settings

Symposium I: New technologies in geriatric dentistry

Chairs:

Prof. Kazuhiro Hori, Niigata University, Japan

Assoc. Prof. Tew In Meei, Universiti Kebangsaan Malaysia, Malaysia

Speakers:

S1-1: Measurement of Tongue Muscle Activity Related with Chewing and Swallowing Function in Geriatric Dentistry

Dr. Jin Magara, Niigata University, Japan

S1-2: AI-based Tongue Image Analysis for Oral Health Management in Older Adults

Dr. Jumpei Okawa, Niigata University, Japan

S1-3: Chewing Smarter, Aging Better: The Role of Mastication in Brain Function and Cognitive Health

Dr. Ma. Therese Blanche O. Sta. Maria, Manila Central University, Philippines

S1-4: Precision-driven Geriatric Prosthodontics: The Role of Dual-scan Protocol in Static Guided Implant Surgery

Assoc. Prof. Tew In Meei, Universiti Kebangsaan Malaysia, Malaysia

Name: Jin Magara

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Measurement of Tongue Muscle Activity Related with Chewing and Swallowing Function in Geriatric Dentistry

Authors and Co-authors	Jin Magara, Takanori Tsujimura, Makoto Inoue
Affiliations	Division of Dysphagia Rehabilitation, Niigata University Graduate School of Medical and Dental Sciences
Presentation Summary	The tongue plays a fundamental and highly coordinated role in both chewing and swallowing. The tongue performs precise and complex movements during chewing to break solid food into small pieces, mix it with saliva, and form a bolus, with the timing of when the bolus becomes appropriate for swallowing controlled by oral sensory feedback. During swallowing, the tongue is responsible for bolus propulsion through coordinated posterior retraction, generating the primary driving pressure required for safe and efficient passage of the bolus through the pharynx to the esophagus. Many clinical studies have demonstrated that decline in these tongue functions contributes to chewing and swallowing deterioration, highlighting the essential need for quantitative evaluation of tongue motor function to elucidate the underlying mechanisms. From this perspective, we have recently developed a suction-type surface electrode that allows direct recording of tongue muscle electromyogram and applied it to measure properties of tongue muscle activities during various tongue movements. In this presentation, I describe how the tongue contributes to tongue pressure generation and chewing-swallowing movements, based on the patterns of tongue muscle activity observed during these tongue movement obtained from health young subjects, and explore tongue function assessment in geriatric dentistry.
Keywords	Electromyogram; Tongue pressure; Chewing

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AI-based Tongue Image Analysis for Oral Health Management in Older Adults

Authors and Co-authors	Jumpei Okawa
Affiliations	Division of Comprehensive Prosthodontics, Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University
Presentation Summary	With the rapid progression of global population aging, maintaining oral health has become increasingly important for promoting healthy longevity and preventing frailty. The tongue has a vital role in oral functions such as mastication, swallowing, and articulation. However, the relationship between tongue condition and both oral and systemic health remains insufficiently understood. Recent advances in artificial intelligence (AI), particularly in image recognition technologies, are increasingly being applied to support medical and dental fields. At the same time, improvements in smartphone processing power, camera quality, and communication networks have made it possible to extract and share various types of information from captured images. In dentistry, visual observation is commonly used in assessments, and smartphone-based image analysis is considered to be highly compatible with current clinical practices. This presentation introduces an AI-based tongue image analysis system developed to support oral health management in populations including older adults. Using deep learning techniques, the system automatically detects and analyzes the tongue region from smartphone-captured images, enabling objective and efficient evaluation of tongue coating and mucosal dryness. Additionally, the potential relevance of these tongue-based indicators to systemic health will be explored. The role of AI in bridging oral and systemic health will be discussed, with an emphasis on its potential contribution to interdisciplinary and clinical approaches in addressing the challenges of a super-aged society.
Keywords	Artificial intelligence; Tongue image analysis; Oral health

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Chewing Smarter, Aging Better: The Role of Mastication in Brain Function and Cognitive Health

Authors and Co-authors	Ma. Therese Sta. Maria[ab], Yoko Hasegawa[a]*, Shogo Yoshimura[a], Masaki Sakata[a], Yukina Miyazaki[c], Tatsuya Suzuki[c], Kazuhiro Hori[a], Yumie Ono[d], Kensuke Yamamura[e], Takahiro Ono[af]
Affiliations	[a] Division of Comprehensive Prosthodontics, Faculty of Dentistry, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan [b] Department of Prosthodontics, College of Dentistry, Manila Central University, Caloocan, Philippines [c] Electrical Engineering Program, Graduate School of Science and Technology, Meiji University, Kanagawa, Japan [d] Department of Electronics and Bioinformatics, School of Science and Technology, Meiji University, Kanagawa, Japan [e] Division of Oral Physiology, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan [f] Department of Geriatric Dentistry, Osaka Dental University, School of Dentistry, Osaka, Japan
Presentation Summary	Chewing, or mastication, is a vital oral function that contributes not only to nutrition but also to brain stimulation and cognitive health. Increasing evidence shows that impaired chewing ability in older adults is associated with cognitive decline, likely due to reduced sensory and motor input to brain regions involved in memory and executive function. This lecture focuses on the relationship between chewing behavior and brain function and its relevance to geriatric dentistry. Recent studies demonstrate that encouraging intentional and thorough chewing during daily meals can improve cognitive performance, particularly memory. Wearable chewing counters have been used to objectively measure chewing frequency and support behavior change. These digital devices allow real-time monitoring of mastication in everyday settings and provide a practical tool for both research and clinical applications. Neurophysiological findings indicate that increased chewing frequency is associated with more efficient brain activity, particularly in the dorsolateral prefrontal cortex during working memory tasks. Rather than increasing brain workload, effective mastication appears to optimize neural processing. Evidence from systematic reviews further shows that older adults with poor masticatory performance, chewing difficulty, or tooth loss consistently exhibit lower cognitive function and a higher risk of cognitive impairment. Together, these findings highlight mastication as a modifiable factor in cognitive aging.

	Overall, this lecture emphasizes the importance of preserving and restoring functional chewing. By integrating advances in prosthodontics, digital dentistry, and wearable technologies such as chewing counters, geriatric dentistry can play a meaningful role in promoting cognitive health, healthy aging, and dementia prevention.
Keywords	Chewing behavior; Cognitive function; Hemodynamic responses; Memory; Older adults; DLPFC, Neural efficiency

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Precision-driven Geriatric Prosthodontics: The Role of Dual-scan Protocol in Static Guided Implant Surgery

Authors and Co-authors	Tew In Meei
Affiliations	Universiti Kebangsaan Malaysia
Presentation Summary	Prosthodontic-driven dental implant planning is fundamental to achieving accurate, functional and biologically sound implant placement, particularly in the geriatric population where compromised anatomy associated with partial and complete edentulism presents significant clinical challenges. With the rapid advancement of digital dentistry, both static and dynamic guided implant surgery have emerged as key technologies to enhance the precision and predictability of implant placement. In static guided implant surgery, the accuracy of the surgical guide is critically dependent on the precise superimposition of three-dimensional (3D) clinical datasets, particularly the integration of cone-beam computed tomography (CBCT) data with surface scan information. This lecture will focus on the pivotal role of the dual-scan protocol using radiopaque markers for achieving accurate 3D superimposition in the construction of static implant surgical guides. A step-by-step digital workflow will be presented, highlighting key clinical and laboratory considerations required to optimize accuracy and predictability in geriatric implant rehabilitation. Furthermore, this lecture will also present the accuracy outcomes of static guided implant surgery constructed using the dual-scan protocol and compare these outcomes with those achieved through dynamic guided implant surgery, providing evidence-based insights for clinical decision-making in geriatric prosthodontic care.
Keywords	Dual-scan protocol, Static-guided implant surgery, Implant placement accuracy

Symposium II: Basic Sciences

Chairs:

Prof. Issei Saitoh, Asahi University, Japan

Assoc. Prof. Masaru Kaku, Niigata University, Japan

Speakers:

S2-1: How the Gut "Tastes" Nutrients: Live Imaging of Gut-Brain Signaling

Dr. Takako Ichiki, Niigata University, Japan

S2-2: Analyses of Internalization Mechanism and Transporting Pathway of Outer Membrane Vesicles Derived from *Porphyromonas gingivalis*

Dr. Naoto Okura, Niigata University, Japan

S2-3: Senescence in Organogenesis

Dr. Finsa Tisna Sari, Universitas Gadjah Mada, Indonesia

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How the Gut "Tastes" Nutrients: Live Imaging of Gut-Brain Signaling

Authors and Co-authors	Takako Ichiki, Miho Terunuma
Affiliations	Division of Oral Biochemistry, Graduate School of Medical and Dental Sciences, Niigata University
Presentation Summary	Dietary nutrients are absorbed in the gastrointestinal tract, yet the neural mechanisms that detect luminal nutrients remain incompletely understood. The vagus nerve is a major gut-brain pathway that relays sensory information via afferent cell bodies in the vagal ganglion. To monitor vagal activity at single-cell resolution, we established an *in vivo* calcium imaging approach for the vagal ganglion. Using this platform, we identified distinct subsets of vagal sensory neurons that respond selectively to low- and high-osmolarity stimuli in the intestinal lumen, as well as to nutrient stimulation with glucose. We then investigated the gut sensing mechanism of γ-aminobutyric acid (GABA), a functional food component reported to alleviate stress and improve sleep quality despite extremely limited penetration into the brain. *In vivo* imaging revealed that intraluminal GABA activates vagal afferents in a concentration-dependent manner and engages neuronal populations largely distinct from those responsive to hypo-osmotic water stimulation or mechanical distension. Moreover, co-perfusion of GABA with nutrients significantly potentiated vagal responses, indicating that GABA can amplify nutrient-evoked gut-brain signaling. Previous studies have shown that dietary GABA supplementation induces satiety and anxiolytic-like effects in mice. Our findings suggest that these benefits may be mediated by rapid enhancement of vagal afferent activity within the gut. In this symposium, we will present these results and highlight our latest insights into vagal detection of nutrients and bioactive compounds.
Keywords	Nutrients; GABA; *in vivo* imaging; vagus nerve

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Analyses of Internalization Mechanism and Transporting Pathway of Outer Membrane Vesicles Derived from *Porphyromonas gingivalis*.

Authors and Co-authors	Naoto Ohkura[1], Shintaro Takahara[1], Masanori Tachikawa[3], Jun Ohshima[4], Susan Gomez-Kasimoto[1], Pemika Thongtade[1], Bau Tran Hau[1], Takako Ida[1], Nagako Yoshiba[2], Shoji Takenaka[1], Yuichiro Noiri[1]
Affiliations	1) Department of Cariology, 2) Department of Oral Health and Welfare Niigata University, 3) Graduate School of Biomedical Sciences, Tokushima University, 4) Department of Restorative Dentistry and Endodontology, Graduate School of Dentistry, The University of Osaka
Presentation Summary	**Objective:** Outer membrane vesicles (Pg-OMVs) derived from the periodontal pathogen *Porphyromonas gingivalis* (Pg) are known to cause neurological damage. However, the mechanism of their transport into the brain remains unknown. This study aimed to elucidate the mechanism by which Pg-OMVs cross the blood-brain barrier (BBB). **Materials and Methods:** Pg-OMVs were isolated from Pg culture supernatant and subjected to proteomic analysis. Pg-OMVs were labeled with fluorescent PKH67 and then examined for uptake into human brain microvascular endothelial cells (hCMEC/D3) using a confocal laser scanning microscope. The uptake mechanism was assessed using a gingipain-deficient mutant (ΔGin-OMV), chlorpromazine, and a neutralizing antibody. Pg-OMVs were administered to C57BL/6JJcl mice on day 15 of pregnancy. DNA was extracted from maternal and fetal brains 3 hours after administration and conducted to PCR and 16S rRNA gene sequencing. **Results and Discussion:** Proteomics analysis identified 124 outer membrane proteins in Pg-OMVs, and gingipains and several ribosomal component proteins were identified. Pg-OMVs were internalized into hCMEC/D3 cells in a temperature-dependent manner, and cell morphology changed from cobblestone to round. Chlorpromazine treatment did not result in any changes compared to the untreated group, and CD147 antibody suppressed this change. ΔGin-OMV suppressed only the morphological change but did not affect internalization. These findings suggest that Pg-OMVs are internalized via CD147 and that gingipains are involved in the morphological change. *In vivo* analysis detected 16S rRNA genes in maternal and fetal brains, suggesting that Pg-OMVs crossed the BBB.
Keywords	Pg-OMV; Blood Brain Barrier; *Porphyromonas gingivalis;* Proteomics

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Senescence in Organogenesis

Authors and Co-authors	Finsa Tisna Sari[1,2], Vanessa Utama[1], Alex Kesuma[1], Katsushige Kawasaki[1], Maiko Kawasaki[1], Atsushi Ohazama[1]
Affiliations	[1]Division of Oral Anatomy, Faculty of Dentistry & Graduate School of Medical and Dental Sciences, Niigata University, Japan [2]Department of Pediatric Dentistry, Faculty of Dentistry, Universitas Gadjah Mada, Indonesia
Presentation Summary	Senescence is as a permanent cell-cycle arrest that occurs after a limited number of cell divisions, primarily caused by telomere shortening and activation of the DNA damage response (DDR). Senescence has both beneficial and detrimental effects on the organism. Senescence has beneficial outcomes, particularly during the early phases of development. During the development, senescence takes place in many different locations and is responsible for the appropriate tissue remodeling and the removal of undesirable cells. It has been shown that senescence was activated in the palatal rugae development and tooth development in wild-type mice. On the other hand, senescence is believed to be one of the causes of cell tissues aging and accumulation of senescent cells typically accelerates biological aging and age-related diseases. It has been found that in the absence of miRNA, ectopic senescence is induced which result in senescence-related facial deformities.
Keywords	Senescence; Palatal rugae development; Tooth development; Midface development; microRNA

Symposium III: Young Leading Researchers (Niigata University Alumni)

Chairs:

Prof. Miho Terunuma, Niigata University, Japan

Assoc. Prof. Benso Sulijaya, Universitas Indonesia, Indonesia

Speakers:

S3-1: A journey back to where my academic career began

Asst. Prof. Angela Quispe-Salcedo, Niigata University, Japan

S3-2: Niigata's life and Research paths

Asst. Prof. Rosa Edith Baldeon Gutierrez, Asahi University, Japan

S3-3: Analysis of Periodontal Parameters and Red Complex Microbial Composition in Periodontitis Subject Following Mobile Apps-based Education

Assoc. Prof. Benso Sulijaya, Universitas Indonesia, Indonesia

S3-4: From Niigata to Thailand – My Path in Geriatric Dentistry and Dysphagia Care

Asst. Prof. Sirima Kulvanich, Thammasat University, Thailand

Name: Angela Quispe-Salcedo

Affiliation: Division of Anatomy and Cell Biology of the Hard Tissue. Niigata University Graduate School of Medical and Dental Sciences. Niigata, Japan.
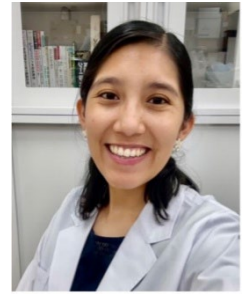
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A Journey Back to Where My Academic Career Began

Authors and Co-authors	Angela Quispe-Salcedo DDS. PhD
Affiliations	Division of Anatomy and Cell Biology of the Hard Tissue. Niigata University Graduate School of Medical and Dental Sciences. Niigata, Japan.
Presentation Summary	Fifteen years ago, I unknowingly began my career into academia when I moved to Japan to pursue a PhD program at Niigata University. Back in 2010, I was another early-career Peruvian dentist looking for better options to full-time clinical practice. My life would radically change after being chosen as one of the awardees of the MEXT Scholarships by Embassy Recommendation. However, my connection with the Faculty of Dentistry of Niigata University began -albeit inadvertently- in 2005, when I received a very interesting paper published by the Department of Microbiology on the use of a triple antibiotic mixture to treat afflicted deciduous teeth. Initially moved by the possibility of conduct high-level research in microbiology, I later realized that I would belong to an anatomy laboratory (!), a field in which I had no experience and poor academic performance during undergraduate years. Starting from this point, I would like to tell my story in academia. From my early days as a morphological sciences PhD student to my current post as Assistant Professor in the laboratory from which I graduated.

In this presentation, I will introduce my experience as a researcher in dental pulp biology, including the postdoctoral fellow years in America, Europe and Japan, and as an instructor in human gross anatomy in Japan. Furthermore, I would like to remark the importance of mentorship, and outreach activities by presenting some independent initiatives in which I participated, with the aim of increasing awareness in basic sciences among younger generations of dental students. |
| Keywords | Academia; Education; Dental pulp; Outreach; Basic science |

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Niigata's life and Research paths

Authors and Co-authors	Rosa Baldeon-Gutierrez
Affiliations	Department of Pediatric Dentistry, Asahi University
Presentation Summary	I recently graduated with a PhD in Oral Sciences from Niigata University. While moving to Niigata was a significant challenge, I feel the four years I spent there were well worth it. The studies I pursued at Niigata University opened doors to research and allowed me to explore a world beyond clinical dentistry. My research in Niigata University was an in-vivo study of pulp wound healing in diabetes mellitus model rats (DM1 and DM2); using Streptozotocin-modified rats as DM1 and spontaneous diabetic Tori fatty rats as DM2. Saline-modified rats or normal rats were used as controls. The upper left first molars of 8 weeks-old rats were pulpotomized with mineral trioxide aggregate. Tissue samples were collected after 7 days and paraffin-embedded tissues were exposed to several antibodies using immunohistochemistry and immunofluorescence techniques. Results showed a delayed in wound healing of diabetic samples associated with a dysregulation in macrophages polarization and odontoblast-like cells differentiation. Now in Asahi University, my research is focused on the differentiation of stem cells from human exfoliated deciduous teeth (SHED) into hepatocytes. SHED's are known for their ease of obtaining and great proliferation potential. We used green fluorescence labeled SHED reprogramed into a primitive state, induced pluripotent stem cells(iPS). Later, iPS were exposed to hepatocytes differentiation medium with the aim of getting Induced Tissue Specific stem cells (iTS) hepatocytes. The generation of iTS liver cells from SHED could be of great therapeutic use for liver pathologies.
Keywords	Diabetes mellitus; Odontoblast-like cells; Macrophages; Human exfoliated deciduous teeth (SHED); Induced Tissue Specific stem cells (iTS).

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Analysis of Periodontal Parameters and Red Complex Microbial Composition in Periodontitis Subjects Following Mobile Apps-based Education

Authors and Co-authors	Benso Sulijaya[1,*], Mardikacandra Manggala Putra[1], Melinda Rabekka Purba[1], Robert Lessang[1], Adityo Widaryono[1], Yuniarti Soeroso[1], Fatimah Maria Tadjoedin[1], Natalina Haerani[1], Valdy Hartono[1], Yoga Setiadharma[1], Aurelle Khadeeja Rizany[2], Marie Rossini Carmela T. Lachica[3]
Affiliations	[1]Department Periodontology, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia [2]Dental Profession Program, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia [3]College of Dentistry, University of the Philippines, Manila, Philippines
Presentation Summary	**Background:** Chronic inflammatory in periodontitis is characterized by a complex oral microbiome includes the red complex. This study investigated the effectiveness of digital education-based mobile apps to improve periodontal parameter and subgingival oral red complex level. **Methods:** Forty-four periodontitis patients were included in this randomized control trial. The patients were placed into two groups: the test group, which received an intervention using mobile apps and scaling and root planing (SRP), and the control group, which only received SRP. The clinical measures (Gingival Index (GI), Plaque Index (PI), and the proportion of pockets measuring 5 mm or more) were assessed at the beginning, one and three months. Additionally, the composition of the red complex microbiota (*P. gingivalis, T. denticola*, and *T. forsythia*) was analyzed using 16S rRNA next-generation sequencing (NGS). Clinical registration number ISRCTN12409366. **Results:** Clinical parameters of GI and PI, inter and intra groups, were statistically significant ($p<0.05$) at the baseline and one month afterward. The percentage of pockets ≥ 5 mm at one month in the test (2.35(1.25-7.62)) and control (3.7(1.08-9.95)) group; while at three months in the test (1.95(0.98-3.85)) and control (0.38(0.29-0.44)) group. The results of inter and intra group for red complex microbiota analysis showed no significant differences ($p>0.05$), but there was a downward trend of *P.gingivalis* in the test group. The result using the delta calculation also showed consistency trend in this study. **Conclusions:** This study shows that digital education-based mobile apps might be beneficial for periodontal treatment, but in cases of severe periodontitis requires comprehensive treatment.
Keywords	Periodontal disease; Mobile applications; Gingival index; Plaque index; Red complex microbiota.

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From Niigata to Thailand – My Path in Geriatric Dentistry and Dysphagia Care

Authors and Co-authors	Sirima Kulvanich
Affiliations	Faculty of Dentistry, Thammasat University
Presentation Summary	I am honored to return to the International Collaboration Symposium and share my journey as an international student at Niigata University from 2018 to 2022, and how that experience has shaped my career in geriatric dentistry and dysphagia rehabilitation. My years in Niigata were truly transformative—working and learning in a multidisciplinary environment deepened my understanding of how dental professionals can play a vital role in improving the quality of life of older adults and patients with swallowing difficulties. In this talk, I will reflect on key lessons from my time in Japan and how those experiences continue to guide my work in advancing dysphagia care and education in Thailand.
Keywords	Geriatric Dentistry

Symposium IV: Strategic Intervention in Oral Healthcare: From Prevention to Damage Limitation

Chairs:

Assoc Prof. Trianna Wahyu Utami, Universitas Gadjah Mada, Indonesia

Assoc. Prof. Yew Hsu Zenn, Universiti Kebangsaan Malaysia, Malaysia

Speakers:

S4-1: Minimal Intervention Dentistry in Indonesia's Oral Healthcare System

Assoc. Prof. Lisdrianto Hanindriyo, Universitas Gadjah Mada, Indonesia

S4-2: The Battle Against Oral Cancer: Are We Strategically Equipped for Early Intervention?

Dr. Muhammad Aiman bin Mohd Nizar, Universiti Kebangsaan Malaysia, Malaysia

S4-3: Patient-centered Minimally Invasive Aesthetic Treatment

Dr. Yew Hin Beh, Universiti Kebangsaan Malaysia, Malaysia

S4-4: Clinical Application of Carbonated Apatite Bone Graft in Immediate Implant Surgery

Dr. Tan Chuey Chuan, Universiti Malaya, Malaysia

S4-5: Jumping Gap in Dental Implant

Assoc. Prof. Syed Nabil, Universiti Kebangsaan Malaysia, Malaysia

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Minimal Intervention Dentistry in Indonesia's Oral Healthcare System

Authors and Co-authors	Lisdrianto Hanindriyo
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Presentation Summary	Minimal Intervention (MI) dentistry is widely recognized at the clinical level; however, its system-wide adoption in Indonesia remains constrained by structural and population-level challenges. According to the 2023 Indonesian Health Survey (SKI), 56.9% of individuals aged ≥ 3 years report dental or oral problems, with dental caries identified as the dominant condition. Although the national caries prevalence has shown a modest decline compared with earlier surveys, from 88.8% in 2018 to 82.8% in 2023, preventive utilization remains extremely low, and most care continues to be sought only when symptoms occur. These patterns reflect underlying barriers that limit MI implementation, including low oral health literacy, restricted access to preventive services, and a predominantly curative orientation within national health financing, particularly under the current Indonesian National Health Insurance Program (JKN) benefit design. At the same time, Indonesia possesses strong structural advantages for MI-oriented care, such as the Community Health Centers (*Puskesmas*) network, Integrated Community Health Post (*Posyandu*) platforms, and school-based health programs. When supported by strengthened oral health literacy strategies, and the integration of MI-aligned interventions into school-based and community programs, these assets offer substantial potential for shifting the national approach toward prevention-centered oral healthcare. Through alignment of financing, workforce roles, and community-level literacy, MI dentistry can be established as a routine, equitable, and cost-effective model of care, contributing to improved oral health outcomes across Indonesia.
Keywords	Minimal intervention dentistry; Oral healthcare system

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The Battle Against Oral Cancer: Are We Strategically Equipped for Early Intervention?

Authors and Co-authors	Dr Muhammad Aiman bin Mohd Nizar
Affiliations	Universiti Kebangsaan Malaysia
Presentation Summary	Oral squamous cell carcinoma (OSCC) remains a major public health burden, particularly in Southeast Asia, where incidence and mortality rates consistently rank among the highest worldwide. Although therapeutic options continue to advance, the greatest potential for improving patient survival lies in prevention and early detection—core principles of minimal intervention dentistry. Early-stage OSCC carries a survival rate exceeding 90%, yet this drops dramatically to 5–20% in advanced disease. Unfortunately, delayed diagnosis remains common. Patient-related factors such as low awareness, limited health literacy, and late presentation contribute significantly, while health-professional factors—including inadequate training in recognising subtle mucosal changes—further hinder timely detection. As a result, many cases are diagnosed only at advanced, often untreatable stages. To strengthen our national response, a coordinated, prevention-driven strategy is essential. This includes structured community education to raise awareness of oral potentially malignant disorders (OPMDs) and risk behaviours, alongside enhanced training for primary dental care and medical practitioners to improve early recognition, risk assessment, and prompt referral. Embedding systematic screening and risk-based recall into routine care aligns closely with the philosophy of minimal intervention dentistry, enabling earlier identification and conservative management of high-risk lesions. By shifting diagnosis toward earlier, more manageable stages, we can effectively reduce OSCC morbidity, mortality, and the long-term socioeconomic burden associated with late-stage disease.
Keywords	Oral squamous cell carcinoma; Oral Potentially Malignant Disorders; Early detection

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Patient-centered Minimally Invasive Aesthetic Treatment

Authors and Co-authors	Beh Yew Hin
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Presentation Summary	Dental bleaching remains one of the most minimally invasive aesthetic treatments and can be performed either as a standalone procedure or as part of a comprehensive restorative plan. In routine clinical practice, the key challenge lies in selecting the most suitable whitening modality whether chairside power bleaching or dentist-supervised home bleaching to ensure predictable, safe, and patient-centred outcomes. This session will outline a structured approach to clinical decision-making, incorporating treatment timing, restorative considerations, and patient expectations. Practical challenges, limitations, and common pitfalls associated with each bleaching modality will also be discussed to support clinicians in optimizing results.
Keywords	Dental bleaching; Patient-centered

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Clinical Application of Carbonated Apatite Bone Graft in Immediate Implant Surgery

Authors and Co-authors	Dr Tan Chuey Chuan
Affiliations	Department of Oral and Maxillofacial Clinical Sciences, Faculty of Dentistry, Universiti Malaya, Malaysia.
Presentation Summary	This presentation details the clinical application of a carbonated apatite (CA) bone graft substitute for alveolar ridge management following tooth extraction. It features a case where immediate implant placement was performed concurrently with ridge preservation. The protocol involved meticulous socket debridement and augmentation using CA granules, a fully synthetic, biomimetic, and highly resorbable osteoconductive material. A resorbable barrier membrane was employed to facilitate guided bone regeneration (GBR) around the implant. Successful osseointegration was achieved within the regenerated, vital bone. This case demonstrates that carbonated apatite is an effective graft material for predictable ridge preservation and augmentation in immediate implant protocols.
Keywords	Carbonated Apatite Bone Graft; Immediate Implant

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Jumping gap in Dental Implant

Authors and Co-authors	Syed Nabil and Benjie Law
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Presentation Summary	The "jumping gap" refers to the horizontal space between the implant surface and the inner wall of the extraction socket when an implant is placed immediately into a fresh extraction site. It is a natural consequence of placing a round implant into a socket that is wider coronally than the implant diameter. Size of the gap is an important consideration where larger gaps usually require bone grafting to maintain contour and attain osteointegration. This presentation discusses the jumping gap and the grafting of such cases.
Keywords	Immediate implant; Jump gap, Bone graft; Alloplastic; Carbonate apatite

February 8, 2026 (Sunday)

13:00 – 14:50   **Oral Presentation Session 1**

Chairs:

Prof. Tuti Ningseh Mohd Dom, Universiti Kebangsaan Malaysia, Malaysia

Prof. Hiroshi Ogawa, Niigata University, Japan

14:50 – 16:30   **Oral Presentation Session 2**

Chairs:

Prof. Pornchai Jansisyanont, Chulalongkorn University, Thailand

Prof. Alexandra Ripszky, Carol Davila University of Medicine and Pharmacy, Romania

February 9, 2026 (Monday)

14:00 – 15:30   **Oral Presentation Session 3**

Chairs:

Prof. Jun Nihara, Niigata University, Japan

Prof. Thantrira Porntaveetus, Chulalongkorn University, Thailand

Oral Health–Related Quality of Life of Filipino Adults Before and After Multi-Disciplinary Complete Oral Rehabilitation

Ma. Therese Sta. Maria[1], Richa C. Marcos[1], Ma. Leonor M. Tianco[1], Maria Leah M. Ragadio[1], Divina B. Cadahing[2,3], Jaime F. Mandapat, Jr.[1], and Ma. Cristina Aurea G. Garcia[2]

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Background: Dental caries and untreated oral diseases remain widespread in the Philippines and contribute to tooth loss, functional limitation, and psychosocial distress. While many studies assess outcomes of specific dental treatments, limited local evidence evaluates how comprehensive multi-disciplinary oral rehabilitation influences oral health–related quality of life (OHRQoL).

Objective: To determine the effect of multi-disciplinary complete oral rehabilitation on the OHRQoL of Filipino adults.

Methods: This prospective study included adults aged 20–65 years who completed comprehensive rehabilitation at Manila Central University College of Dentistry from July to October 2024. Treatment plans integrated periodontics, endodontics, oral surgery, restorative dentistry, and prosthodontics (fixed and removable partial dentures). Demographics, remaining teeth, and DMFT scores were recorded. OHRQoL was measured before and after treatment using the validated Tagalog OHIP-14. Paired t-tests assessed changes in total and domain scores, while repeated measures ANOVA examined differences across prosthesis types.

Results: Sixty participants were included, predominantly female. Baseline OHIP-14 scores reflected pronounced physical and psychosocial disability. Mean total OHIP-14 scores improved from 31.8 to 12.6 after treatment ($p < 0.001$), indicating substantial reductions in pain, functional limitation, and social discomfort. Participants rehabilitated with fixed prostheses demonstrated significantly greater psychosocial improvement than those receiving removable prostheses ($p < 0.001$), attributed to improved stability, esthetics, and speech.

Conclusion: Multi-disciplinary complete oral rehabilitation significantly improved the OHRQoL of Filipino adults, particularly in psychosocial domain. These findings highlight the value of coordinated,

patient-centered treatment planning and underscore the importance of posttreatment evaluation in delivering functionally and socially meaningful oral rehabilitation.

Keywords: Caries; OHRQoL; OHIP-14; Rehabilitation; Prosthodontics

Bridging Knowledge to Action: The Role of Oral Cancer Education in Enhancing Routine Oral Examination in Makassar, Indonesia

Andi Anggun Mauliana Putri[1,2], Miftah Raodatul Ramdhani[1], Erni Marlina[1,2], Ali Yusran[1,2]

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Background: Oral cancer is one of the malignancies with high morbidity and mortality rates, primarily due to delayed diagnosis. Routine oral examination plays a critical role in early detection and improved prognosis; however, public awareness of such examination remains low. Community knowledge regarding risk factors and early signs of oral cancer may influence this awareness. This study aimed to analyse the relationship between the level of community knowledge about oral cancer and their awareness of performing routine oral examinations in Makassar City.

Material and Methods: A cross-sectional observational analytic study was conducted involving 406 residents of Makassar City selected through quota sampling. Data were collected using a validated and reliable standardized e-questionnaire. Data analysis was performed using SPSS version 26 with correlation statistical tests at a significance level of 0.05.

Results: The majority of respondents had a moderate level of knowledge about oral cancer (55%) and moderate awareness of routine oral examination (45%). Age and educational level showed significant associations with both knowledge of oral cancer and awareness of routine oral examinations ($p < 0.05$). Furthermore, there was a significant positive correlation between the level of knowledge about oral cancer and awareness of routine oral examinations ($r = 0.465$; p-value = 0.001).

Conclusion: Higher levels of knowledge about oral cancer are associated with greater awareness of the importance of routine oral examination. Continuous education regarding risk factors and early detection strategies should be optimized to enhance preventive health behaviors in the community.

Keywords: Oral Cancer; Knowledge; Awareness; Routine Oral Examination

Schoolchildren's Oral Health in Romania: Major Factors Affecting Care and Outcomes

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Background: Children's oral health is influenced by biological, behavioural, and socio-economic factors, including diet, hygiene practices, and access to dental care. In this context, the study aimed to analyse the key determinants of oral health status among schoolchildren in Romania.

Materials and Methods: The study was a cross-sectional survey of 3843 schoolchildren. The mean age of the participants was 10.56 ± 2.61 years. Data were collected through a questionnaire assessing children's oral health from the parents' perspective, developed by the World Health Organization, validated, and adapted to the target population, in conjunction with clinical examinations performed by the school dental practitioner. The statistical analysis was performed using IBM SPSS Statistics 25.

Results: We found a significant association, indicating that poor oral health status in children was more common among children whose parents had only primary or lower-secondary education ($p < 0.001$). Their parents' level of education strongly influences children's dietary habits and dental visit patterns. The social impact of oral health status is also significantly linked to the educational attainment of the adult caregiver with whom the child lives.

Conclusion: The present study highlights key factors affecting schoolchildren's oral health and provides a framework for developing school-based intervention programs. The findings could guide national policies aimed at reducing social inequalities and improving oral health. The study offers clinicians and researchers a comprehensive view of children's oral health behaviours and care needs. In Romania, there is a need to establish preventive oral health policies that incorporate these insights.

Keywords: Oral diseases; Oral health; Public oral health strategies; Dental Education

The Effectiveness of a Metaverse-Based Oral Health Education (Meta-OHE) among Malaysian Adolescents

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Background: Dental caries is highly prevalent among Malaysian adolescents and limited oral health literacy contributes to risky behaviours and delayed preventive care. Conventional school-based oral health education (OHE), talks and printed materials, competes poorly with adolescents' digital native nature. Mobile health (mHealth) platforms and immersive metaverse technologies offer more engaging channels, but comparative evidence against traditional OHE is limited. This study compared three OHE modalities—(a) conventional face-to-face sessions, (b) mHealth via WhatsApp, and (c) an immersive metaverse-based platform (Meta-OHE)—in improving oral health knowledge and attitudes.

Materials and Methods: A quasi-experimental, three-arm parallel group design was conducted enrolling 240 students aged 16 years from a secondary school in Malaysia. Participants completed a validated questionnaire assessing sociodemographic background, oral health knowledge, and attitudes before and after the intervention. Group A received Conventional OHE lectures, Group B received mHealth-based materials, and Group C engaged with the Meta-OHE platform. Quade's ANCOVA was used to compare post-intervention outcomes across groups.

Results: A total of 220 participants (91.7%) completed the study. Between-group analysis indicated significant differences in post-test knowledge scores (F = 3.304, p = 0.039). Meta-OHE achieved higher knowledge scores than mHealth (p = 0.032), while differences between Meta-OHE and conventional OHE, and between conventional OHE and mHealth, were not significant. For attitudes, a significant between-group effect was observed (F = 7.712, p < 0.001): both Meta-OHE (p = 0.004) and mHealth (p = 0.015) outperformed conventional OHE, with no significant difference between Meta-OHE and mHealth (p = 1.000).

Conclusion: Meta-OHE shows potential to enhance adolescent oral health literacy and may be positioned as a scalable adjunct to conventional OHE, delivering knowledge gains beyond WhatsApp-based mHealth and attitude improvements comparable to mHealth.

Keywords: Metaverse; Meta-OHE; Virtual Reality; Immersive Reality; Oral Health Education

Depressive Symptoms and Oral Health in Japanese Older Adults

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Background: Due to Japan's growing aging society, addressing risk of late-life depression is critical. This study aimed to examine the correlation between depressive symptoms and various oral health-related factors in Japanese older adults.

Materials and Methods: 127 Japanese outpatient older adults, categorized into pre-old (65-74) and old (≥75), assessed seven oral health factors: oral hygiene (Bacterial Counter), xerostomia (unstimulated saliva), occlusal support (remaining teeth), oral motor function "pa," "ta," "ka" (Kenkokun), tongue pressure (JMS), masticatory performance (Gummy jelly), and dysphagia (RSST). Depressive symptoms were evaluated using Validated Geriatric Depression Scale-15 (GDS-15), along with GOHAI (oral health-related QoL) and LSNS (Lubben Social Network Scale). Data were analyzed using Mann-Whitney U, Chi-square, and binary logistic regression.

Results: Significant differences were found in tongue pressure and oral motor functions between the age groups. GOHAI score was significantly lower in groups experiencing depression. Significant differences were found in oral motor functions "ta" and "ka," GOHAI (p=0.027), and LSNS (p=0.011) and (p=0.015) in pre-old and old people with depression, respectively. Binary logistic analysis indicated that participants with lower GOHAI (OR 6.06, 1.12–32.79) and lower LSNS (OR 2.87, 1.32–6.22) scores were significantly more likely to have depressive symptoms.

Conclusion: The decline in oral motor function and tongue pressure in older adults is notable, especially among those with depressive symptoms. These suggest that oral health factors and social engagement have significant impacts on overall quality of life. Therefore, interventions focused on modifiable oral health-related factors and improving social engagement of older adults should be emphasized.

Keywords: Oral Function; Depression; Older Adults; Oral Health; Social Engagement

Association between Multiple Psychological Symptoms and Multi-Dimensional of Oral Health-Related Quality of Life in Myanmar Adults

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Background: Psychological factors are linked to oral health-related quality of life(OHRQoL), but their effects on specific OHRQoL dimensions remain unclear. This study examines the associations of individual and combined psychological symptoms with overall and specific dimensions of OHRQoL among Myanmar adults.

Materials and Methods: A cross-sectional survey was conducted in Yangon from February 2023 to May 2024. Data were collected through face-to-face interviews using the validated Oral Health Impact Profile-14, and Depression, Anxiety, and Stress-21 Scale. Bivariate and linear regression analyses were performed.

Results: Among 316 participants with 53.8% female, the mean age is 55.4±13.0. The overall median OHRQoL score is 7.0, with 33.5% reporting anxiety, 22.8% depressive, and 13.3% stress symptoms. Regarding multiple symptoms, 19.0% had only one symptom, 13.9% had any two symptoms, and 7.6% had all three psychological symptoms. Females and older adults reported poorer oral function (p=0.003) and orofacial appearance (p=0.021) within OHRQoL dimensions. Participants with individual or combined psychological symptoms showed significantly poorer OHRQoL across all dimensions. All psychological symptoms remained strong independent predictors for poor OHRQoL and its dimensions after adjusting for potential confounding factors. The combined DAS model indicated that OHRQoL worsened with increasing numbers of psychological symptoms, highlighting their cumulative effects.

Conclusion: Psychological symptoms were consistently and strongly associated with poorer OHRQoL across all dimensions, and the effect of cumulative coexisting psychological symptoms was even more pronounced. Dental professionals should be aware of psychological factors, and integrating mental health screening and education into dental care may improve both oral and overall well-being.

Keywords: Depression; Anxiety; Stress; Oral health related quality of life; Myanmar

Association between Snacking Behaviors and Early Childhood Caries among Myanmar Preschool Children: A Cross-Sectional Study

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Background: Early Childhood Caries (ECC) remains a major public health concern in Myanmar, where dietary practices play a key role in children's oral health. Snacking is a common routine among preschoolers and understanding its relationship with ECC is important for developing effective prevention strategies. This study assessed the prevalence and severity of ECC and examined associations with snacking behaviors among preschoolers.

Methods: In 2024, 815 children aged 4-5 years from eight preschools in Yangon were examined using the International Caries Detection and Assessment System, and classified as no caries, non-cavitated, or cavitated. Parents completed structured questionnaires through preschool teachers to provide sociodemographics, snacking (eating foods or drinks between main meals) and oral hygiene behaviors. Bivariate and logistic regression analyses were conducted.

Results: Overall ECC prevalence was 96.2%, with 8.2% non-cavitated and 88.0% cavitated lesions. Snack timing was associated with caries prevalence ($p=0.02$), while snacking frequency ($p<0.001$), snack timing ($p=0.03$), and sweet drink intake ($p=0.02$) were associated with caries severity. In univariable regression, children with flexible snacking (95%CI: 1.06-5.35) and those with on-demand snacking (95%CI: 1.23-9.13) had higher odds of experiencing caries than those with scheduled snacking. In multivariable regression, after adjusting for sociodemographic and oral hygiene behaviors, both irregular snacking groups remained significantly associated with caries experience.

Conclusion: ECC prevalence was extremely high among Myanmar preschoolers, with the majority presenting cavitated lesions. Snacking anytime patterns showed a strong association with high caries prevalence. Promoting regular snack routines through targeted health-education programs may help reduce ECC risk in this population.

Keywords: Snacking; Early Childhood Caries; Prevalence; Myanmar

Effect of potassium on involuntary swallowing performance in normal adults

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Background: Swallowing initiation arduousness is one of symptoms observed in dysphagia patients. Based on our previous finding shows that potassium ion facilitates swallowing evoked superior laryngeal nerve in rats. There is no consensus on effect of potassium on swallowing performance in humans. This study aimed to investigate whether the application of a potassium solution to pharynx affects the initiation of involuntary swallowing in normal adults.

Materials and Methods: 28 healthy adults (18 females, age: 29 ± 4 years) were included. Pharyngeal stimulation consisted of infusion of distilled water, 154 mM saline (NaCl), and 154 mM potassium chloride (KCl) at two rates (0.2 mL/min and 3 mL/min). Participants were instructed to swallow as they preferred. Electromyograms (EMGs) were recorded from suprahyoid muscles to determine the characteristics of swallowing muscle activity. The number of swallows was counted, and the latency between swallows was measured. Statistical analysis, Shapiro–Wilk normality test was applied to determine the normality test, then, using one-way repeated measures analysis of variance (ANOVA), followed by a post hoc Student-Newman-Keuls test.

Results: The number of swallows and estimated volume of solution per swallow were significantly larger with KCl at both rates, followed by DW and NaCl. Onset latency and time interval between the first and second swallows were the shortest with KCl, followed by DW and saline. The larger the infusion rate was, the more the facilitatory effect was. Area and duration, especially the peak-to-offset time, of EMG bursts were significantly larger and longer during voluntary swallowing than during involuntary swallowing at any condition, respectively.

Conclusion: Potassium facilitates initiation of involuntary swallowing when infused at an optimal rate and site.

Keywords: Potassium chloride; Swallowing reflex; Involuntary swallowing; Pharyngeal stimulation

Presentation No: O1-9	Competing

Exploring the Effects of Neuromuscular Electrical Stimulation Frequency on Displacement of Hyoid and Perceived Discomfort

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Background: Neuromuscular electrical stimulation (NMES) has been utilized for dysphagia rehabilitation. Nevertheless, its application in clinical practices has been limited due to uncertainty in optimal stimulation parameters. This study aims to elucidate the effect of NMES frequency on hyoid displacement and discomfort perception among healthy individuals.

Materials and Methods: NMES was delivered to 12 volunteers at 20, 50 and 80Hz in a single-blinded randomized order. Under each frequency, hyoid positions were captured at 6 intensities using videofluoroscopy: resting, sensory level, motor level, 80% of maximum tolerated level (MTL), MTL, and a constant-current (1.8 mA) level. At 1.8 mA, participants were also requested to evaluate their level of discomfort using a 6-point ordinal scale. Hyoid Euclidean displacements were statistically compared using repeated measures ANOVA. The correlation between NMES intensity (mA) and hyoid displacement was studied using Pearson correlation. Discomfort ratings were compared using Friedman test with Bonferroni correction.

Results: At MTL, hyoid displacements at 50 and 80Hz were significantly higher than that at 20Hz. The highest correlation coefficient between NMES intensity and hyoid displacement was yielded at 50Hz. At 1.8mA, significant difference in discomfort was reported with the lowest mean discomfort ratings at 80Hz, followed by 50 and 20Hz.

Conclusion: Current results suggest that submental NMES at 50Hz is able to evoke hyoid displacement to a greater extent, in a more efficient manner, and at a relatively comfortable intensity. Further investigations are required to establish an NMES training protocol designated for dysphagia rehabilitation and maximize rehabilitation gains.

Keywords: Neuromuscular electrical stimulation (NMES); Dysphagia rehabilitation; Videofluoroscopy (VF)

Effects of Resistance Training on Handgrip Strength, Masticatory Performance, and Maximum Tongue Pressure in Healthy Adults Pilot Observational Study

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Background: Resistance training improves skeletal muscle capacity, but its potential influence on orofacial muscle function such as mastication and tongue pressure remains insufficiently understood. Exploring this relationship may clarify how whole-body exercise contributes to oral function and swallowing-related biomechanics.

Materials and Methods: This cross-sectional observational study enrolled healthy adults aged eighteen to forty-five years. Participants were categorized into a resistance training group and a non-training group. Handgrip strength was assessed using a Takei handgrip dynamometer. Masticatory performance was evaluated by visual scoring of color changes produced by standardized color changeable chewing gum. Maximum tongue pressure was measured using the JMS tongue pressure manometer. Descriptive and inferential statistics were used to compare outcomes between the groups and to examine correlations among variables.

Results: Preliminary analyses showed higher handgrip strength in the resistance training group. This group also demonstrated a tendency toward better masticatory performance and greater maximum tongue pressure. Positive correlations were observed among handgrip strength, masticatory performance, and tongue pressure which suggests a functional connection between systemic and orofacial musculature.

Conclusion: Regular resistance training may enhance orofacial muscle performance as reflected by improved handgrip strength, masticatory efficiency, and tongue pressure. These findings highlight a potential integrative role of whole-body muscular conditioning in oral motor performance and may support future applications in preventive care and oral rehabilitation. Studies with larger cohorts and longitudinal designs are recommended.

Keywords: Resistance training; Handgrip strength; Masticatory performance; Maximum tongue pressure; Gym

Efficiency in Motion: Leveraging Human Resource Strategies for High-Volume Preventive Dental Care

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Background: Early Childhood Caries (ECC) remains a significant public health challenge in the Philippines, particularly in rapidly growing municipalities like Naic, which requires efficient delivery of high-volume oral health services for its young demographic. This case study examines the capacity of a limited human resource team to conduct extensive preventive care within a finite timeframe, highlighting the practical application of service-learning principles.

Materials and Methods: As part of their community-based dental education program, a team of seven dental interns, one municipal dentist, and one faculty supervisor, delivered oral health education (OHE), oral screening, and topical fluoride application (TFA) to a 134-population local daycare center. Rigorous planning and constant faculty consultations ensured clinical accuracy and logistical feasibility. Through careful assessment, strategic pre-planning, and dry runs, a high patient volume was efficiently managed. Key organizational strategies employed included: gathering preliminary data for efficient workflow design; establishing dedicated service stations (registration, parents' forum, children's OHE, toothbrushing drills, holding area, and treatment area); practicing sticker-coding systems; pre-packing materials; and employing a strict time-keeping mechanism by the floor manager.

Results: The dental team efficiently delivered OHE, oral screening, and TFA to 103 children (77% of target population) within an eight-hour workday.

Conclusion: This case demonstrated that a small, well-trained dental team can effectively deliver high-volume pediatric preventive care through implementation of a well-planned, structured, and tightly managed system, with faculty-guided quality assurance. Optimized workflow, experiential learning, skill application,

and collaborative problem-solving were demonstrated to address oral health needs in time-constrained community settings, while providing valuable training for future health professionals.

A Simple Technique to Ensuring Esthetic Results in Restoring Extensive Carious Lesions in Anterior Teeth

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Background: A problem in anterior tooth restorations is the presence of a grayish shadow on the labio-cervical area. This happens when caries is long standing, extensive and black. New concepts in caries removal recommend that discolored affected dentin can be left behind. In anterior teeth, incomplete removal of affected dentin will manifest as a gray line seen through the translucent labial enamel. Complete removal of the affected dentin might lead however to pulp exposure. Several techniques including the use of opaquers, glass ionomer cements as dentin replacements and placing a thick composite layer have been proposed but the problem still exists. Removal of just enough affected dentin for both esthetic results and pulpal health is crucial. This case report shows how the use of a cotton pellet as a visual guide for removal of affected dentin without causing pulp exposure can result to esthetic anterior restorations.

Materials and Methods: This presentation consist of clinical cases showing the restoration of extensive direct composite resin restorations in anterior teeth. Caries progression, optical properties of teeth and dental composites and how they affect color, and description of the technique using cotton pellet as guide in caries removal is discussed.

Results: Excellent esthetic results were obtained for all cases.

Conclusion: Understanding optical properties of the teeth and restorative materials and caries progression is key to obtaining esthetic, durable direct composite restorations. The use of cotton pellet as guide in caries removal yielded excellent esthetic results.

Keywords: Composite restorations; Extensive caries; Cotton pellet; Optical properties

Influence of Denture Materials on Trueness of Complete Denture Digitalization Using an Intraoral Scanner

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Background: Complete denture (CD) duplication supports subsequent clinical procedures. Traditional duplication using impression materials is technique-sensitive, whereas intraoral scanning overcomes these limitations. This study evaluated the influence of denture materials on trueness of maxillary CD digitalization using an intraoral scanner. Scan image counts and scanning duration were also assessed.

Materials and Methods: This in vitro study involved three types of maxillary CD fabrication: 1) heat-polymerized polymethyl methacrylate (PMMA) with prefabricated PMMA teeth, 2) milled denture base and teeth, and 3) 3D printed denture and teeth. Each denture was scanned using a desktop scanner (reference) and an intraoral scanner (10 scans per group). Trueness of whole denture, base, and teeth was analyzed quantitatively and qualitatively using 3D inspection software and expressed as root mean square (RMS) deviation, where higher values indicate lower trueness. Scan image counts and duration were recorded. Data were analyzed using Welch's or one-way ANOVA with post hoc tests.

Results: RMS deviations for whole denture and base were highest in milled, followed by heat-polymerized, and lowest in 3D printed. RMS deviations for prefabricated and milled PMMA teeth were comparable, which were higher than 3D printed teeth. The 3D printed denture required fewest scan images and shortest scanning duration, whereas milled and heat-polymerized dentures were comparable.

Conclusion: Trueness of denture digitalization using an intraoral scanner varied upon denture material types with 3D printed dentures showed the highest, followed by heat-polymerized, while milled denture showed the lowest. The 3D printed denture required lowest scanning images and shortest scanning duration.

Keywords: 3D printing; Complete denture; Digital dentistry; Intraoral scanner; Milling

Presentation No: O2-3	Competing

Comparative Evaluation of Marginal Adaptation and Microbial Leakage in Class II Restorations with Alkasite Material: In Vitro Study

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Background: Microbial leakage and poor marginal adaptation are major concerns in Class II restorations that can compromise longevity and clinical success. Restorative materials such as alkasite-based Cention N claim improved sealing ability and adaptation, but limited comparative data are available. This study aimed to compare the microbial leakage and marginal adaptation of proximal cavities restored with alkasite restorative material (Cention N), nanohybrid composite resin (Filtek Z350XT), and glass hybrid GIC (EQUIA Forte).

Materials and Methods: A total of 66 sound human third molars were randomly assigned to three experimental groups (n=20) and 2 control groups (n=3), followed by restoration with Cention N, Filtek Z350XT, or EQUIA Forte. Microbial leakage was assessed using a modified dual-chamber bacterial penetration model with *Streptococcus mutans* over 40 days. Marginal adaptation was examined qualitatively using scanning electron microscopy (SEM). Data was analysed using descriptive analysis and one-way ANOVA, with significance value of $p < 0.05$.

Results: A statistically significant difference in microleakage was observed among the restorative materials ($p = 0.030$), with Cention N showing the highest mean day of microbial leakage occurrence, indicating delayed bacterial penetration. A significant difference was also found between Cention N and Filtek Z350XT ($p = 0.037$). SEM analysis revealed that Cention N exhibited the smallest marginal gap among all materials tested.

Conclusion: Within the limitations of this study, Cention N demonstrated the least microbial leakage and superior marginal adaptation compared to Filtek Z350XT and EQUIA Forte. These findings suggest that Cention N may offer clinical advantages in restoring proximal cavities.

Keywords: Microbial leakage; Marginal adaptation; Cention N; Alkasite restorative material

Siglec9 Defines a Myeloid-Driven Immunosuppressive Microenvironment in Head and Neck Squamous Cell Carcinoma

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Background: Sialic acid-binding immunoglobulin-like lectins (Siglecs) are inhibitory receptors that recognize sialylated glycans and contribute to tumor immune evasion. While Siglec15 has been identified as an immune checkpoint molecule, the biological and immunological role of Siglec9 in head and neck squamous cell carcinoma (HNSCC) remains incompletely defined.

Methods: RNA-seq expression profiles and clinical data of HNSCC patients were obtained from The Cancer Genome Atlas (TCGA). Patients were stratified into Siglec9-high and Siglec9-low groups. Functional enrichment analyses were performed using Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG). Immune and stromal scores, tumor purity, and immune cell infiltration were estimated using different algorithms by R project. Single-cell RNA-seq dataset was further analyzed to determine cell type-specific Siglec9 expression.

Results: High Siglec9 expression was positively correlated with PD-L1 expression and negatively correlated with tumor purity. Siglec9-high tumors exhibited significantly increased immune and stromal scores and showed consistent enrichment of myeloid-lineage cells, including monocytes, macrophages, and dendritic cells. Pathway analyses demonstrated activation of immune-related and myeloid-associated signaling pathways in the Siglec9-high group.

Conclusion: Siglec9 expression is closely associated with myeloid-dominant immune infiltration, PD-L1 expression, and immunosuppressive macrophage signatures in HNSCC. These findings suggest that Siglec9 may serve as a potential biomarker of an immunosuppressive tumor microenvironment and represent a potential target for modulation of the tumor immune microenvironment. Further functional and clinical validation is required.

Keywords: Tumor microenvironment; Siglec9; Immunosuppression; Head and neck squamous cell carcinoma

Beyond Thrombocytosis: Role of Platelet Phenotype and Activation Status in Predicting Outcomes to Systemic Therapy in Head and Neck Cancer

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Background: Platelets contribute to tumor progression, angiogenesis, and immune evasion in head and neck cancers. Beyond thrombocytosis, qualitative platelet features like activation markers and immune-modulatory functions, may influence treatment response. We evaluated platelet-related biomarkers in a clinical cohort undergoing neoadjuvant PCE therapy (paclitaxel, carboplatin, cetuximab) for oral squamous cell carcinoma (OSCC) and contextualized these findings within an ongoing systematic review on platelet biomarkers across systemic therapies to synthesize the evidence on the association between pre-therapy qualitative platelet parameters and clinical outcomes

Materials and Methods: 25 patients with resectable OSCC treated with neoadjuvant PCE were retrospectively analysed. Treatment response (RECIST v1.1) was compared with pre-treatment platelet count, platelet-to-lymphocyte ratio (PLR), and neutrophil-to-lymphocyte ratio (NLR). In parallel, a systematic review is being conducted to synthesize evidence on quantitative and qualitative (platelet-derived mediators, activation, PD-L1) biomarkers in predicting outcomes to chemotherapy, targeted therapy, and immunotherapy. Screening and data extraction are ongoing.

Results: The objective response rate to PCE was 36%. Responders had significantly lower pre-treatment platelet counts (median $20.7 \times 10^4/\mu L$ vs. $25.4 \times 10^4/\mu L$, p=0.025) and lower PLR (p=0.024). No association was observed with NLR. Early trends from the ongoing systematic review suggest increasing interest in platelet quantity and activation status as potential biomarkers.

Conclusion: Lower platelet count and PLR may predict better response to neoadjuvant PCE therapy in OSCC. Ongoing systematic review findings support the emerging relevance of platelet-based biomarker. Further mechanistic and prospective studies are needed to validate their clinical-utility.

Keywords: Head and Neck Cancer; Neoadjuvant PCE Therapy; Oral Squamous Cell Carcinoma; Platelet Biomarkers

Presentation No: O2-6	Competing

The Role and Machine Learning Analysis of Perineural Invasion Related Gene Expression in Head and Neck Squamous Cell Carcinoma

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Background: Head and neck squamous cell carcinoma (HNSCC) remains a global health challenge due to its high recurrence rate and poor prognosis. Perineural invasion (PNI), characterized by tumor cells infiltrating nerves, has been frequently reported in HNSCC. This study aims to investigate the relationship between gene expression and PNI in HNSCC, with an emphasis on identifying key biomarkers and elucidating their roles in tumorigenesis and immune cell infiltration.

Materials and Methods: Our study focuses on digging deeper into The Cancer Genome Atlas (TCGA) database to identify differentially expressed genes associated with PNI and HNSCC. Functional annotation of these genes was performed using GO and KEGG pathway analyses. To identify critical biomarkers, machine learning algorithms including Random Forest (RF), LASSO regression, and Support Vector Machine (SVM) were employed. Validation of the findings was conducted using the Gene Expression Omnibus (GEO) database and immune cell infiltration analysis via CIBERSORTx.

Results: Our analysis identified 267 overlapping genes. Functional enrichment analysis highlighted significant associations with muscle-related pathways. Machine learning algorithms identified MMP1 and MMP10 as significant genes. Single-cell sequencing dataset confirmed high expression levels of MMP1 and MMP10. Immune infiltration analysis suggested significant correlations between these genes and specific immune cells. Immunohistochemical staining and western blotting confirmed consistency between protein levels and RNA-sequencing data.

Conclusion: MMP1 and MMP10 have emerged as critical biomarkers in HNSCC, potentially influencing tumorigenesis through extracellular matrix remodeling and immune modulation. These findings provide insights for future research into targeted therapies and diagnostic tools, thereby enhancing HNSCC management.

Keywords: Head and neck squamous carcinoma; Perineural invasion; Machine learning; MMP1; MMP10

Extracellular Adenosine Triphosphate affects Oral Squamous Cell Carcinoma Cell Function and Metastasis

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Background: Oral squamous cell carcinoma (OSCC) frequently exhibits high recurrence and lymph node metastasis, partly due to dysregulated extracellular matrix (ECM) degradation by matrix metalloproteinases (MMPs). Extracellular ATP (eATP), enriched within the tumor microenvironment, activates P_2 receptors; however, its role in OSCC migration and ECM modulation remains unclear. This study investigated the effects of eATP on OSCC migration and ECM homeostasis.

Methods: HSC-4 (metastatic) and HSC-7 (primary) OSCC cell lines were treated with 0–200 µM eATP in vitro. Cell viability and migration were assessed using MTT and scratch assays. *MMP* and *TIMP* mRNA expression was analyzed by RT-qPCR. MMP9 secretion was detected by ELISA. P_2Y_1 and P_2Y_2 involvement was examined using MRS2179 and AR-C118925, respectively.

Results: Both OSCC cell lines expressed multiple P_2 receptors. eATP did not alter viability. In HSC-4, 200 µM eATP reduced migration and increased E-cadherin, whereas eATP treatment showed no migratory change of HSC-7. 50 µM eATP selectively downregulated *MMP8* and *MMP9* in both lines and reduced MMP9 secretion; *TIMP* levels remained unchanged. P_2Y_1 inhibition reversed eATP-mediated MMP suppression, whereas P_2Y_2 inhibition further suppresses MMP expression.

Conclusion: eATP modulates OSCC migration and ECM homeostasis in a cell-type-dependent manner. 200 µM eATP reduced HSC-4 migration through EMT modulation. 50 µM eATP downregulated *MMP8* and *MMP9*, and reduced MMP9 secretion via the eATP–P_2Y_1 pathway. eATP levels and the distinct roles of P_2Y_1 and P_2Y_2 highlight purinergic signaling as a key determinant of ECM dynamics in OSCC and could be a potential target for effective OSCC treatment.

Keywords: eATP; OSCC; Migration; ECM homeostasis

From Mechanics to Biology: DLC-Coated Drills as a Paradigm Shift in Implant Bed Preparation

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Background: Osseointegration is essential for long-term success of implant therapy. While extensive research has focused on modifying implant-surfaces, the biological influence of the implant drill itself remains underexplored. Because implant site preparation is a minimally invasive yet biologically decisive step, this study developed diamond-like carbon (DLC)-coated drills on stainless steel (SS) substrates and evaluated their effects on drill wear, early bone healing, and implant stability.

Materials and Methods: Maxillary molars of 4-week-old Sprague–Dawley rats were extracted and allowed to heal for four weeks. Implants were placed using new or ten-times-reused DLC and SS drills (n=6 per group). Scanning electron microscopy assessed drill degradation and osteotomy morphology. Implant stability was evaluated by reverse torque testing from 3 to 42 days. Immunohistochemistry examined TRAP, macrophage polarization (M1/M2), and osteogenic markers (RUNX2, osteocalcin). Statistical comparisons were performed using Student's t-test.

Results: SS drills displayed progressive structural degradation, whereas DLC drills-maintained surface integrity even after multiple reuse cycles. DLC-prepared osteotomies showed increased trabecular formation and reduced osteoclastic activity. DLC significantly enhanced early regenerative responses, demonstrating a more favorable M1/M2 ratio and higher RUNX2 expression. Osteocalcin exhibited an earlier peak at 21 days, corresponding to implant stability being achieved in half the time compared to SS drills ($p < 0.05$).

Conclusion: DLC-coated drills resist wear during reuse and markedly accelerate early bone healing and implant stability. Implant site preparation should be regarded not merely as a mechanical procedure but as a biologically driven intervention that can profoundly influence long-term implant outcomes.

Keywords: Diamond-Like Carbon Coating; Stainless Steel; Dental Implant Drill; Bone Healing; Implant Stability.

Analyzing Possible Osteocyte Network Formation in New Bone Area after Bone Transplantation using Different Bone Quality Models

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Background: Osteocyte networks play an important role in bone remodelling. However, previous studies have not focused on osteocyte network in newly formed bone following graft transplantation. Moreover, the effects of bone quality on osteocyte network formation after transplantation remain unclear. This study aimed to investigate how osteocyte network develops in newly formed bone during the short period following bone transplantation, under different conditions of host and graft bone quality.

Materials and Methods: Four-week-old male Sprague-Dawley rats were assigned to control or BAPN group (0.2% beta-aminopropionitrile in drinking water for 4 weeks to create poor bone quality model). Both groups were subdivided into donor and recipient categories to create four experimental groups: NN (normal host/graft), NB (normal host/BAPN graft), BN (BAPN host/normal graft) and BB (BAPN host/graft). Calvaria grafts were transplanted, and samples were collected at 1, 2, 4, and 8 weeks. Histological analysis assessed osteocyte density, osteocyte process number, and osteocyte process area.

Results: BAPN groups showed decreased osteocyte density and osteocyte process number. Moreover, at 8-week time point, NN group showed significantly higher osteocyte process area than other groups, while the BB group showed the lowest. Furthermore, osteocytes and their processes in NN group were well-aligned, while BAPN groups showed disorganized osteocytes with randomly oriented processes.

Conclusion: Poor bone quality associated with collagen cross-linking inhibition might impair osteocyte network formation. These findings might highlight the influence of host and recipient bone quality on the development of osteocyte network and on graft success.

Keywords: Bone graft; Osteocyte network; Bone quality

Presentation No: O2-10	Competing

Novel Age and Growth Estimation (NAGE) Model by Optimizing Inverted Gompertz and Gamma-Type Formula Using Machine Learning and CT Imaging

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Background: The permanent maxillary canine morphology via CT imaging, serves as an ideal candidate for dental age estimation (DAE). This study aimed to develop a novel estimation model in Japanese population based on morphometric features of the canine, it combined machine learning (ML) approaches and optimization of inverted Gompertz and Gamma-type formula.

Materials and Methods: 785 permanent maxillary canines' morphometric measurements: length (L), open apex shortest width (SW), and longest width (LW) were obtained from CT images of the Japanese population aged 1-23 years. We fitted to characterize growth patterns; Gompertz for L; Gamma-type for SW and LW. We combined all variables to construct NAGE model: $y=a \cdot L^b + c \cdot \log(1+\overline{W}) + d$. Parameters optimized by ML, statistical analysis was evaluated via RMSE, R^2, scatter plots with fitted regression lines, year-stratified error across combined (C), female (F), and male (M) groups and applied to 14 multiple-examined samples (age 1-15 years) with total of 85 consecutive examinations.

Results: Age 1–23-years fit RMSE was range between 1.67–2.16 years while the R^2 was 0.79–0.87. Limitation to 1–16-years, improves the prediction (RMSE was range between 1.09–1.45 years, and R^2 was range between 0.83–0.90. Multiple-examined samples' mean±SD chronological age (CA) vs predicted age (PA)= 7.83±2.86 years vs 7.88±2.80 years with various RMSE for each samples ranging 0.04–1.94 years. The overall RMSE= 0.99 years with R^2= 0.88.

Conclusion: NAGE model provides accurate predictions across sexes and age ranges, reliable for treatment planning, age and growth prediction where continuous monitoring is required.

Keywords: Dental age estimation; Permanent maxillary canine; Machine learning; Computed tomography; Growth curve.

The Effects of Probiotic and Essential Supplements on Periodontitis-Associated Biofilms

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Background: To achieve full potential of using probiotics as adjunctive therapy for periodontitis, understanding the activity of periodontal pathogens coculture with probiotics and essential supplements is necessary. This study aimed to explore (i) the effects of *Limosilactobacillus reuteri*, the probiotic strain, on *Fusobacterium nucleatum* and *Streptococcus gordonii* biofilm formations, and (ii) the response of *Porphyromonas gingivalis* biofilm to the cell-free supernatant of the cultures containing the probiotic strain, when supplemented with L-arginine or glycerol.

Materials and Methods: This laboratory-based experiment constructed mixed-species biofilms by co-incubating *L.reuteri* (DSM20016) with *F.nucleatum* (ATCC25586) and *S.gordonii* (ATCC10558) anaerobically for 24 h in saliva-coated wells (N=27). Arginine or glycerol was co-added in the initial culture in supplementation groups. The colony-forming unit (CFU) count measured the number of each bacterial species within the biofilms. To observe the response of *P.gingivalis* (ATCC33277) to cell-free supernatants, the 24-h mixed culture supernatants of *L.reuteri*, *F.nucleatum* and *S.gordonii* obtained by centrifugation and filter-sterilized with 0.22-μm filters. *P.gingivalis* was incubated anaerobically for 24 h in pre-reduced PBS containing 50% cell-free supernatants, followed by CFU count.

Results: *L.reuteri* coculture significantly increased the number of *F.nucleatum* and *S.gordonii* (p<0.05), regardless L-arginine supplementation. However, *L.reuteri* coculture supplemented with glycerol significantly inhibited the growth of *F.nucleatum* and *S.gordonii* compared to the controls (p<0.01). The metabolites via arginine or glycerol fermentation affected the growth of *P.gingivalis* biofilms.

Conclusion: Glycerol is an essential substrate which drive the inhibitory effect of *L.reuteri* against periodontitis-associated biofilms. The inhibitory impact could even turn into a growth spurt in the absence of glycerol.

Keywords: Probiotic; Periodontitis; Arginine; Glycerol

Enamel Formation by *Ofd1* Is Via X-Inactivation

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Background: X-inactivation is a process required to equalize the dosage of X chromosome-encoded genes between females (XX) and males (XY). In each female cell, one of the two X chromosomes is randomly selected to be inactivated. Oral-facial-digital syndrome type I (OFD1) is characterized by facial, digital, and dental malformations, including enamel defects. It is inherited as an X-linked dominant male-lethal trait. OFD1 syndrome is caused by a mutation in the OFD1 gene located on the X chromosome.

Materials and Methods: To understand the role of *OFD1* in enamel formation, we generated mice with epithelial conditional deletion of *Ofd1* using *Keratin14Cre*.

Results: Hemizygous *Ofd1* mutant mice [*Ofd1^{fl};K14Cre(HM)*] showed premature abrasion and a lack of enamel rods across the entire occlusal surface. Shh signaling is known to play a critical role in enamel formation, which was found to be downregulated in ameloblasts of *Ofd1^{fl};K14Cre(HM)* mice. In heterozygous *Ofd1* mutant mice [*Ofd1^{fl/WT};K14Cre(HET)*], some regions of the occlusal surface exhibited premature abrasion and a lack of enamel rods, while other regions without premature abrasion showed normal enamel rods. Premature abrasion with a lack of enamel rods was observed in different regions of the occlusal surface in each *Ofd1^{fl/WT};K14Cre(HET)* mouse. We found that in *Ofd1^{fl/WT};K14Cre(HET)* mice, ameloblasts that inactivated the normal X chromosome lost Shh signaling activity, while ameloblasts that inactivated the X chromosome with an *Ofd1* mutation retained Shh signaling activity.

Conclusion: Enamel defect in OFD1 syndrome is determined by X-inactivation.

Keywords: Ofd1; Enamel formation; X-inactivation.

The Role of NF-κB Inhibition by DHMEQ in Periosteal cell-derived Osteoregeneration

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Background: Periosteal cells possess high potential and are promising for cell-based bone regeneration therapy. Dehydroxymethylepoxyquinomicin (DHMEQ) is a novel inhibitor of Nuclear Factor-kappa B (NF-κB), a transcription factor integral to inflammatory responses and bone metabolism. This study aimed to investigate the effects of DHMEQ on human periosteal cells (hPCs) *in vitro.*

Methods: hPCs were treated with varying concentrations of DHMEQ, and MTT assay was performed to determine cytotoxicity. The effect of DHMEQ on cell adhesion was evaluated by adhesion assay. Osteogenic differentiation was analyzed by alkaline phosphatase (ALP) activity assay, ALP staining, and Alizarin Red Staining (ARS). qPCR was also performed to analyze the expression levels of osteogenesis-related genes (ALP, COL1A1) and inflammation-related genes (IL6, IL8). ELISA was conducted to measure IL6 and IL8 secretion.

Results: The MTT assay indicated that DHMEQ concentrations up to 10 µM showed no cytotoxicity. DHMEQ treatment significantly promoted hPCs cellular adhesion after 1 hour. Moreover, DHMEQ also enhanced osteogenic differentiation, as demonstrated by increased ALP activity, stronger ALP staining, and greater calcium deposition in ARS. qPCR analysis revealed that DHMEQ upregulated osteogenic markers while downregulating inflammatory cytokines. Consistently, ELISA confirmed reduced secretion of IL6 and IL8 in DHMEQ-treated cells.

Conclusion: DHMEQ enhances cell adhesion and osteogenic differentiation of hPCs while suppressing inflammatory responses. These findings suggest that DHMEQ may be used as a promising therapeutic agent for bone regeneration by modulating both osteogenic and inflammatory pathways of hPCs. Further studies are needed to clarify the underlying mechanisms and to evaluate its efficacy *in vivo.*

Keywords: Periosteal cells; NF-κB Inhibition; Dehydroxymethylepoxyquinomicin; Bone regeneration

| Presentation No: O3-4 | Competing |

Metabolome-Based Identification of Sake Lees-Derived Compounds that Modulate Osteoclast Differentiation

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Background: Osteoporosis involves excessive osteoclast-mediated bone resorption, increasing bone fragility and the risk of periodontal disease and tooth loss. Because current treatments present adverse effects, natural modulators of osteoclast activity are needed. Sake lees, a byproduct of sake production, contains diverse bioactive metabolites. This study aimed to identify sake lees–derived compounds capable of regulating osteoclast differentiation and potentially influencing bone metabolism.

Methodology: Fresh (S1) and aged (S3) sake lees were examined using metabolomic analysis to compare their metabolite profiles. Candidate metabolites were tested in RAW 264.7 macrophage cells. Cytotoxicity was assessed through cell viability assays, after which osteoclast differentiation was induced with RANKL. Tartrate-resistant acid phosphatase (TRAP) staining and image analysis quantified osteoclast formation. Statistical analysis was conducted using one-way ANOVA followed by Dunnett's test.

Results: Metabolome analysis revealed significant differences between S1 and S3. S3 showed higher antioxidant capacity and greater bioactive compounds in organic acid and sugar groups. Sake lees on osteoclast differentiation were examined, revealing that S1 significantly reduced

RANKL induced osteoclast formation in a dose-dependent manner. Testing of selected metabolites showed that several compounds inhibited osteoclast differentiation without affecting cell viability, indicating selective suppression of osteoclastogenesis.

Conclusion: Fresh sake lees contain metabolites that selectively inhibit osteoclast differentiation without cytotoxic effects, highlighting their potential as natural modulators of osteoclast-mediated bone loss. These findings provide a rationale for further mechanistic studies and in vivo validation to develop safe and natural therapeutic strategies for managing bone resorption in dental and systemic conditions.

Keywords: Metabolome; Sake lees; Osteoclast; Bone Loss

Microparticle-Delivered Erythromycin Restores Bone Remodeling in Periodontitis-Associated BRONJ

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Background: Erythromycin (ERM) can restore bone metabolic balance under inflammation, potentially via DEL-1. Microparticle delivery offers sustained release, improved local availability, and reduced systemic exposure. Given the lack of a gold-standard therapy for BRONJ, we evaluated the regenerative effects of erythromycin microparticles on bone healing.

Materials and Methods: Female C57BL/6J mice (7 weeks) received intraperitoneal zoledronic acid twice weekly for 8 weeks, followed by ligature-induced periodontitis on the maxillary second molar. After 4 weeks, the ligated tooth was extracted, and a single intrapalatal injection of PLA14200, erythromycin (ERM), or blank microparticles (bPLA) (1 µg/µL) was administered; controls received PBS. Gingival tissue was collected for pro-inflammatory cytokine analysis, DEL-1 expression, and bulk RNA sequencing. Maxillae were evaluated by micro-CT and histology (TRAP, ALP, Masson's trichrome, TUNEL, DEL-1). Bone marrow cells were also differentiated into osteoclasts in vitro and assessed by TRAP staining.

Results: Zoledronic acid caused delayed gingival healing, reduced alveolar resorption, increased bone density, and suppressed osteoclast activity, consistent with BRONJ. PLA14200 improved gingival closure, reduced socket voids, and enhanced bone regeneration, with elevated DEL-1 and lower IL-1β/IL-6. RNA-seq showed distinct clustering between groups. PLA14200 upregulated transport-related genes (Krt8, Cdh26, Aldh1a1, Fmo3, Msln, Pglyrp1, Bpifa1) and cytoskeletal motor pathways, while collagen-associated genes (Col1a1, Col1a2, Col3a1, Col5a1, Col6a1, Thbs2, Postn) were downregulated, indicating inflammation resolution and restored regeneration.

Conclusion: PLA14200 improved bone regeneration and gingival healing in a BRONJ model, accompanied by elevated DEL-1, restored osteoblast–osteoclast activity, and reduced inflammation, supporting its potential as a regenerative therapeutic for BRONJ.

Keywords: BRONJ; Zoledronic Acid; Erythromycin; Bone Regeneration

Targeted Intralesional Delivery of Erythromycin-Loaded Microparticles Promotes Oral Ulcer Regeneration

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Background: Erythromycin (ERM) is best known as an antibiotic, but low-dose ERM also has strong anti-inflammatory and pro-regenerative activity through DEL-1 induction. Loading ERM into microparticles allows precise dose control and targeted delivery to the ulcer site. Intralesional injection is more effective than topical application because it places microparticles directly within the lesion, ensuring stable local exposure and minimizing drug loss into saliva. Improving ulcer healing is clinically important for dentists because persistent oral ulcers cause pain, limit oral function, increase infection risk, and delay dental treatment. This study evaluated the effect of intralesionally delivered ERM-loaded microparticles on tongue ulcer healing.

Materials and Methods: A tongue ulcer model was established in C57BL/6J mice using 50% acetic acid. Mice received a single intralesional injection of ERM, ERM-loaded microparticles, blank microparticles, or PBS. Bulk RNA sequencing assessed global gene expression changes. Ulcer tissues were evaluated by immunofluorescence for Ly6, F4/80, DEL-1, CD31, α-SMA, and LAMC2. Collagen deposition was examined using Masson's trichrome staining.

Results: ERM-loaded microparticles upregulated epithelial-regeneration genes (Col7a1, Hcar2) and downregulated inflammatory pathways (NFκB2, Prepl). Ly6 and F4/80 decreased, indicating reduced neutrophil and macrophage infiltration. Regeneration markers (HCAR2, α-SMA, DEL-1, Ki67, PDGFRα) increased, reflecting enhanced proliferation and stromal activation. CD31, LAMC2, and Col7a1 were elevated, consistent with improved angiogenesis and epithelial repair. Complete ulcer healing was achieved by day 5 only in the ERM-loaded microparticle group, which also showed the highest collagen density.

Conclusion: Intralesional ERM-loaded microparticles reduce inflammation and promote coordinated epithelial, vascular, and stromal regeneration in tongue ulcers, supporting their potential as a targeted mucosal healing therapy.

Keywords: Erythromycin; Oral ulcer; Tongue; Regeneration

Pre-conditioning Treadmill Running Attenuates Craniofacial Pain- and Anxiety-like Behaviors and Neural Alterations Induced by Persistent Masseter Muscle Inflammation in Mice

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Background: Our preclinical studies have demonstrated that physical exercise exerts inhibitory effects on craniofacial pain- and anxiety-like responses. However, it remains unclear whether these beneficial effects persist after the cessation of exercise. In this study, we investigated whether pre-conditioning treadmill running (TR) attenuates craniofacial pain- and anxiety-like behaviors and modulates brain responses under masseter muscle inflammation evoked by complete Freund's adjuvant (CFA).

Materials and Methods: Male C57BL/6J mice were assigned to sedentary and TR groups. TR (6 meters/min, 30 min/day) was performed for 10 consecutive days before masseter injection of CFA on Day 0. Behavioral assessments were conducted before TR and three days after CFA injection (Day +3). Pain-like behaviors were evaluated using orofacial formalin test, while anxiety-like behaviors using Elevated Plus Maze and Open Field tests. Immunohistochemistry was performed on Day +3 to quantify pCREB and FosB expression in the amygdala and insular cortex. Comparisons were made between non-CFA and CFA-inflamed mice with sedentary or TR.

Results: CFA-inflamed mice exhibited increases in pain- and anxiety-like behaviors, accompanied by elevated pCREB and FosB expression in both regions compared with non-CFA mice. In CFA-inflamed mice, TR significantly reduced pain- and anxiety-like behaviors and attenuated pCREB and FosB expression in both regions compared with sedentary conditions.

Conclusion: TR conditionings exert preventive effects on craniofacial pain- and anxiety-like behaviors and neural responses induced by masseter muscle inflammation, even three days after cessation of TR. These

findings suggest that physical exercise might provide prolonged inhibitory effects against pain and anxiety related to brain dysfunction.

Nano-Chitosan Gel from *Penaeus Monodon* (Black Tiger Prawn) as A Bioactive and High-Bioavailability Antimicrobial Agent against Periodontal Pathogens

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Background: Periodontal disease is a chronic inflammation highly prevalent in Indonesia, primarily caused by pathogens like *Porphyromonas gingivalis* and *Aggregatibacter actinomycetemcomitans*. Conventional antibiotics like metronidazole risk inducing resistance. Chitosan from *Penaeus monodon* exoskeleton is a promising natural antibacterial agent, whose effectiveness is enhanced by nanoparticle technology. The smaller size increases surface area and improves antimicrobial bioavailability.

Materials and Methods: This *in vitro* Randomized Controlled Trial used the broth dilution method. Nano chitosan was synthesized via the ionic gelation technique and characterized using PSA. Gel stability was assessed via homogeneity, pH, and spreadability. Formulations (1.25%, 2.5%, 5%) were tested against *P. gingivalis* and *A. actinomycetemcomitans* to determine MIC and MBC. Statistical analysis included Kruskal–Wallis test followed by Post-Hoc tests.

Results: Chitosan nanoparticles sized 446.4 nm and 63.48 nm were successfully synthesized, meeting standards for homogeneity, pH, and spreadability. Nano chitosan gel exhibited superior antibacterial activity (MIC: 1.25%; MBC: 2.5%) against both pathogens compared to conventional chitosan. The 2.5% nano chitosan gel was equivalent in effectiveness to the 0.75% metronidazole control. Statistical analysis confirmed a significant difference among groups ($p<0.05$).

Conclusion: Nano-chitosan gel from *Penaeus monodon* is highly effective in inhibiting and killing *Porphyromonas gingivalis* and *Aggregatibacter actinomycetemcomitans*. Its superior activity is due to the smaller particle size,which improves the antimicrobial bioavailability, allowing it to achieve bacteriostatic (MIC: 1.25%) and bactericidal (MBC: 2.5%) effects at lower concentrations. This makes nano-chitosan gel a promising topical antimicrobial alternative for periodontitis therapy.

Keywords: Nano-chitosan; *Penaeus monodon; Porphyromonas gingivalis; Aggregatibacter actinomycetemcomitans; Periodontitis*

February 8, 2026 (Sunday)

13:00 – 14:50   **Poster Presentation Session 1**

Chairs:

Prof. Lisa R. Amir, Universitas Indonesia, Indonesia

Prof. Miho Terunuma, Niigata University, Japan

14:50 – 16:30   **Poster Presentation Session 2**

Chairs:

Prof. Tomihara Kei, Niigata University, Japan

Assoc. Prof. Hsu Zenn Yew, Universiti Kebangsaan Malaysia, Malaysia

February 9, 2026 (Monday)

11:45 – 13:00   **Poster Presentation Session 3**

Chairs:

Assoc. Prof. Haslina Rani, Universiti Kebangsaan Malaysia, Malaysia

Asst. Prof. Kaung Myat Thwin, Niigata University, Japan

14:00 – 15:30   **Poster Presentation Session 4**

Chairs:

Assoc. Prof. Tsujimura Takanori, Niigata University, Japan

Assoc. Prof. Nor Azlida Mohd Nor, Universiti Malaya, Malaysia

HCN2 Channels: A Potential Therapeutic Target for Orofacial Neuropathic Pain after Trigeminal Nerve Injury

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Background: Hyperpolarization-activated cyclic nucleotide-gated (HCN) channels have recently emerged as promising targets for the treatment of neuropathic pain. This study investigated the potential involvement of HCN2 channels in the development of trigeminal neuropathic pain following peripheral nerve injury.

Materials and Methods: Infraorbital nerve chronic constriction injury (ION-CCI) model was adopted to rats, and head withdrawal thresholds (HWT) to mechanical stimulation were assessed pre- and postoperatively, as well as after pharmacological intervention. In the trigeminal ganglion (TG), intracellular cyclic adenosine monophosphate (cAMP) and cytoplasmic protein kinase A (PKA) levels were quantified by Enzyme-Linked Immunosorbent Assay (ELISA), while *Hcn2* mRNA expression was evaluated by quantitative Polymerase Chain Reaction (qPCR). Immunohistochemical analysis was performed to assess phosphorylated cAMP response element-binding protein (pCREB) expression in the TG and HCN2 expression in infraorbital nerve (ION) axons.

Results: In the TG, cAMP and pCREB levels were elevated, whereas cytoplasmic PKA and *Hcn2* mRNA levels were reduced. Axonal HCN2 expression was increased in CCI rats. On day 14, HWT was significantly reduced following CCI but was ameliorated by local administration of the HCN channel blocker ivabradine at the site of axonal injury.

Conclusion: Collectively, these findings suggest that CCI-induced alterations in cAMP-PKA-pCREB signaling promote HCN2 accumulation in injured axons, thereby contributing to the development of orofacial neuropathic pain following peripheral nerve injury.

Keywords: Hyperpolarization-activated cyclic nucleotide-gated channel; Rat; Neuropathic pain; Orofacial; Trigeminal

Fungal Imbalance and Host Hbd-2 Roles in Immune Regulation of Mucosal Autoimmunity on Oral Lichen Planus and Type 2 Diabetes

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Background: Saliva is vital for oral health, and antimicrobial peptides such as hBD-2 provide immunity against pathogens, including *Candida*. Conditions such as oral lichen planus (OLP) and type 2 diabetes mellitus (T2DM) alter saliva and the microbiome, increasing the risk of fungal infections. This study reviews *Candida* colonization and oral microbiome in OLP, explores links between salivary flow, pH, and hBD-2 in T2DM, and assesses *Candida* prevalence and types in controlled versus uncontrolled T2DM.

Materials and Methods: The OLP review followed PRISMA guidelines, analyzing 12 studies (4 for deep analysis) using odds ratios (ORs) and the Mantel-Haenszel method. For T2DM, an observational cross-sectional study included 90 participants (30 each: uncontrolled T2DM, controlled T2DM, healthy controls), with saliva collected for hBD-2 ELISA and SFR/pH measurement, and oral swabs for *Candida* identification via culture and fermentation tests. Data were analyzed using Kruskal-Wallis, Mann-Whitney, and Spearman's rho in R-Studio.

Results: In OLP, a significant association with oral microbiota was found (OR=4.155, 95% CI:1.278-13.511, P=0.024), with *C.albicans* predominant but non-albicans species noted. In T2DM, uncontrolled patients showed higher hBD-2 levels (1731.38 ± 975.79 pg/mL) correlated with <100 *Candida* colonies (P=0.004), and negative correlations between SFR/pH and hBD-2 (r=-0.304, P=0.004; r=-0.236, P=0.023). *C.albicans* was more prevalent than non-albicans, with significant differences across HbA1c categories (P = 0.000011).

Conclusions: Insights from OLP dysbiosis inform T2DM, with elevated hBD-2 reflecting *Candida* responses in uncontrolled disease. This highlights hBD-2 as a noninvasive biomarker for fungal infections in oral disorders, underscoring the importance of early detection and management.

Keywords: hBD-2; *Candida*; Oral Lichen Planus; Diabetes Mellitus; Oral Innate Immunity.

Systemic Disease Manifesting Orally: Primary DLBCL

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Lymphoma is a heterogeneous malignant neoplasm of the lymphoproliferative system, characterized by proliferation of lymphoid cells or their precursors. It is broadly classified into Hodgkin's lymphoma (HL) and Non-Hodgkin's lymphoma (NHL). HL typically arises in nodal sites, whereas NHL is more frequently detected at extra-nodal locations, with the stomach being the most common site, followed by the salivary glands and oral cavity. Both HL and NHL can only be distinguished microscopically and represent the second most common malignancies in the head and neck region after squamous cell carcinoma. Diffuse large B-cell lymphoma (DLBCL) is the most prevalent subtype of NHL and is characterized by rapidly proliferating large lymphoid cells. It most commonly affects males over the age of 50.

Within the maxillofacial region, DLBCL may present with non-specific symptoms such as swelling or ulceration, leading to potential misdiagnosis as periodontitis, osteomyelitis, pyogenic granuloma, or even squamous cell carcinoma. Although lymphoma in this region more frequently affects the maxilla than the mandible, it remains an uncommon primary oral presentation.

Here, we report a case of a 70-year-old female who presented with oral mucosal swelling as the first clinical indication of disease. This case highlights the importance of considering lymphoma in the differential diagnosis of persistent or atypical oral lesions to prevent delays in diagnosis and management.

Keywords: Lymphoma; Systemic disease; Oral; Primary.

Soft Tissue Cephalometric Measurements in Selected Myanmar Adults Using Holdaway Analysis

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Background: Soft tissue evaluation is important in orthodontic treatment planning because it strongly influences the patient's final facial profile. Comprehensive treatment planning should include hard and soft tissue cephalometric analysis. Holdaway analysis is widely used to study soft tissue features across populations, but no established norms exist for Myanmar adults. This study aimed to establish Holdaway soft tissue values for Myanmar adults, compare males and females, and evaluate differences from standard Holdaway norms.

Materials and Methods:

1. Study Design - Cross-sectional analytic study

2. Clinical data collection – Forty-four Myanmar adults (patients or students) from the University of Dental Medicine, Yangon, were selected for the study. Digital lateral cephalograms were obtained, traced, and analyzed using CorelDRAW 16 programme. The measurements were organized into tables, and statistical analysis was performed using SPSS Version 22 to evaluate the soft-tissue parameters.

Results: The Myanmar adult males were shown to have more prominent upper lip and nose ($p<0.001$) and chin ($p<0.05$) when compared with the Myanmar adult females. The Myanmar adult samples had reduced nose prominence (12.94 ± 1.92 mm), basic upper lip thickness (12.89 ± 1.76 mm) and upper lip thickness (12.12 ± 1.69 mm) than the Holdaway values.

Conclusion: Results showed Myanmar adults' soft-tissue measurements differ from other races, indicating the need for population-specific norms to improve orthodontic and surgical treatment planning. Such norms may enhance diagnostic accuracy and outcomes, though larger studies are required to confirm these findings.

Keywords: Soft tissue; Cephalometric measurements; Myanmar; Holdaway analysis.

Aesthetic Perception of Malocclusion and Self-Perceived Orthodontic Treatment Need Among Adolescents in Yangon, Myanmar

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Background: The need and demand for orthodontic treatment depends upon the severity of malocclusion traits and the impact of that malocclusion traits on the patient's socio-psychologic and physiologic conditions, traditional customs of individual races, value judgements, attitudes etc. The identification of malocclusion by a dental health care professional is a primary factor in motivating an individual to seek the orthodontic treatment. This study aimed to evaluate the normative orthodontic treatment need on orthodontic self-perception and oral aesthetic impact of malocclusion among adolescents in Yangon, Myanmar.

Materials and Methods: This cross sectional descriptive study was conducted in six government basic education high schools from Yangon, Myanmar. The samples consisted of 200 randomly selected, 100 males and 100 females, of 14-15-year-old school children. Orthodontic aesthetic self-perception was assessed by Oral Aesthetic Subjective Impact Scale (OASIS). Normative orthodontic treatment need was measured with Index of Orthodontic Treatment Need (IOTN). The Dental Health Component (DHC) was determined by measuring the malocclusion on the study casts using the digital caliper. The Aesthetic component (AC) was evaluated by using 10 intraoral color photographs of the Aesthetic Component scale.

Results: Subject with higher need for orthodontic treatment perceived themselves as worse off than their peers with lower need. More socially deprived children or those with high IOTN AC scores have a higher OASIS score. Males have less IOTN AC score and OASIS score than females. Awareness of aesthetic impact on malocclusion increased at that age group, they started to concern with their appearance thereby increasing demand for orthodontic treatment and consequently improving their oral health.

Conclusion: Perceived aesthetic impact of malocclusion was likely to be influenced by seeking orthodontic treatment, therefore potential use of orthodontic services.

Keywords: Oral Aesthetic Subjective Impact Scale; Index of Orthodontic Treatment Need; Malocclusion.

Morphological Changes in the Temporomandibular Joint after Orthognathic Surgery in Mandibular Prognathism with Jaw Deviation

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Background: This study investigated early morphological adaptations of the temporomandibular joint (TMJ) in patients with mandibular prognathism with deviation (MPD) following orthognathic surgery.

Materials and Methods: Forty-three patients were evaluated using sagittal and coronal CT multiplanar reconstruction images to assess postoperative changes in the TMJ.

Results: At six months postoperatively, the mandibular condyle showed significant inward rotation on both the deviated and non-deviated sides. The mandibular ramus exhibited a significant outward inclination on the non-deviated side, accompanied by small but significant increases in the superior and posterior joint spaces. These findings indicate that the proximal mandibular segments were effectively repositioned after surgery. On the deviated side, the superior surface of the condyle tilted anteriorly at six months, although no measurable postoperative changes were noted in condylar height, anteroposterior length, mediolateral width, or in the dimensions of the condylar neck on either side. This localized change suggests adaptive bone remodeling may have occurred in response to altered mechanical loading. Throughout the observation period, the posterior slope of the articular eminence remained significantly steeper and the mandibular fossa deeper on the deviated side compared with the non-deviated side. However, on the non-deviated side, both the posterior slope and the depth of the fossa increased significantly after surgery, implying a gradual reduction in preexisting TMJ asymmetry.

Conclusion: Taken together, these findings suggest that early postoperative TMJ changes—particularly on the non-deviated side—are likely driven by adaptive remodeling associated with the altered loading environment during normal condylar movement after surgical correction of MPD.

Keywords: Mandibular protrusion; Mandibular deviation; Orthognathic surgery; Mandibular fossa; Posterior slope of articular eminence

Porphyromonas Gingivalis Promote Proliferation, Migration, and Invasion of Oral Squamous Cell Carcinoma by Regulating the Nrf2/SLC7A11/GPX4 Pathway to Suppress Ferroptosis

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Background: Oral squamous cell carcinoma (OSCC) is a major global health concern. *Porphyromonas gingivalis*, a primary pathogenic bacterium promotes tumorigenesis and progression. Ferroptosis is also closely related to the progression of tumors. Therefore, this study aims to investigate the effects of *Porphyromonas gingivalis* on ferroptosis in OSCC cells and explore the underlying mechanisms.

Method: CCK-8, wound healing, and transwell invasion assays were used to assess changes in the biological behavior changes induced by *Porphyromonas gingivalis*. Flow cytometry and fluorescence microscopy were employed to examine ferroptosis biomarkers. Transmission electron microscopy was utilized to observe mitochondrial morphology, while western blot and immunofluorescence analysis were performed to assess the ferroptosis-related proteins.

Results: *Porphyromonas gingivalis* enhanced the proliferation, migration, and invasion of OSCC cells. Additionally, *Porphyromonas gingivalis* suppressed ferroptosis in OSCC cells. Furthermore, *Porphyromonas gingivalis* modulated the expression of Nrf2/SLC7A11/GPX4 signaling pathway and reduce the level of relative oxygen species and lipid peroxide. It also showed that *Porphyromonas gingivalis* has no effects on the expression of ferrous ion.

Conclusion: This study demonstrates that *Porphyromonas gingivalis* modulates Nrf2/SLC7A11/GPX4 signaling pathway to suppressing ferroptosis and promoting the progression of OSCC cells. Targeting ferroptosis may be a potential strategy for patients with *Porphyromonas gingivalis* infected OSCC.

Keywords: Oral squamous cell carcinoma; Porphyromonas gingivalis; ferroptosis; Nrf2/SLC7A11/GPX4 signaling pathway

GSK-3β as a Potential Therapeutic Target in Patients with Periodontitis and Diabetes: A Scoping Review

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Background: Periodontitis and Diabetes Mellitus (DM) share a bidirectional relationship involving inflammation and impaired bone metabolism. Glycogen synthase kinase-3 Beta (GSK-3β) regulates both insulin signalling and the Wnt/ β catenin pathway. Hyperglycaemia-induced GSK-3β activation inhibits osteogenesis, while its inhibition reduces pro-inflammatory cytokines and promotes regeneration. This review maps the literature on GSK-3β as a therapeutic target for preventing alveolar bone loss in diabetic periodontitis

Materials and Methods: A search was conducted on Ovid, Scopus, and Web of Science for English-language studies from the year 2000 to present using keywords eg "GSK-3β", "periodontitis", and "diabetes". Inclusion was strictly limited to in vivo animal studies investigating GSK-3β modulation in comorbid diabetes and periodontitis, human and in vitro studies were excluded.

Results: Included studies predominantly utilised diabetic rat models. Synthesised data indicate that inhibiting GSK-3β reduces alveolar bone loss and pro-inflammatory markers. However, the precise molecular mechanisms remain complex. While some studies implicate the Wnt/ β catenin pathway, others highlight the kinase's dual role in modulating osteoblast and osteoclast activity. Consequently, a definitive regenerative pathway remains ill-defined.

Conclusion: Preclinical evidence supports GSK-3β as a therapeutic target, likely via immune regulation and bone metabolism control. However, its signalling cascades are complex, capable of exerting opposing inflammatory effects. Strategic modulation could address the diabetic milieu by simultaneously regulating insulin homeostasis and arresting periodontitis.

Keywords: Glycogen synthase kinase; GSK-3β; Periodontitis; Bone loss; Diabetes

Investigating the Roles of Wnt/β-catenin Signalling Pathway in Bone Remodelling and Periodontal Tissue Inflammation: A Scoping Review

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Background: The Wnt/ß-catenin pathway dysregulation produces some of the most detrimental effects on human health, as it controls many biological functions. Persistent biochemical changes in the body can cause an imbalance of the pathway's agonists and antagonists, leading to many further complications. One of them is periodontitis, an inflammatory bone disease due to the imbalance of β-catenin-regulated osteoblasts and osteoclasts. This review aims to compile, summarise, and analyse current studies on the signalling pathway and its role in controlling bone remodelling and periodontal tissue inflammation.

Materials and Methods: A scoping review was done to analyse the latest research environment for the Wnt signalling pathway and its role in bone remodelling and periodontal tissue inflammation. Research papers were searched in three different databases: Scopus, Web of Science, and Ovid medline. The studies are obtained from a combined search string of "Periodontitis", inflammation", "Wnt signalling", and "bone remodelling" between 2007-2025.

Results: The search reveals an important ligand in promoting periodontal ligament remodelling Wnt5a, protein expression changes between normal and periodontitis patients in terms of Wnt ligands and regulatory enzymes. A significant number of studies are also focused on controlling regulatory enzymes in the pathway, which helps in reducing the effects of periodontitis.

Conclusion: This review summarises the current findings on Wnt/β-catenin pathways and the effects of periodontitis on the expression of key player proteins in regulating the pathway. The review also highlights a possible target for periodontitis treatment at many stages of the pathway.

Keywords: Wnt/β-catenin signalling pathway; Periodontitis; Inflammation; Bone remodelling.

Current Progress and Emerging Technologies in Umbilical Cord Mesenchymal Stem Cell-Derived Extracellular Vesicles for Wound Healing Applications: A Scoping Review

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Background: Constant microbial exposure and mechanical stress are important contributors to delayed wound healing. Recent years have seen increased attention on the use of umbilical cord mesenchymal stem cells (UCMSCs), particularly the UCMSC-derived extracellular vesicles (UCMSC-EVs) that offer promising cell-free therapy for modulating inflammation and promoting tissue regeneration. The growing interest in EV technologies aims to overcome limitations in scalability and therapeutic consistency. This topic is increasingly relevant to accelerated wound healing in dental research. Thus, this scoping review aims to systematically map and summarise current technologies and advancements in UCMSC-EVs for wound healing.

Materials and Methods: PubMed, Web of Science, and Scopus were searched from database inception to 2025. Eligible studies included *in vitro* and *in vivo* research involving UCMSC-derived exosomes for wound healing. The review followed PRISMA-ScR guidelines and data were charted using predefined categories, including exosome preparation, physiochemical characterisation, and biological outcomes.

Results: A total of 30 studies met the inclusion criteria. Most of the study employed ultracentrifugation-based isolation methods, with reported exosome sizes ranging from 30-150 nm. Key themes included exosome preparation and characterisation, along with benefits on wound closure across *in vitro* and *in vivo* models. Significant gaps were identified in standardisation, scalability, and comparative evaluations of isolation methods.

Conclusion: This review highlights recent advancements of UCMSC-EVs-based technologies for wound healing. Findings suggest UCMSC-EVs-based technologies can provide higher yields and improved therapeutic potentials compared to natural EVs. Future research should prioritise standardised protocols and scalable production strategies to support translation into oral wound healing applications.

Keywords: Umbilical Cord Mesenchymal Stem Cells; Extracellular vesicles; Wound Healing.

When Normal Becomes Nightmare: Anxiety Triggered by Misinterpretation of Fordyce Granules - A Serial Case Report

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Background: Fordyce Granules (FG) are benign, asymptomatic, ectopic *sebaceous* glands, but their appearance often leads to patient misinterpretation. Increased access to unvalidated information even contributes to self-misdiagnosis and increased anxiety. This case series aims to highlight the chain of diagnostic misconception and the resultant iatrogenic anxiety caused by misinterpreting FG.

Material and Methods: This series present two male patients, 37 and 34 years old complaining yellowish-white buccal mucosal spots. Both were referred from primary healthcare with a suspected diagnosis of leucoplakia, had undergone over examination test and received untargeted antifungal therapy. Oral medicine specialist subsequently diagnosed both patients with FG, provided detailed explanations and reassurance regarding the normal variant condition. Previous untargeted prescription the discontinued, and *chlorhexidine gluconate 0.2%* was prescribed to improve oral hygiene.

Results: The high prevalence of FG, estimated at 70-80% in adults, its natural predilection for males of ratio 2:1, and its prevalence occurrence in the buccal mucosa provide a strong scientific basis for its benign nature. The cases illustrate a chain of misconceptions: misdiagnosis as leucoplakia and subsequent HIV testing which were driven by patient anxiety and stigma resulted in unnecessary over-treatment with antifungal.

Conclusion: The cases underscore the risk of diagnostic misconceptions and iatrogenic anxiety triggered by normal anatomical variant. Comprehensive education on normal oral variants in urgently required for primary healthcare providers and the public to prevent misdiagnosis, inappropriate treatment, and alleviate unnecessary patient distress.

Keywords: Fordyce granules; Self-misdiagnosis; Anxiety; Oral manifestations of HIV/AIDS.

Reactive Gingival Lesion Linked to Complex Dentofacial Anomaly in the Anterior Maxillary Gingiva: A Case Report

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Introduction: Reactive gingival lesions are non-neoplastic proliferations that arise in response to chronic irritation, local trauma, or anatomical abnormalities. Although these lesions are common, their occurrence in conjunction with complex dentofacial anomalies particularly in the anterior maxillary region poses diagnostic and therapeutic challenges. Anomalies such as abnormal tooth position, alveolar irregularities, and occlusal disruptions can cause persistent mechanical irritation, making the tissue susceptible to excessive reactive responses.

Material and Method: A 14-year-old girl presented with swelling of the anterior maxillary gums extending to the palate, initially asymptomatic but progressively enlarging over the course of one year. Clinical and radiographic findings revealed a suspected fibromatous epulis associated with an impacted mesiodens tooth, and histologically uncover inflammatory cells infiltration. It is surprisingly that panoramic radiographic findings also revealed complex dental issues in the anterior maxilla. Definitive management involved surgical excision of the lesion.

Results: The coexistence of structural anomalies and reactive proliferation highlights the role of anatomical abnormalities as persistent irritants causing gingival inflammation and excessive fibrovascular tissue growth. Comprehensive management requires not only lesion removal but also correction of underlying anomalies to prevent recurrence.

Conclusion: Reactive gingival lesions in the anterior maxilla may be caused by undiagnosed dentofacial anomalies, which result in continuous mechanical irritation. Accurate diagnosis requires a multidisciplinary approach that combines clinical findings, radiography, and histopathology.

Keywords: Reactive Gingival Lesion; Dentofacial Anomally Maxillary.

Recalcitrant Ulceration in A 9 Years Old Girl: Clinical Correlation between Local Trauma and Systemic Allergic History

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Background: Recalcitrant oral ulceration in children is a multifactorial condition characterized by prolonged healing times and high recurrence rates. While minor mechanical trauma is typically the primary trigger, an underlying immuno-allergic predisposition can exacerbate inflammation, leading to persistent ulcers. Studies indicate that children with a history of atopy (allergic conditions) show an increased presence of eosinophils and mast cells at the site of mucosal injury. These immune cells contribute to heightened tissue damage and delayed epithelial repair. Recognizing the dual influence of local trauma and systemic allergic susceptibility is crucial to preventing chronicity and complications in oral ulcers.

Materials and Methods: A 9-year-old girl presented with a recurrent ulcer on her tongue for two months at Hasanuddin Dental Hospital. The ulcer, measuring 3 mm in diameter, had a yellowish-white base and was located on the lingual apex. The patient had a systemic history of atopy (itching on her legs) and the ulcer was unresponsive to aloe vera extract therapy. The treatment plan combined topical steroid and Low Level Laser Therapy.

Results: This case suggests that allergic predisposition may contribute to the chronicity of traumatic oral ulcers. Elevated levels of circulating IgE and eosinophils in atopic individuals enhance mucosal inflammation, prolonging the ulcerative phase and inhibiting proper epithelial repair. A combined approach targeting both local trauma and hypersensitivity is essential for effective healing.

Conclusion: The interaction between local trauma and systemic allergic predisposition emphasizes the need for a multifaceted treatment strategy to manage inflammation and promote recovery.

Keywords: Recalcitrant ulceration; Local trauma; Paediatric atopy

When Recurrence is not a Reactivation: Possible Exogenous Hsv-1 Reinfection

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Background: Recurrent Intraoral Herpes Simplex (RIHS), caused by the reactivation of latent Herpes Simplex Virus Type 1 (HSV-1), typically presents as oral vesicular lesions. Reactivation mostly trigger endogenously such as by immunocompromise, however this case report an unusual recurrence pattern. Detailed history strongly suggests possibility of exogenous viral infection via non-sterile communal eating utensils was likely triggering the RIHS.

Material and Methods: A 24-year-old woman visited Hasanuddin University Dental Hospital with sudden vesicular lesions on her palate and lips. She also had ulcers in the lower back and gums. Her medical history include typhoid, pneumonia, seafood allergy, and reactions to methyl drugs. The exam showed multiple small blisters on her lips and palate, surrounded by redness but tender to palpation. Tests confirmed she had HSV-1. She was treated with chlorine dioxide and povidone-iodine, and advice to improve her hygiene and avoid sharing utensils. A week later, her symptoms completely disappeared.

Results: An Individual can be reinfected with different HSV strains of either the same or a different type. Patients with previous exposure usually have high levels of neutralizing HSV IgG antibody, and coincidentally can stay at the same level even when the reinfection occur leading to misconception of reactivation process. It is unfortunate, that up to now, it is uneasy to differentiated whether a person being exacerbated from the laten re-activation or re-infection.

Conclusion: The potential for exogenous reinfection by a distinct or the same *Herpes Simplex Virus type 1* (HSV-1) strain cannot be dismissed, particularly in atypical or refractory cases.

Keywords: Recurrent intraoral herpes; HSV-1; Reinfection; Reactivation.

Presentation No: P2-1	Competing

Post Angulation Effects on Fracture Resistance and Bonding Performance with Micro-Ct Analysis of Self-Adhesive Resin Cement and Polyethylene Fiber Posts

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Background: Endodontically treated teeth require post systems for structural reinforcement, particularly where aesthetic and angulation correction demands. Although polyethylene fiber posts luted with self-adhesive resin cement (SARC) offer adaptability, their bonding integrity remains insufficiently underexplored. This study investigated the bonding performance of self-adhesive resin cement (SARC) with polyethylene fiber posts in endodontically treated teeth.

Materials and Methods: Two experimental phases were conducted. Fracture resistance: Extracted maxillary incisors were endodontically treated and restored with polyethylene fiber posts at 0°, 5°, 10°, and 15° angulations. Fracture resistance was measured using a universal testing machine. Adhesive evaluation: Extracted single-rooted mandibular premolars were assigned to cementation protocols: SARC with adhesive pretreatment, SARC without pretreatment, and conventional adhesive resin cement (CAR). Micro-CT assessed void volume and distribution, while push-out bond strength and SEM analyses evaluated interfacial adhesion and failure modes.

Results: Post-angulation significantly affected fracture resistance ($P < 0.05$), with 5° producing the highest values. Micro-CT revealed that SARC, regardless of adhesive pretereatment, resulted in the smallest and most uniformly distributed voids compared to CAR. Push-out bond strength showed no significant differences among groups ($P > 0.05$). SEM predominantly demonstrated cohesive failure within the polyethylene post.

Conclusion: Polyethylene fiber post-angulations at 5°–10° improved fracture resistance, while SARC without adhesive pretreatment reduced void formation and maintained bond integrity. These findings support the clinical viability of SARC for post-endodontic cementation and reinforce the influence of post angulation and microstructural factors on restoration predictability.

Keywords: Self-adhesive resin cement; Micro-CT; Push-out bond strength; Polyethylene fiber post; Fracture resistance

Magnesium-Doped Hydroxyapatite Coating of Ti-Nb Alloy Surfaces for Improved Osteoblastic Response

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Background: Titanium–niobium (Ti–Nb) alloys are increasingly recognised as promising materials for biomedical applications. However, their limited bioactivity requires surface modifications to improve cellular interactions, especially in dental and maxillofacial contexts.

This study aimed to compare the in vitro biocompatibility and inflammatory potential of magnesium-doped hydroxyapatite (HAp+Mg)-coated Ti-Nb (A1) and titanium-niobium (A2) alloys, with a view to applying HAp+Mg-coating to improve the dental implant biocompatibility.

Materials and Methods: Tested samples: Ti-Nb alloy discs (diameter 10 mm; thickness 2 mm). HAp+Mg coatings were applied using a magnetron sputtering system (AJA International, USA). HOb human osteoblasts (MERCK) were incubated with both, A1 and A2 samples, for 48 hours. The control group comprised unexposed osteoblasts. Tests performed included viability (MTT), cytotoxicity (LDH), proinflammatory potential – NO (Griess assay) and (IL6 multiarray assay using Luminex 200), fluorescent stainings for annexin V, F-actin, and the autophagy marker LC3B. All data from the study were analysed with IBM SPSS Statistics 25.

Results: In accordance with ISO 10993-5:1999, both A1 and A2 alloys demonstrated good biocompatibility, exhibiting no cytotoxic effects on the tested cells. The A1 samples induced a higher density of adherent cells compared to both A2 and control. NO and IL-6 assays indicated that A1 did not trigger inflammatory responses, compared to A2, ($p=0.029$, $p=0.01$ respectively). Comparison between the A1 and A2 revealed no statistically significant differences in autophagy levels.

Conclusion: Collectively, these results support the cytocompatibility and lower inflammatory potential of the A1 samples, encouraging further development for clinical applications in dental implantology.

Keywords: Osteoblasts; Apatite; MgO; Biocompatibility; Autophagy

Comparative Study on Efficacy of Low Level Diode Laser and Two Desensitizing Agents for Dentin Hypersensitivity

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Background: Dentin hypersensitivity is characterized by short, sharp pain arising from exposed dentin in response to external stimuli. Several modalities have been suggested for treatment of this condition such as low level laser therapy and application of desensitizing agents. The aim of this study was to compare the clinical efficacy of resin monomer, glutaraldehyde and low level diode laser for treatment of dentin hypersensitivity.

Materials and Methods: This study was designed as randomized clinical trial, 78 patients aged 20-40 years, having one cervical hypersensitive tooth, exposed dentin less than 1 mm deep. Visual analog scale (VAS) ≥ 1 were randomly allocated into three groups (n=26): Group A: resin monomer (Shield Force Plus); Group B: glutaraldehyde (Gluma desensitizer); Group C: Low level diode laser (650±5 nm/30mW). Dentin hypersensitivity was evaluated using air blast and tactile stimuli at baseline, immediately, 2 weeks, 4 weeks and 6 weeks. Data Analysis were done by using Kruskal-Wallis and Friedman tests ($P<005$).

Results: A significant reduction of dentin hypersensitivity after all treatments at all evaluation time points were observed ($p<0.05$). Although all desensitizing treatments are still effective at 6 weeks follow up, low level diode laser was the most effective when compared with resin monomer and glutaraldehyde.

Conclusion: The efficacy of low level diode laser in reduction of dentin hypersensitivity showed superior results when compared to resin monomer and glutaraldehyde.

Keywords: Dentin hypersensitivity; Resin monomer; Glutaraldehyde; Low level diode laser

Diode Laser and Conventional Ferric Sulfate Pulpotomy in Deciduous Molars: Comparative Outcomes in Myanmar Children

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Background: Ferric sulfate, coagulative agent, is the current gold standard for vital pulpotomy. Diode lasers offers a newer option for precise coronal pulp removal while preserving remaining radicular pulp vitality. This study aimed to compare the effectiveness of laser and ferric sulfate in pulpotomy of deciduous molars.

Method: A randomized controlled clinical trial conducted at the Department of Paediatric Dentistry, University of Dental Medicine (Yangon) during 2023-2024. Forty deciduous mandibular molars in children aged 4 to 8 years were randomly assigned to either laser or ferric sulfate groups. Laser pulpotomy used diode laser set at 810nm, 2W, applied for 10-15 seconds on remaining pulp tissue after coronal pulp amputation in experimental group. A cotton pellet soaked with 15.5% ferric sulfate was placed over the amputated pulp for 15 seconds in control group. Polymer-reinforced zinc-oxide-eugenol cement was placed over the pulp stump, and the tooth was restored with stainless-steel-crown. All subjects were evaluated clinically and radiographically at 3 and 6 months. Fisher's exact test analyzed the difference between two groups, with significance set at $p<0.05$.

Results: Laser pulpotomy showed 100% success rate at 3-month and 6-month follow-ups, while ferric sulfate pulpotomy had success rate of 95% at 3-month and 90% at 6-month. Although laser pulpotomy showed superior success rate, the difference between the groups was not statistically significant ($p = 1.000$ at 3-month and $p = 0.487$ at 6-month).

Conclusion: Diode laser can be used as non-pharmacologic pulpotomy technique as a viable alternative to the current gold standard ferric sulfate pulpotomy.

Keywords: Diode laser; Ferric sulfate; Vital pulpotomy; Deciduous molars

Immediate Denture Fabrication Using an Intraoral Scanner in Patients with Compromised Maxillary Dentitions

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Background: Conventional impressions for immediate dentures carry significant risks in patients with unstable prostheses or severely mobile teeth, including accidental extraction, loss of the occlusal relationship, and increased discomfort. Intraoral scanners (IOS), which enable non-contact and high-precision data acqusition, may provide a safer alternative. This report presents two cases in which IOS-based workflows were successfully used to fabricate immediate dentures for patients with compromised maxillary dentitions.

Materials and Methods: Two female patients with unstable maxillary prostheses or advanced periodontal mobility underwent IOS-based digital impressions. Maxillary and mandibular arches were scanned carefully to avoid causing displacement of mobile teeth or partially detached prostheses. The interocclusal relationship was digitally recorded. Planned extraction sites were virtually removed in CAD software (Medit Link), and post-extraction ridge morphology was simulated. Working casts were printed with a 3D printer, and immediate dentures were conventionally fabricated on the printed models. Removal of partially detached prostheses, tooth extractions, and denture delivery were performed during the same appointment.

Results: OS enabled safe impressions without dislodging mobile teeth or unstable prostheses and preserved the pre-existing occlusal relationship. Both dentures demonstrated excellent fit, stable occlusion, and satisfactory esthetics with minimal adjustments. Patient-reported outcomes improved substantially, including OHIP-J14 scores, chewing ability, and esthetic satisfaction.

Conclusion: IOS-based digital impressions provide a safe, efficient, and predictable approach for immediate denture fabrication in high-risk cases. By enabling non-contact data acquisition and accurate occlusal preservation, IOS represents a valuable, patient-friendly alternative to conventional impression methods in challenging clinical situations.

Keywords: Intraoral scanners; Immediate dentures; Non-contact; Digital workflows

Effect of Endodontic Irrigants on Dentine Microhardness: A Literature Review

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Background: Irrigation solutions are mandated in endodontics to enhance the removal of inflamed and necrotic tissues, microbes and biofilms, and smear layer from root canal system. However, irrigants may alter the structural properties of root dentine, hence affecting the long-term prognosis of endodontically-treated teeth. This review aims to summarize the effect of commonly used endodontic irrigation solutions on dentine microhardness.

Materials and Methods: A literature search on Google Scholar was performed with keywords 'endodontic irrigation' and 'dentine microhardness'. Full text review and original articles published in English were included.

Results: Sodium hypochlorite (NaOCl) and chlorhexidine digluconate (CHX) reduce dentine microharness but do not remove smear layer. Ethylene-diamine-tetraacetic-acid (EDTA) causes greater reduction in dentine microharness compared to NaOCl and CHX, and it removes smear layer. MTAD does not alter dentine microhardness but removes smear layer. Addition of surface modifiers into irrigants has no significant effect on dentine microhardness. All irrigants except EDTA exhibit antimicrobial activity and demonstrate effectiveness against *Enterococcus faecalis*.

Conclusion: To minimize undesirable reductions in dentine microhardness, irrigants should be used in a controlled sequence. NaOCl is recommended for routine irrigation, followed by a final rinse with EDTA and CHX, or alternatively MTAD alone.

Keywords: Endodontic irrigation; Dentine microhardness; Smear layer; *Enterococcus faecalis*

A Clinical Case of Persistent Mucogingival Fenestration Following Root Canal Treatment and Guided Bone Regeneration

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Introduction: Mucogingival fenestration is a pathological condition in which a part of the tooth root is clinically apparent in the oral cavity as a result of the destruction and loss of the alveolar bone, periosteum, and oral mucosa. The contributing factors include thin labial cortical plate of anterior teeth, thin gingival phenotype, buccally positioned roots, high frenum attachment, and chronic periapical infection. This clinical case report describes an interdisciplinary approach in managing mucogingival fenestration and the factors associated with wound dehiscence.

Case Presentation: A 44-year-old male presented with soft tissue fenestrations at the buccal gingiva of teeth 21 and 22 with diameters of 5 x 3 mm, associated with exposed root surface of tooth 22. The patient had previously undergone cyst enucleation and perforation repair on tooth 21 that was diagnosed with radicular cyst but failed to resolve completely although evidence of bone regeneration can be seen radiographically. The management of soft tissue fenestration involved mucogingival surgery to increase the quality of keratinized tissue, root end surgery of tooth 21, and guided bone regeneration. However, persistence of mucogingival fenestration was demonstrated. Wound debridement was performed, and tissue sample was sent for histopathological examination. Based on the histopathological findings, a diagnosis of osteomyelitis was obtained and further treated with a course of antibiotic. Clinical evaluation at 2 months follow-up revealed resolution of the mucogingival fenestration.

Conclusion: Mucogingival fenestration treatment is determined by the underlying cause and contributing factors, which may necessitate an interdisciplinary approach.

Keywords: Mucogingival fenestration; Root end surgery; Regeneration

Oral Pyogenic Granuloma with Maxillary Bone Resorption and Sinus Expansion: A Very Rare Case Report and Review

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Background: Oral pyogenic granuloma (PG) is a benign vascular lesion that predominantly affects the gingiva and typically presents as a superficial hemorrhagic exophytic mass without bone involvement. Consequently, radiographic assessment is not routinely performed. However, in exceedingly rare aggressive variants, alveolar bone resorption and possible extension into the maxillary sinus may occur, detectable only through imaging. This case report aims to present an uncommon radiological manifestation of oral PG.

Materials and Methods: A 13-year-old male presented with a progressively enlarging sessile gingival lesion in the upper right posterior region, elastic, non-tender, bleeding on probing, and associated with tooth mobility. Panoramic imaging (Vatech PAX-i 3D Green) showed an ill-defined radiolucency and sinus floor discontinuity, while 3D CBCT revealed extensive alveolar maxillary bone destruction and sinus opacification. An incisional biopsy with hematoxylin-eosin staining confirmed oral pyogenic granuloma.

Results: Radiographic changes in oral PG are typically absent due to its predominantly soft-tissue origin, and bone involvement is extremely rare. The present case demonstrated extensive alveolar bone destruction and sinus opacification, representing only the third reported case worldwide after those documented by Abe et al. (2017) and Deshpande et al. (2025). CBCT provided essential diagnostic information that was not appreciable on panoramic imaging.

Conclusion: Clinicians and radiologists should consider pyogenic granuloma in lesions with alveolar bone loss and sinus changes, using CBCT to assess osseous involvement and MRI to clarify soft-tissue extension, with histopathology confirming the diagnosis.

Keywords: Oral pyogenic granuloma; Maxillary bone resorption; Maxillary sinus expansion.

Reviving Microbial Genomes from Archived FFPE Oral Cancer Tissues: A Metagenomic Approach to Explore Tumor-Associated Microbiota

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Background: The long-held belief that tumors are sterile has been challenged by the discovery of intratumoral bacteria in various cancers. However, profiling the tumor-associated microbiota in oral squamous cell carcinoma (OSCC) remains difficult, especially using formalin-fixed paraffin-embedded (FFPE) tissues, which are the most abundant clinical archives.

Materials and Methods: We established a workflow to recover microbial DNA from archived FFPE tissues of OSCC patients. After extraction, we amplified the bacterial 16S rRNA gene and performed metagenomic sequencing. The data were then analyzed to identify bacterial taxa and assess microbial diversity.

Results: We successfully detected bacterial genomes in 11 of the 20 FFPE samples, revealing distinct microbial communities. The most abundant phyla were Actinobacteriota, Proteobacteria, Bacteroidota, and Firmicutes. We identified several genera, including *Fusobacterium*, *Prevotella*, and *Cutibacterium*, suggesting that oral cancer tissues host a complex ecosystem of both oral and skin-associated bacteria.

Discussion: Although the presence of skin commensals may indicate contamination, the repeated detection of oral pathogens implies a potential biological role. Further validation with qPCR and FISH is ongoing to confirm the true intratumoral localization and function of these microbes.

Conclusion: This study shows that it is feasible to reconstruct microbial genomes from archived FFPE oral cancer tissues using NGS. Our approach enables retrospective investigation of the tumor microbiome from vast clinical archives, paving the way for future research on the role of microbiota in cancer development, immunity, and treatment.

Keywords: FFPE; Oral squamous cell carcinoma; Intratumoral bacteria; Metagenomic sequencing; Microbiome

Presentation No: P2-10	Competing

Proteomic Profiling Reveals Distinct Extracellular Matrix Landscapes in Different Bone Types

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Background: Extracellular matrix (ECM) is a fundamental determinant of bone structure and function, contributing to both mechanical integrity and the regulation of cellular behaviour. Although ECM composition varies across tissues, the molecular differences among specific bone types remain insufficiently understood. This study aimed to investigate ECM composition of distinct skeletal sites to better understand site-dependent molecular features.

Materials and Methods: Calvaria, femur, and mandible were harvested from male C57BL/6J mice (3-52 weeks old). ECM proteins were extracted using a newly developed sequential solubilization method employing EDTA, hydroxylamine, and guanidine hydrochloride. The extracted proteins were digested with trypsin and analysed by mass spectrometry to obtain a comprehensive ECM profile.

Results: Principal component analysis demonstrated clear separation among the three bone types, indicating distinct ECM signatures. Collagens represented the predominant ECM proteins, with the calvaria showing a higher collagen proportion compared with the femur and mandible. Conversely, lysyl oxidase, thrombospondin-4, and tenascin-N were enriched in the femur and mandible.

Conclusion: These findings reveal marked site-specific differences in bone ECM composition, reflecting variations in developmental origin and mechanical environment. Understanding these regional ECM characteristics provides important insight into bone biology and tissue-specific regulation.

Keywords: Extracellular matrix; Bone; Collagen; Proteomics

Effect of Cookie Structure on Chewing and Swallowing Characteristics: A Pilot Study

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Background: Cookies are one of the foods considered unsuitable for people with swallowing disorders because of their sticky characteristics and low moisture content. In recent years, 3D additive manufacturing technology has been attracting attention in the food industry, and in this study, we fabricated cookies with designed structures using this technology. This study aimed to clarify the effects of differences in cookie structure on chewing and swallowing characteristics.

Materials and Methods: The subjects were four healthy volunteers. The test foods consisted of structured cookies (W28 x D28 x H23 mm) formed with a block-check structure using a 3D additive manufacturing device, non-structured cookies formed from dough sheets, and jelly. Surface muscle activity of the masseter and suprahyoid muscles was measured using a wireless electromyograph. The subjects were instructed to chew one cookie at a rate of once per second and to swallow it after 25 chews. Additionally, the jelly was chewed 10 times at the same rate. We compared the muscle activity among test foods, and between the early and later stages of chewing.

Results: Muscle activity of the masseter and suprahyoid muscles during cookie chewing was greater than that during jelly chewing. Additionally, the suprahyoid muscle activity of structured cookies was greater than that of non-structured cookies. Furthermore, the duration of suprahyoid muscle activity in the later stage of chewing was longer than the early stage.

Conclusion: These results suggested that the structure of food affected muscle activity during oral processing.

Keywords: Muscle activity; Mastication; Cookies; Three-dimensional additive technology

Radiographic Analysis of Alveolar Bone Changes in Guided Bone Regeneration

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Background: Guided Bone Regeneration (GBR) is widely used to augment alveolar bone prior to implant placement; however, objective and reproducible quantification of dimensional changes remains limited.

Objective: This study aimed to map alveolar bone dimensional changes following GBR using a validated CBCT-based radiographic measurement protocol.

Materials and Methods: A retrospective analysis of pre- and post-operative CBCT scans from patients undergoing GBR (2015–2024) was conducted. Four CBCT measurement protocols were systematically tested: the Enamel–Dentin Junction (EDJ) reference method, the cusp–root reference method, the EDJ midpoint–cusp method, and the Planmeca Romexis CEJ–Cusp Line Method. After pilot testing on five representative cases, the CEJ–Cusp Line Method was selected as the final protocol due to its superior reproducibility and alignment consistency. Intraobserver reliability was assessed using 18 datasets, showing excellent agreement (ICC = 0.967–0.983). Alveolar bone width and height were measured at standardized 1-mm intervals along the CEJ–cusp axis on both T0 and T1 CBCT images.

Results: Preliminary measurements (n=5/38) demonstrated consistent dimensional gains following GBR, with mean height increase of 1.66 ± 1.30 mm and width increase of 1.71 ± 1.40 mm. The protocol provided stable and clinically meaningful quantification across timepoints.

Conclusion: The validated CEJ–Cusp Line Method offers a reliable approach for assessing alveolar bone dimensional changes following GBR. The findings of this study may support improved treatment planning and facilitate early prediction of healing quality following GBR.

Keywords: Guided Bone Regeneration(GBR); Cone Beam Computed Tomography(CBCT); Alveolar Bone; Bone Width and Height Analysis

Exploring Global Trends in Maxillofacial Trauma for Preventive Strategies in South Asia: A Systematic Review and Comparative Analysis

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Background: Maxillofacial trauma is a global health concern with regional differences in causes and patterns. South Asia faces a high burden of preventable injuries from road traffic accidents, occupational hazards, and interpersonal violence, while Europe still reports notable violence-related trauma. Since the comparative analyses between South Asia, Japan, and Europe are limited this study aims to systematically review trauma patterns in South Asia and compare with other data to identify preventable strategies.

Materials and Methods: A comprehensive literature search was conducted in PubMed, Cochrane, and Scopus for studies between 1990 and 2025. Studies reporting etiology, demographics, fracture sites and treatment approaches for maxillofacial trauma in South Asia were included. Extracted data are being descriptively compared with findings from Japan and Europe to examine the mentioned parameters.

Preliminary Result: So far, the review indicates a high burden of preventable trauma in South Asia, with road traffic accidents with male predominance being most frequent, followed by interpersonal assault and falls. Mandibular fractures is the common site of injury. Comparison with Japan suggest a lower burden of preventable trauma, likely reflecting long-term safety initiatives, while European data show relatively higher contributions from violence-related injuries. Data extraction and synthesis are ongoing to refine these findings.

Conclusion: This study aims to elucidate how maxillofacial trauma patterns in South Asia differ from Japan and Europe. By identifying preventable factors and regional gaps, the findings will inform targeted prevention strategies and support future collaborative trauma-reduction efforts.

Keywords: Global comparison; Maxillofacial trauma; Prevention; Road traffic injuries; South Asia

Bioactive Compounds in Chewing Sticks and the Applicability of Chemical Analysis Methods: A Scoping Review

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Background: Chewing sticks such as *Salvadora persica* have long been used for oral hygiene and are recognized for their antimicrobial, anti-inflammatory, and anti-cariogenic properties. However, the specific bioactive compounds underlying these effects and the most appropriate chemical analysis methods remain unclear, limiting consistent evidence evaluation and the development of chewing-stick–based biomaterials. Therefore, systematic mapping of their bioactive constituents and analytical techniques is required.

Materials and Methods: This study adopted a scoping review design guided by PRISMA-ScR. Literature searches were conducted in Web of Science, PubMed, Scopus, ScienceDirect, and Google Scholar for studies published between 2020 and 2025. Eligible studies included laboratory-based and phytochemical analyses reporting the identification or quantification of bioactive compounds in chewing sticks. Data extraction covered chewing stick species, identified bioactive constituents, and the analytical methods used. Data were synthesized descriptively by mapping study characteristics, categories of bioactive compounds, and methodological strengths and limitations.

Results: The major groups of bioactive compounds, including alkaloids, flavonoids, tannins, saponins, essential oils, and antibacterial agents, have been identified across various chewing stick types.The analytical techniques have been compared in terms of their applicability, limitations, and analytical accuracy.

Conclusion: A comprehensive overview of the bioactive compounds in chewing sticks has been provided, and the most appropriate analytical methods for their identification have been classified.The findings have

been used to strengthen the scientific understanding of chewing stick–related oral health benefits and to inform future research directions.

Correlation between Perceived Academic Stress and Recurrent Aphthous Stomatitis in Dental Students

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Background: Recurrent Aphthous Stomatitis (RAS) causes recurrent, painful oral ulcers. Although its exact cause is unknown, stress—especially academic stress—may disrupt hormonal balance and weaken the immune system, contributing to RAS. Pre-clinical students at Hasanuddin University's Faculty of Dentistry, particularly the 2023 cohort, experience significant academic stress due to adapting to new learning methods. The objective of this study is to analyze the relationship between academic stress and the occurrence of RAS among 2023 preclinical Dentistry students at Hasanuddin University.

Materials and Methods: This cross-sectional study involved 156 purposively sampled students. Data were collected using the Perceived Stress Scale Academic (PAS) and RASDX questionnaires and analyzed with SPSS 25, utilizing Kendall's Tau test.

Results: The results of the study showed that there was a relationship between the level academic stress and the occurence of Recurrent Aphtous Stomatitis with $p = 0.000$ ($p < 0.05$).

Conclusion: High academic stress is significantly associated with Recurrent Aphtous Stomatitis among 2023 Dentistry students at Hasanuddin University. These findings highlight the need for effective stress management strategies to enhance both academic performance and oral health.

Keywords: Academic Stress; Recurrent Aphthous Stomatitis

Bridging the Literacy Gap in Periodontal Care: Are Periodontal Disease Leaflets Readable?

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Background: Effective periodontal disease management relies on active patient participation. Patient information leaflets (PILs) serve as an important resource, yet their suitability for individuals with lower literacy levels remains unclear. This study evaluated the literacy demands of periodontal disease PILs in relation to recommended readability standards.

Materials and Methods: This cross-sectional study examined 15 PILs on periodontal disease produced by dental schools, dental hospitals, and professional organisations in major English-speaking countries. Readability was assessed using the Flesch Reading Ease (FRE) and Flesch–Kincaid Grade Level (FKGL) indices via Readable (Added Bytes, Hassocks, United Kingdom). Readability indices were compared against recommended United Kingdom (UK) education level. Three reviewers from different backgrounds independently evaluated understandability and actionability using the Patient Education Material Assessment Tool for printable material (PEMAT-P). Data were summarised using mean (SD), median (IQR), and frequency (%). Statistical analyses included the Shapiro–Wilk test, one-sample t-test, and one-sample Wilcoxon signed-rank test.

Results: The median FRE score was 62.45 (IQR 11.49), and the mean FKGL score was 8.23 (SD 1.74). Both indices indicated that the PILs required at least a UK Year 9 reading level ($p > 0.05$). Mean understandability and actionability scores were 80.38 (SD 19.23) and 69.33 (SD 26.04), respectively.

Conclusion: Periodontal disease PILs generally exceeded recommended readability thresholds, suggesting that many may be challenging for individuals with lower literacy skills. Improving the clarity and actionability of these materials may better support patient understanding and engagement during periodontal treatment.

Keywords: Health Literacy; Patient Education Handout; Periodontal Disease; Readability

Are We Keeping Up? A Swot Analysis of Dental Advertising Guidelines

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Background: The rise of social media and digital marketing has transformed dental advertising worldwide. Emerging trends such as testimonials, influencer-driven content, aesthetic-focus promotion, and livestreaming increasingly challenge traditional regulatory mechanisms. This study compares Malaysia's dental advertising guideline with those of developed countries using a SWOT analysis to identify key strengths and opportunities for improvement.

Materials and Methods: A systematic targeted search was conducted across official government, dental association, and dental regulatory websites from developed countries. Documents published from 2015 onward were included to capture recent regulatory updates. Eligible guidelines addressing promotional advertising strategies were screened, and a SWOT analysis (strengths, weaknesses, opportunities, and threats) was applied to assess the advertising provisions of each guideline and to facilitate comparison with the Malaysian guideline.

Results: Fourteen guidelines from eight countries were appraised and mapped against Malaysia's dental advertising guideline. Malaysia shared several strengths with developed countries, including prohibitions on misleading and comparative claims, restrictions on testimonials, and controls on promotional tactics. Some areas require greater clarity in addressing digital advertising practices such as the use of influencers, AI-modified images, livestreaming, and pricing transparency. Opportunities include strengthening digital-specific provisions, improving guidance patient images, and developing a practical compliance guide with clear Do/Don't examples. A shared threat across jurisdictions is the rapid evolution of digital advertising, which may outpace regulatory updates and increase the risk of misinformation.

Conclusion: The SWOT findings highlight the need to strengthen Malaysia's provisions to keep pace with emerging practices and ensure ethical, patient-centred advertising.

Keywords: Advertising; Dentistry; Guidelines; SWOT analysis

The Effectiveness of Annual versus Biannual SDF Application on Dentinal Caries among Preschool Children: A Randomised Controlled Trial Protocol

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Background: Silver diamine fluoride (SDF) is a minimally invasive agent widely used for arresting dentinal caries in preschool children. However, evidence on the frequency of SDF application remains debatable. This study protocol aims to compare annual versus biannual 38% SDF application in arresting dentine caries in primary teeth over a 12-month follow-up.

Materials and Methods: This study will employ a two-arm, parallel randomised controlled trial. The primary outcome is the caries arrest rate, while changes in oral health related quality of life (OHRQoL) will be assessed as the secondary outcome using Malay-ECOHIS questionnaire. Caries will be assessed using dmft index, and arrest rate will be determined based on visual-tactile criteria. Preschool children aged 4–5 years in Perak will be recruited through a two-stage stratified sampling design, with schools selected by district type and size, followed by random sampling of eligible children. A cluster-adjusted lesion-level calculation determined a required sample of 288 children. Participants will be stratified by caries severity (≤3 or >3 active lesions) and randomly assigned to either the annual 38% SDF group or the biannual 38% SDF group. Allocation concealment will be maintained and the trial will be double-blinded. Outcome assessments will be conducted at baseline, 6 months, and 12 months, with Malay-ECOHIS will distributed accordingly. Data will be analysed using intention-to-treat principles.

Conclusion: It is hypothesised that children receiving biannual SDF application will exhibit higher caries arrest rates, along with greater improvements in OHRQoL. These findings will generate evidence to optimise SDF application protocols and support wider adoption of SDF within Malaysian preschool oral health programmes.

Keywords: Silver Diamine Fluoride; Randomised Controlled Trial; Preschool Children; Caries; Protocol

The Interplay of Oral Hygiene (OHIS), Salivary Metagenome Diversity, and Caries in Malaysian School-Children

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Background: Dental caries remains a significant public health burden in Malaysia, with a high prevalence, especially in primary school children. While frequent carbohydrate consumption is the primary acidogenic trigger, the resultant microbial dysbiosis is critically modulated by host and lifestyle factors, including oral hygiene and socio-demographic status. Traditional assessments fail to capture the high-resolution microbial community shifts associated with these variables. The objective of this study was to investigate the association between Oral Hygiene Index Simplified (OHIS), salivary microbiome diversity and composition, and dental caries severity (ICDAS II) in a cohort of Malaysian school-children.

Materials and Methods: This was a cross-sectional study recruiting 60 school-children aged 7 to 12 years who attended dental check-ups at the Faculty of Dentistry, University Kebangsaan Malaysia (UKM), and Hospital Tunku Ampuan Besar Tuanku Aishah Rohani, Hospital Pakar Kanak-Kanak UKM (HPKK). Clinical assessments included caries severity using the ICDAS II criteria and oral hygiene status using the OHIS. Unstimulated saliva samples were collected, and bacterial DNA was extracted for 16S rRNA gene amplicon sequencing. The resulting sequence data were processed to determine alpha diversity, beta diversity (PCoA), and taxonomic composition. Statistical analyses employed included Chi-square and diversity index comparisons.

Results: The majority of children (65%) demonstrated a fair level of oral hygiene (OHIS). The Chi-square test indicated a statistically significant association between oral hygiene level and caries status ($p = 0.003$), with a strong relationship (Cramer's V = 0.406). Similarly, salivary pH was significantly associated with caries status ($p = 0.031$). Alpha diversity analysis showed that the Good OHIS group exhibited significantly higher InvSimpson, Shannon, and Simpson indices compared to the Fair OHIS group ($p < 0.05$ for all). Taxonomically, Firmicutes exhibited the highest relative abundance in all groups (good 45.49%, fair

48.3%). At the genus level, Streptococcus and Rothia showed a trend of increasing relative abundance in individuals with more severe OHIS, while Neisseria and Haemophilus tended to decrease.

Conclusion: The findings confirm that poor oral hygiene is a critical environmental filter driving salivary microbiome dysbiosis, characterised by reduced diversity (lower InvSimpson and Shannon indices) and an ecological shift towards potentially acidogenic taxa (increased Firmicutes, Streptococcus, and Rothia). This study provides high-resolution, integrated evidence of the interplay between clinical hygiene practices and the microbial community, which is essential for developing targeted, effective preventive strategies in Malaysian paediatric oral health.

Keywords: Dental Caries; 16S Metagenomic; Oral Hygiene Index Simplified; Microbiome Diversity

Sea, Salt and Smiles: A Glimpse into The Oral Health Realities of a Stateless Bajau Laut Family

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Background: Oral health is a vital component of overall well-being, yet achieving optimal outcomes remains challenging for marginalised and stateless groups. The Bajau Laut community in Semporna, Sabah, faces significant structural, social, and economic barriers to oral healthcare. Their stateless status, geographic isolation, and dependence on informal livelihoods limit access to dental services and preventive care. Integrating social and behavioural science (SBS) perspectives explains how cultural norms, health beliefs, and systemic inequalities shape oral health behaviours.

Materials and Methods: This community-based study was conducted on 24 May 2025 under the Dentistry for the Needy (DFTN) programme, in collaboration with NGO Borneo Komrad and Universiti Malaya. Activities included oral health education, dental screening, and basic treatment. Data were collected through clinical records, field observations, and interviews. Analysis applied SBS frameworks such as the Health Belief Model, Health Locus of Control, Maslow's Hierarchy of Needs, and Iceberg Theory.

Results: A total of 28 individuals received treatment, equally distributed by gender (14 males, 14 females). Tooth extractions (42%) were most common, followed by fillings (11%), while preventive care such as fluoride varnish, fissure sealants, and silver diamine fluoride was underutilised (<10%). Adolescents (13–17 years) and young adults (18–29 years) had the highest treatment needs, with widespread untreated caries, abscesses, and early permanent tooth loss, leading to potential functional and aesthetic challenges. Low oral health literacy, reliance on traditional remedies, financial hardship, and statelessness hindered care-seeking, while NGO support positively influenced programme participation.

Conclusion: High treatment needs and low preventive care uptake among the Bajau Laut highlight the need for community-driven education, NGO-government collaboration, and policy reforms to improve oral health equity.

Keywords: Bajau Laut; Stateless community; Oral health disparities; Social and behavioural science; Dental outreach

Presentation No: P3-7	Competing

Association of Out-of-Pocket Expenditures with Continuation and Type of Treatment among New Adult Cancer Cases at Ahsania Mission Cancer and General Hospital in Bangladesh (2023-2024): A Secondary Data Analysis

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Background: Globally, an estimated 19.3 million new cancer cases and 10.0 million deaths occurred in 2020. Bangladesh faces a high cancer burden (~167,000 new cases in 2022) with minimal financial protection for patients. Cancer treatment costs often cause "financial toxicity" distress that forces patients to skip treatment or incur debt. In Bangladesh's predominantly out-of-pocket (OOP) health system, 16% of households incur catastrophic health expenses that drive them into poverty. This study aimed to assess the association of OOP expenditure with treatment continuation and type of treatment among new adult cancer cases at Ahsania Mission Cancer & General Hospital (AMCGH).

Materials and Methods: A hospital-based analysis of secondary data was conducted on new adult cancer patients at AMCGH during 2023–2024. Key variables included OOP expenditure, treatment continuation status (continued vs. discontinued), and treatment type (chemotherapy or radiotherapy, and others). Associations were examined using chi-square tests and multivariable logistic regression (adjusting for demographics and cancer stage), with $p<0.05$ considered significant.

Results: Of 12,907 new patients, only 43.2% completed their prescribed treatment. Those who completed incurred a median OOP cost of 116,173 BDT versus 1,950 BDT among those who discontinued ($p<0.001$). Higher OOP spending significantly predicted greater odds of treatment continuation ($p<0.001$) and was also associated with receiving chemotherapy/radiotherapy ($p<0.01$). Notably, 97.3% of patients who completed treatment underwent chemotherapy or radiotherapy, compared to very few discontinuers.

Conclusion: Substantial OOP expenses present a barrier to treatment continuation and influence cancer care decisions in Bangladesh. In a health system lacking universal coverage, many patients forgo or discontinue therapy due to financial hardship. These findings highlight an urgent need for financial protection strategies (e.g., subsidies, insurance) to mitigate financial toxicity, improve treatment continuity, and ensure equitable access to cancer care.

Keywords: Out of Pocket Expenditure (OOP); Treatment Continuation; Treatment Type; Cancer Care; Bangladesh

From Classroom to Community: Nurturing Great Smiles with Magallanes Educators

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Background: The Philippines' dentist-to-population ratio is 1:53,000, far beyond the 1:7,500 WHO recommendation, indicating a significant shortage of oral health providers. Thus, the Municipality of Magallanes, together with the University of the Philippines, proposed training teachers as oral health workers. By increasing the teachers' knowledge and basic skills regarding oral health, this research aims to empower and enable them to extend oral health promotion within their communities.

Materials and Methods: Lecture workshops covered five modules: anatomy of the mouth, common oral diseases and treatment, preventive dental strategies, effects of smoking and alcohol on oral health, and common dental injuries and trauma. Toothbrushing and oral screening demonstrations were also conducted. Twenty-nine participants (16 daycare workers and 13 public school teachers) were evaluated through pre-test, post-test, and return demonstration. Follow-up evaluation was conducted five months after training.

Results: Participants demonstrated increased knowledge, with average scores increasing from 80.36% on pre-test to 90.36% on post-test. All 29 participants correctly performed proper toothbrushing during return demonstrations. Five months after training, teachers were able to teach and demonstrate correct toothbrushing techniques to students and parents. All schools utilized the provided dental models and toothbrushing posters which were prominently displayed in their wash facilities.

Conclusion: This research showed that community-based training can help increase the teachers' oral health knowledge and practical skills, enabling them to serve as informed community members and effective advocates for proper oral health practices for Magalleños.

Keywords: Capacity building**;** Oral health; School teachers; Community dentistry

Presentation No: P3-9	Competiting

Benchmarking Large Language Models for Dental Clinical Decision Support: A BERT Score Analysis of Claude Opus 4.5

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Background: Large language models (LLMs) are increasingly explored as clinical decision support systems (CDSS) in healthcare; however, their application in dentistry remains understudied, particularly regarding semantic similarity between AI-generated recommendations and actual clinical treatments. This study aimed to evaluate the semantic alignment of Claude Opus 4.5 as a dental CDSS with published treatment plans using BERT Score analysis.

Materials and Methods: A cross-sectional study analyzed 116 dental case reports from Case Reports in Dentistry journal (2024-2025). Case presentations were input into Claude Opus 4.5 configured with a standardized CDSS prompt, and AI-generated recommendations were compared against published treatments using BERT Score metrics across nine dental specialties.

Results: The overall mean BERT Score F1 was 0.8199 ± 0.0144 (95% CI: 0.8172-0.8225). Oral and Maxillofacial Surgery had the highest case representation (n=46, 39.7%). No significant differences existed between dental specialties (Kruskal-Wallis p=0.386). A significant negative correlation was observed between response time and BERT Score (ρ=-0.371, p<0.001), and the BERT Score significantly exceeded the 0.80 threshold (p<0.001, Cohen's d=1.38).

Conclusion: Claude Opus 4.5 demonstrates strong semantic alignment with published dental treatment plans across all specialties, suggesting potential utility as a supplementary CDSS tool in dental practice while maintaining essential human clinical judgment.

Keywords: Artificial Intelligence, Large Language Models, Clinical Decision Support System, Dentistry, BERT Score

Interprofessional Collaboration in Dentistry: Family Medicine Perspective on Oral Health Promotion

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Background: Given the aim of practice of family physicians as primary health care for patients, this study assessed professional practices related to patients' oral health.

Materials and Methods: A sample of 110 family physicians (mean age=50.79; 99 women) completed an anonymous questionnaire assessing practices concerning medical history taking, oral cavity examination, and topics perceived as necessary for professional training. Two categories of professional experience were compared: physicians with more than 20 years of experience and those with less than 20 years.

Results: 60% reported performing routine oral cavity examinations, and 56.4% indicated permanent collaboration with dentists. 30% referred patients to a dentist for oral conditions, while 64.5% referred them to an ENT specialist. Regarding training needs, 87% identified patient education on risk factors as the primary topic in preventing oral diseases. Analyses revealed significant differences: physicians with over 20 years of experience performed more comprehensive history (t=2.55–3.16), wrote medical referral letters more frequently (t=3.94–6.70), and showed greater interest in oral health training (t=3.16–5.67). Physicians with less experience integrate more often the oral exam into the general patient assessment and were attentive to referrals in case of systemic diseases (t=2.71–4.02).

Conclusion: Professional experience differentially shapes oral health approaches. More experienced physicians display practice patterns oriented toward rigorous documentation, whereas less experienced more frequently integrate oral examinations into routine care. Involvement of family physicians is essential for primary and secondary prevention of oral diseases, including risk assessment through oral screening of all patients.

Keywords: Interprofessional collaboration; Oral health; Family physicians; Primary prevention; Secondary Prevention

Caries Incidence in First Permanent Molars among Children Exposed to Different Fluoride Levels

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Background: Malaysia has a long history of implementing WF for population based caries prevention. However, WF was discontinued in Pahang in 2012, and the impact on caries progression remained underexplored. This study aimed to compare the caries incidence rates of first permanent molars (FPMs) among children exposed to different fluoride levels in Malaysia.

Materials and Methods: A retrospective cohort study was conducted using school dental records of children with WF-ceased (Pahang) and those with full WF exposure (Perak). A total 462 records from 2015 to 2019 were analysed. Caries was assessed using Decayed, Missing, and Filled Teeth (DMTF) Index at baseline (age 8) old and at follow-up (age 12). Cumulative incidence was calculated as the number of children who were caries-free at baseline but developed FPM caries during follow-up. Incidence rate was the number of new carious FPMs per 100 FPM teeth-years at risk.

Results: The cumulative caries incidence in FPMs was significantly higher among schoolchildren in Pahang (30.2%) compared to those in Perak (8.4%) at follow-up. Over five years, children in fluoridated areas had lower risk of developing FPM caries (RR: 0.28, CI:0.17-0.45) than those in WF-ceased areas. Tooth 46 showed the highest number of newly developed lesions, followed by teeth 36, 16, and 26. The caries incidence rate was also higher in Pahang (3.80 per 100 FPM tooth-years) compared to Perak (0.80 per 100 FPM tooth-years). Multivariate analysis indicated WF exposure as a significant protective factor.

Conclusion:. Children with less WF exposure experienced greater caries progression, highlighting the importance of sustaining and strengthening WF policies in Malaysia.

Keywords: Caries; Children; Oral health; Water fluoridation

Strengthening The Oral Health Workforce for Filipino Children: Insights from Scotland and Thailand

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Introduction: Integrating oral health into primary health care (PHC) is essential to addressing the burden of oral diseases, particularly among vulnerable groups such as children. A well-distributed and adequately trained oral health workforce (OHWF) is critical to delivering effective services. In the Philippines, challenges such as limited workforce numbers, geographic maldistribution, and weak integration into PHC hinder equitable child oral health service delivery. This study aimed to identify strategies to strengthen the OHWF for child-focused services by drawing lessons from international models.

Methods: A comparative analysis of the OHWF structures and strategies in the Philippines, Scotland, and Thailand was conducted. Data were drawn from 34 sources identified through systematic searches of PubMed and Web of Science, citation tracking, and grey literature review. A thematic analysis was applied to extract recurring workforce strategies across the three country case studies.

Results: Five interrelated themes emerged: (1) reassignment of preventive and routine tasks to trained non-dental personnel; (2) reduction of workforce migration and improved retention in rural areas through fair job opportunities; (3) redistribution of workforce resources from urban to underserved areas; (4) recruitment of individuals from disadvantaged regions via expanded and equitable training pathways; and (5) recalibration of dental education to promote community engagement and social accountability.

Conclusion: Findings suggest that skill-mix models, targeted recruitment, structured post-graduation service commitments, and socially accountable education can strengthen OHWF capacity. Implementing these strategies in the Philippines requires a holistic, systems- thinking approach to improve workforce availability, distribution, and efficiency and to advance oral health equity.

Keywords: Oral Health; Children; Health Workforce; Primary Health Care; Philippines

Postoperative Pain and Oral Health–Related Quality of Life following Emergency Endodontic Treatment: A Prospective Clinical Study

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Background: Factors influencing postoperative pain and oral health–related quality of life (OHRQoL) in the endodontic field remains insufficiently explored. This study aimed to evaluate postoperative changes in pain and OHRQoL and identify predictive factors associated with these outcomes.

Materials and Methods: Ninety-seven patients presenting with moderate to severe endodontic pain were enrolled in this prospective cohort study. Preoperative pain was assessed using the numeric rating scale, and OHRQoL was measured with the Oral Health Impact Profile-14. All patients received emergency endodontic intervention. Postoperative pain and OHRQoL were recorded at days 1, 2, and 7 and were analyzed using the Friedman test with Dunn's post hoc test and Bonferroni correction. Linear regression identified predictors of postoperative outcomes, and Spearman's correlation examined associations between pain intensity and OHRQoL. Statistical significance was set at $p < 0.05$.

Results: Postoperative pain decreased significantly over time ($p < 0.001$), with the greatest reduction occurring within the first 24 hours. OHRQoL improved significantly across the 7-day period ($p < 0.001$) and demonstrated a strong positive correlation with pain reduction ($r = 0.655$, $p < 0.001$). Preoperative pain severity was the only significant predictor of postoperative pain ($p < 0.005$). Both preoperative pain intensity and the type of emergency treatment were significantly associated with OHRQoL improvement ($p < 0.005$).

Conclusion: Emergency endodontic treatment effectively reduces pain and enhances OHRQoL. Complete canal debridement and appropriate preoperative pain management may contribute to better patient-reported outcomes.

Keywords: Endodontic; Postoperative pain; Oral health–related quality of life

Investigation of Undergraduate Dental Students' Attitudes Toward Dental Dam Use in Endodontic Treatment: A Cross-Sectional Study

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Background: The dental dam is regarded as a mandatory adjunct in endodontic treatment, and its use is compulsory for students during clinical endodontic procedures. Therefore, this study aims to evaluate dental students' attitudes toward the use of the dental dam in endodontic clinics and to assess its prospective application after graduation.

Materials and Methods: A cross-sectional study was conducted using a self-administered questionnaire distributed to a random sample of 57 undergraduate dental students. The questionnaire included items on factors contributing to difficulties in dental dam use, perceived efficacy of its application, and intended future use in clinical practice. It was pretested and validated prior to distribution.

Results: Out of 57 distributed questionnaires, 18 were completed, yielding a response rate of 32.2%. The main factors contributing to difficulty in dental dam use were clamp selection (54.38%), placement of the dental dam itself (45.61%), and the need for assistance during placement (98.27%). Most respondents also perceived the dental dam as effective in improving treatment quality and safety. Furthermore, 72.41% of students indicated their intention to continue using dental dams for all indicated procedures after graduation.

Conclusion: Students found dental dam application challenging, especially clamp selection, placement, and the need for assistance. Nevertheless, they recognized its efficacy and expressed willingness to use it in future practice. Further studies are recommended to explore strategies to improve dental dam training and ease of use.

Keywords: Dental Dam; Endodontic Treatment; Survey; Undergraduate

Presentation No: P4-6	Competing

Molding Future Dentists Through Community Deployments: Course Learning Outcomes Validated by Dental Students' Experiences

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Background: Developing, implementing, and advocating for oral health promotion activities and improving capacity-building initiatives in communities are the main objectives of the Dental Public Health Practice course integral to the dental curriculum. Different training modalities are utilized in this course that are applied to the dental students' community deployments. This study aims to determine if the course learning outcomes are met in these training modalities through analyzing post-deployment student reflections.

Materials and Methods: This qualitative descriptive study analyzed guided post-community deployment and end-of-rotation reflections from 17 dental students. The reflections focused on experiential learnings, possible applications in future practice, and shifts in professional perspectives. The investigators individually reviewed the reflections and identified recurring themes. Themes were then aligned with the course learning outcomes.

Results: Analysis of the dental students' reflections revealed five main themes: Community Engagement, Character Building, Clinical Skills Enhancement, Oral Health Promotion Responsibility, and Service to the People. Reflections highlighted students' involvement in planning and implementing oral health programs, collaboration with community stakeholders and other health professionals, and development of individual personal and behavioral competencies. Students also demonstrated increased understanding of their roles in promoting and advocating for good oral health and improving access to dental care for the underserved, in line with the Dental Public Health Practice course outcomes.

Conclusion: Course learning outcomes were achieved as students' reflections demonstrated their increased awareness regarding the oral health situation in the community and a strengthened sense of social responsibility, as well as improved character and clinical skills.

Keywords: Community Dentistry; Dental Education; Dental Students; Teaching Methods; Community Health Education

Interprofessional Education in a Community-Based Setting: A Reflection Analysis

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Background: The ability to collaborate across disciplines is crucial for future dental professionals to advocate for oral health, integrate preventive strategies into community programs, and work effectively within multidisciplinary teams. This reflection analysis aims to explore how participation in an interprofessional education (IPE) session contributed to constructive educational outcomes of dental interns.

Materials and Methods: A faculty-facilitated IPE activity was incorporated into a community rotation of graduating interns from Dentistry, Medicine, and Public Health. Narrative reflections of seven Dental Intern participants were analyzed thematically across three domains: personal insights, professional identity and responsibilities, and interprofessional learning.

Results: Analysis revealed a shift from initial reluctance to enhanced confidence and enthusiasm. Within the personal domain, participants outlined clear communication, collaboration, systems-thinking, and advocacy as strengths, despite perceived limitations in grasping complex public health concepts. Professionally, dental interns successfully advocated oral health within the overall systemic well-being. Prevention was the shared goal of all professions. Interprofessional learning highlighted discipline-specific contributions: Medicine's clinical diagnosis focus, Public Health's policy orientation, and Dentistry's oral-systemic health integration, demonstrating that combined roles bring about holistic community outcomes. Participants emphasized the value of interactive activities and suggested allocating more time for group discussions, case scenarios, and opportunities to share practical skills with other professions.

Conclusion: Core competencies such as advocacy skills and ability to integrate oral health within broader community health strategies are developed through IPE. Reflections underscored the need for continued and expanded IPE opportunities as part of dental education to promote interprofessional collaborative practice.

Keywords: Interprofessional Education; Health Workforce; Oral Health; Dental Education

Elicitation of Swallowing Reflex during Laryngeal Thermal Stimulation in Anesthetized Rats

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Background: Activation of thermosensitive transient receptor potential (TRP) channels is suggested to facilitate swallowing reflex in patients with dysphagia. However, how thermal stimulation modulates swallowing reflexes remains unclear. This study aims to investigate the effect of laryngeal thermal stimulation on swallowing initiation in anesthetized rats.

Materials and Methods: Experiments were carried out using urethane-anesthetized Sprague-Dawley male rats. After an incision laterally just above the vocal folds, peltier-controlled temperature delivering device was placed on vocal folds and the number of swallows evoked by 10°C, 20°C and 50°C stimulations for 3 seconds were measured. A swallow was identified by digastric and thyrohyoid electromyographic bursts. Next, the effects of laryngeal application of small amount (3μl) of capsazepine and SB366791 (TRPV1 antagonists) and bilateral transection of superior laryngeal nerves (SLNx) on 50°C-evoked swallows were evaluated. In histological experiment, lipophilic neuronal tracer DiI (4%, 1 μl) was injected into the right side of the vocal fold to investigate the laryngeal sensory innervation. TRPV1 expression in glossopharyngeal and vagal ganglia was evaluated seven days after DiI injection.

Results: 50°C stimulation evoked a number of swallows, while the number of swallows was low with 10°C and 20°C stimuli. TRPV1 antagonists significantly reduced the number of 50°C-evoked swallows, and bilateral SLNx abolished 50 °C-evoked swallows. Approximately half of DiI positive cells expressed TRPV1 receptors in the nodose, petrosal and jugular ganglia.

Conclusion: These results indicate that laryngeal heat stimulation evokes the swallowing reflex through activation of TRPV1. Half of sensory neurons innervating the larynx express TRPV1.

Keywords: TRPV1; Swallowing reflex; Vagal ganglia

Saliva Swallowing Performance as a Predictor of Eating Function: An RSST-Based Analysis

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Background: Repetitive Saliva Swallowing Test (RSST) is widely used as a bedside screening tool for patients with swallowing disorders; however, its predictive validity relative to instrumental assessments, such as Fiberoptic Endoscopic Evaluation of Swallowing (FEES), and its association with functional oral intake remain inadequately defined. Establishing whether the RSST provides independent predictive item may aid in the early identification of dysphagia, particularly when instrumental assessment is limited. This study aimed to determine whether RSST independently predicts Functional Oral Intake Scale (FOIS) levels and to examine its relationship with FEES-derived physiological parameters and global functional status, including Japan Coma Scale (JCS) and Functional Independence Measure (FIM).

Materials and Methods: A cross-sectional study of 41 inpatients with suspected dysphagia, admitted to Niigata University Medical and Dental Hospital, was conducted. A complete case analysis (n = 31) was performed for the FEES-integrated modelling. Spearman's correlations assessed associations among RSST, FEES parameters, FOIS, JCS, and FIM. Ordinal logistic regression with a logit link identified the independent predictors of FOIS.

Results: The RSST showed the strongest correlation with FOIS ($\rho = 0.406$, $p = .008$), whereas the FEES parameters, JCS, and FIM demonstrated weak or nonsignificant associations. RSST was the only significant independent predictor of FOIS ($\beta = 0.56$, OR = 1.74, 95% CI 1.08–2.81, $p = .023$).

Conclusion: The RSST provides unique and clinically meaningful predictive value for functional oral intake, outperforming FEES-derived physiological measures and global functional indices, and serves as a rapid, practical tool for early dysphagia screening and diet-advancement decision-making.

Keywords: Dysphagia; Fiberoptic endoscopic evaluation of swallowing; Functional oral intake scale; Repetitive saliva swallowing test

Effect of potassium on voluntary swallowing performance in healthy humans

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Background: Swallowing can be evoked by either peripheral or central inputs to so called swallowing central pattern generator in the brainstem. Regarding peripheral mechanism of swallowing initiation, we previously suggested that potassium ion facilitates swallowing reflex in animals and humans. The current study aimed to clarify whether potassium ion-containing solution facilitates voluntary swallowing and how the swallowing muscle activity is affected by potassium in healthy adults.

Materials and Methods: Nine healthy young volunteers were instructed to swallow as quickly as possible for 1 min while either distilled water (DW), 154 mM sodium chloride (NaCl) or 154 mM potassium chloride (KCl) was applied to the pharynx at two rates (0.2 mL/min and 3.0 mL/min). Electromyograms (EMGs) were recorded from suprahyoid muscles to characterize the property of swallowing muscle activity. The number of swallows was counted, and the time interval between consecutive swallows was measured. EMG activity was rectified and evaluated using peak amplitude and integral value of swallowing burst. One-way repeated measures analysis of variance (ANOVA) was performed, followed by a post hoc Tukey's test to determine the effect of solution.

Results: The number of swallows was the largest and time interval between the swallows was the smallest for KCl at 3.0 mL/min. The swallowing EMG activity was not different among the solutions. The time interval between the swallows was gradually increased with time for NaCl while it did not differ for DW and KCl.

Conclusion: Potassium applied to the pharynx facilitates voluntary swallowing in humans.

Keywords: Electromyography; Potassium chloride; Swallowing

Differences in Tongue Muscle Activity during Chewing of Rice with Various Textures

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Background: The tongue performs finely coordinated movements in response to peripheral factors such as food texture in food processing; however few studies have quantitatively evaluated change of tongue movement in this process. This study aimed to quantify tongue muscle activity during chewing rice with various physical properties.

Materials and Methods: Ten young healthy volunteers were instructed to chew unilaterally three types of rice-based foods (regular, soft, extra soft) with different physical properties on either left or right side, randomly. The masseter and suprahyoid electromyograms (EMGs) were recorded using conventional surface electrodes (NM-319Y, NIHON KODEN, Japan) and the tongue EMG was recorded using suction surface electrodes (TK221-006e, Unique Medical, Japan). The chewing process was divided into three stages; early, middle, and late. The changes of muscle activity per cycle were evaluated according to the chewing side (occlusal or balancing) separately. Physical property and water content of foods were also measured at each three stage.

Results: Masseter muscle activity was significantly higher for regular rice than that for extra soft rice in the early and middle stage. On the other hand, tongue muscle activity was significantly higher for extra soft rice than that for regular rice in the late stage. Regarding physical properties of the food bolus, extra soft rice exhibited significantly higher cohesiveness and water content than the other foods in the late stage.

Conclusion: Quantitative measurements of tongue muscle activity demonstrated that tongue movements are modulated depending on the chewing process and the physical properties of the bolus.

Keywords: Tongue; Electromyogram; Chewing; Food physical property

"Eat Right and Smile Bright" An Oral Health and Nutrition Workshop for the Barangay Nutrition Scholars (BNS) of Maragondon

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Background: Early childhood caries (ECC) remains a public health concern in the Philippines affecting 85.2% of children aged five, which shows necessity for earlier preventive measures. Barangay Nutrition Scholars (BNS) are local community health workers who implement feeding programs, monitor expectant and lactating mothers, and track the growth and nutritional status of children aged 0–5. To increase BNS knowledge and confidence in engaging the community, an oral health and nutrition workshop was conducted.

Materials and Methods: Twenty-one BNS from Maragondon attended a whole-day workshop facilitated by dental interns and the community dentist. Modules focused on the first 1000 days, proper oral hygiene, balanced diet, sugar intake, behavior change strategies, and dental home concept, BNS's role in preventing ECC was emphasized. Pre-test and post-test questionnaires, and Likert-scale surveys assessed outcomes. To consolidate knowledge, open discussions, a snack planning game, and role-playing scenarios were conducted.

Results: BNS exhibited active participation in learning about community oral health. Questionnaire results revealed an increase in knowledge, from zero perfect pre-test scores to 80% perfect post-test scores. Post-training Likert-scale results also showed increased BNS self-confidence and commitment in oral health promotion.

Conclusion: An increase in knowledge and confidence among BNS highlights the effectiveness of targeted oral health and nutrition workshop, which can strengthen ECC prevention at the grassroots level. Findings support developing training materials and integrating similar workshops into BNS capacity building. Future studies may assess the impact of the workshop on BNS and community interactions and changes in prevalence of ECC.

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