UNIVERSITI SAINS MALAYSIA

17TH NDSSC
REVOLUTIONISING ORAL HEALTH THROUGH AI

Organised by
PUSAT PENGAJIAN SAINS PERGIGIAN
SCHOOL OF DENTAL SCIENCES
and
PERSATUAN SAINS PERGIGIAN
DENTAL STUDENTS SOCIETY, USM

17TH NATIONAL DENTAL STUDENTS SCIENTIFIC CONFERENCE

Revolutionising Oral Health through AI

SATURDAY
8 A.M. - 5 P.M.

HEALTH CAMPUS
UNIVERSITI SAINS MALAYSIA

EVENT DATE **5 JULY 2025**

PROGRAMME & ABSTRACT BOOK

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Welcome to

17th National Dental Students Scientific Conference 2025

17TH NDSSC

REVOLUTIONISING ORAL HEALTH THROUGH AI

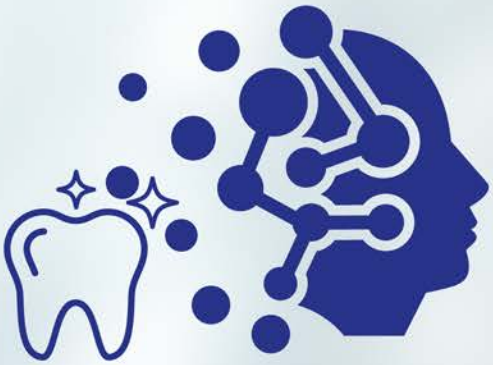
Introduction

17th National Dental Students Scientific Conference

The 17th National Dental Students Scientific Conference is a premier event that brings together aspiring dental professionals, researchers, and educators to explore the latest advancements in dental science and technology. As an annual gathering, this conference serves as a vital platform for dental students from all dental institutions in Malaysia to present their research, exchange ideas, and engage in academic discussions that shape the future of dentistry.

With the ever-evolving landscape of oral healthcare, scientific inquiry and innovation play a crucial role in enhancing clinical practices and improving patient outcomes. This year's conference aims to foster a culture of scientific excellence by providing students with opportunities to showcase their research, gain valuable insights from industry experts, and develop essential skills for their professional careers.

Through keynote lectures, oral and poster presentations, as well as enhancement educational activities, the 17th National Dental Students Scientific Conference will empower students to bridge the gap between research and practice. It will also encourage interdisciplinary collaboration, ultimately contributing to the advancement of dental science on a national and global scale.



17TH NDSSC

REVOLUTIONISING ORAL HEALTH THROUGH AI

Message from

Professor Dr. Norhayati Luddin
Dean, School of Dental Sciences
Health Campus, USM

Assalamualaikum warahmatullahi wabarakatuh and greetings,

It is with great honour and pleasure that I welcome all distinguished guests, speakers, academic staff, and student participants to the 17th National Dental Students Scientific Conference (NDSSC) 2025, hosted by the School of Dental Sciences, Universiti Sains Malaysia.

This esteemed annual event serves as a vital platform for dental students across Malaysia to present their research, exchange scholarly ideas, and engage in academic discussions that contribute meaningfully to the advancement of dental education and practice. We are proud to witness the continued growth of this conference, which remains dedicated to nurturing future leaders in the field of dentistry.

The theme for this year's conference, "Revolutionising Oral Health through AI" is both relevant and forward-thinking. The integration of artificial intelligence in healthcare holds immense potential to enhance diagnostic accuracy, treatment planning, and clinical decision-making. As such, this conference offers an important opportunity for students to explore how emerging technologies can shape the future of oral healthcare.

In addition to the scientific presentations - both oral and e-poster - we are pleased to offer a diverse range of student enrichment competitions. These activities are designed to complement the academic program by promoting creativity, critical thinking, and interdisciplinary engagement.

I would like to extend my deepest appreciation to the organising committee, academic reviewers, speakers, and judges for their dedication and commitment in making this event a success. Your contribution to nurturing the next generation of dental professionals is invaluable.

To all participants, I encourage you to make the most of this opportunity - to learn, engage, and collaborate with one another. May this conference inspire new ideas, strengthen professional networks, and motivate you to pursue continuous growth in your academic and clinical journey.

Wishing you a successful and enriching experience at the 17th NDSSC 2025.

Thank you.

Message from

Dr Nurhafizah binti Ghani
Conference Director, 17th NDSSC

Assalamualaikum warahmatullahi wabarakatuh and greetings,

On behalf of the School of Dental Sciences, Universiti Sains Malaysia, I extend a warm welcome to all distinguished guests, esteemed speakers, dedicated participants, and enthusiastic students to the 17th National Dental Students Scientific Conference 2025. We are delighted to welcome representatives from dental institutions throughout Malaysia. Your presence signifies a collective dedication to advancing dental research and fostering a strong, collaborative academic community.

This National Dental Students Scientific Conference has long served as a vital platform to cultivate a research-oriented mindset among future dental professionals. It offers students an opportunity to present their scholarly work and provides a nurturing space to sharpen their scientific communication skills, receive constructive feedback, and develop networks that will support their professional journey.

This year's theme, "Revolutionising Oral Health through AI" is both timely and relevant. In a rapidly evolving healthcare landscape, research is the foundation for clinical innovation and improved patient outcomes. We are confident that the work presented at this conference will inspire new ideas, stimulate critical discussion, and pave the way for impactful contributions to dental practice.

I want to acknowledge the continuous efforts and dedication of the organising committee, the scientific and academic reviewers, and our invited speakers and judges, who have contributed their time and expertise to ensure the success of this conference. Your commitment is deeply appreciated. To all participants, I encourage you to make the most of this opportunity—not only to present your work but to engage fully, ask questions, exchange insights, and build lasting academic collaborations.

May the 17th NDSSC be a rewarding and enriching experience for everyone involved.

Thank you.

Organising Committee

17th National Dental Students Scientific Conference

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Advisor II: Dr. Norhayati Yusop

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17th National Dental Students Scientific Conference

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Yvonne Wong Huey Chi

Program Schedule

17th National Dental Students Scientific Conference

5 July 2025 (Saturday)
Health Campus, Universiti Sains Malaysia

TIME	ACTIVITIES	ENRICHMENT ACTIVITIES
0745	Registration	
0815	Ceremonial procession of VIPs	(1) Tooth & Travel competition
0825	National Athem "Negaraku" & USM official song "Menara Ilmu" Corporate video presentation Doa recital	
0835	**Welcoming & Officiating Speech** **Professor Dr. Norhayati Luddin** Dean, School of Dental Sciences	
0845	Student's opening performance	
0900	**Keynote Lecture** **Professor Dr. Zabidi Azhar Mohd Hussin** "The Virtual Transformation of Medical & Dental Education: Post-COVID-19"	
0930	Lucky draw (1)	
0940	Break-up session	
0945	Oral & e-Poster presentation	
1000		(2) Digital Dentistry – 3D Scan (3) Plastinomy – Skull Edition
1300	Lunch & Zuhur prayer	
1400	e-Poster display	
1530	**Plenary Lecture** **Professor Dr. Mohd Yusmiaidil Putera Mohd Yusof** "Drill, Fill...and Digitize: Embracing AI Without Losing Your Drill"	
1600	Lucky draw (2)	
1600	**Sponsor talk**	
1630	Award presentation & Lucky draw (3)	
1700	Closing ceremony	

Bibliography Keynote Speaker

Professor Dr. Zabidi Azhar Mohd Hussin

Professor of Paediatrics, University of Cyberjaya

Professor Dr. Zabidi Hussin was born in an isolated kampung in Pasir Mas, Kelantan and received his secondary studies in MRSM Pengkalan Chepa. He continued his studies in the field of Medicine at the University of Newcastle-upon-Tyne, England and graduated in 1985.

He subsequently worked and pursued his further studies in Paediatrics and Medicine in Newcastle and obtained the Diploma in Child Health and Membership of the Royal College of Medicine. He was awarded the Fellowship of the Royal College of Paediatrics and Child Health in 1991. He received further training in Paediatric Neurology in Sydney, Tokyo and Baylor College of Medicine, USA. He served at the Universiti Sains Malaysia for 25 years until he retired at the age of 55 in 2016.

Over the years, he has held several significant academic and leadership positions. Currently, Professor Dr. Zabidi Hussin is the Professor of Paediatrics at the University of Cyberjaya. Previously, he served as the Vice Chancellor of University of Cyberjaya and Perdana University and the Deputy Vice-Chancellor of the International Medical University (IMU). His career reflects a strong commitment to medical education, leadership, and the advancement of paediatric healthcare.

Bibliography Plenary Speaker

Professor Dr. Mohd Yusmiaidil Putera Mohd Yusof

Consultant Forensic Odontologist & Oral and Maxillofacial Radiologist

Professor Dr. Mohd Yusmiaidil Putera Mohd Yusof is a Professor at Universiti Teknologi MARA and a national board-certified clinical specialist in both Forensic Odontology and Oral and Maxillofacial Radiology. He is an Adjunct Visiting Professor at University of Turin, Italy and is currently the Principal Fellow of the Institute of Pathology, Laboratory and Forensic Medicine (I-PPerForM), a Higher Institution Centre of Excellence (HICoE) focusing on multidisciplinary approach for forensic identification and biological profiling with emphasis on utilizing emerging technologies.

A man of many hats, Professor Dr. Mohd Yusmiaidil is also serving as a Chairman for the Patient Complaint Bureau under the auspices of the Malaysian Dental Association where he and his bureau members mediate issues and disputes arise between both patients and clinicians. He is a member under the International Forensic Odontology Sub-Working Group (INTERPOL Disaster Victim Identification Working Group).

From 2016 to date, he has published 74 scientific publications with 45% of publications were published in Q1/Q2 JCR-indexed journals under two discipline-based categories namely Dentistry, Oral Surgery and Medicine and Legal Medicine. 95% of his total publications were published in Scopus-indexed journals.

His primary research activities revolve around skeletal and dental age assessments. He developed dental age prediction models and constructed a new maturity scale of teeth developmental staging based on the Malaysian population. His team won the prestigious Geneva International Exhibition of Inventions 2025 on the AI-Powered Growth Prediction System. The team also won Kreso Glavac Special Innovation Award and gold award in MTE and IIDEX, respectively on automated Forensic Dental Age Estimation Lab (F-DentEst Lab) project. He has deep interest towards automated diagnostics by means of machine learning and emerging technologies.


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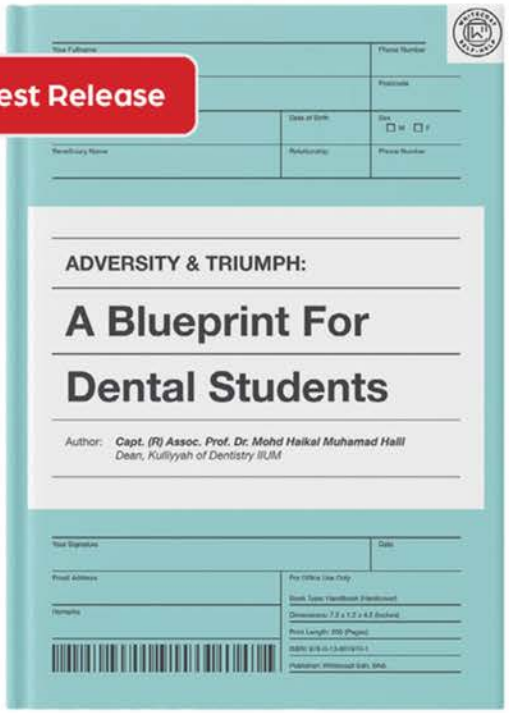

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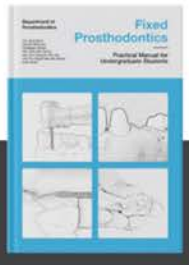

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Designers	– 4
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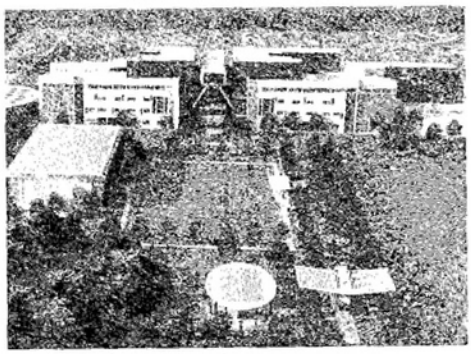

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- Time Management.
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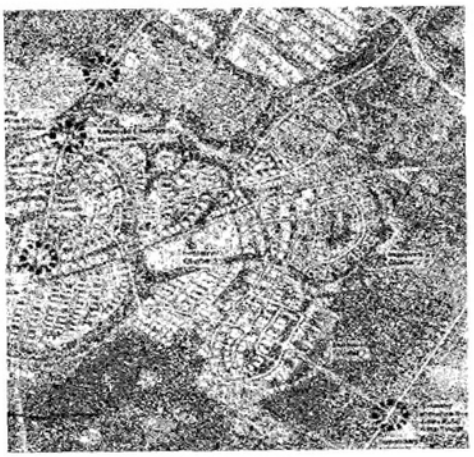
Commercial Development, Selangor



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RAILWAY

- Upgrading Klang Valley Double Track (KVDT).

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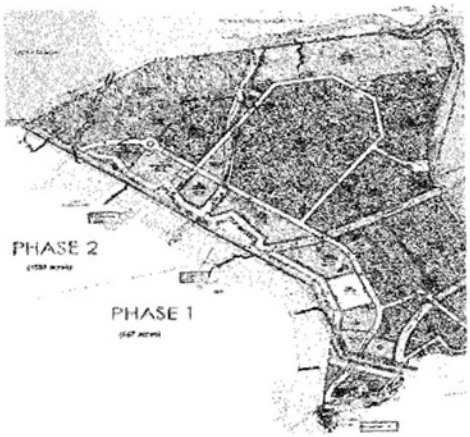

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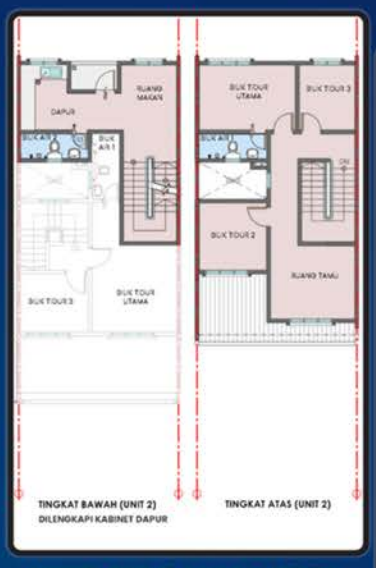

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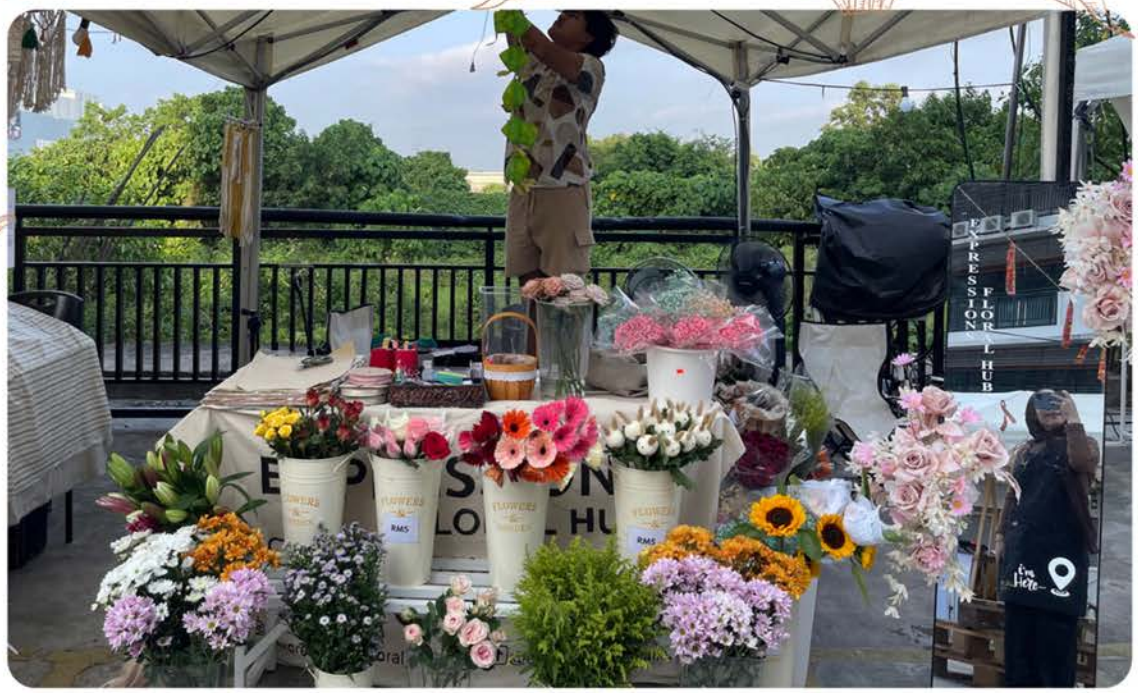

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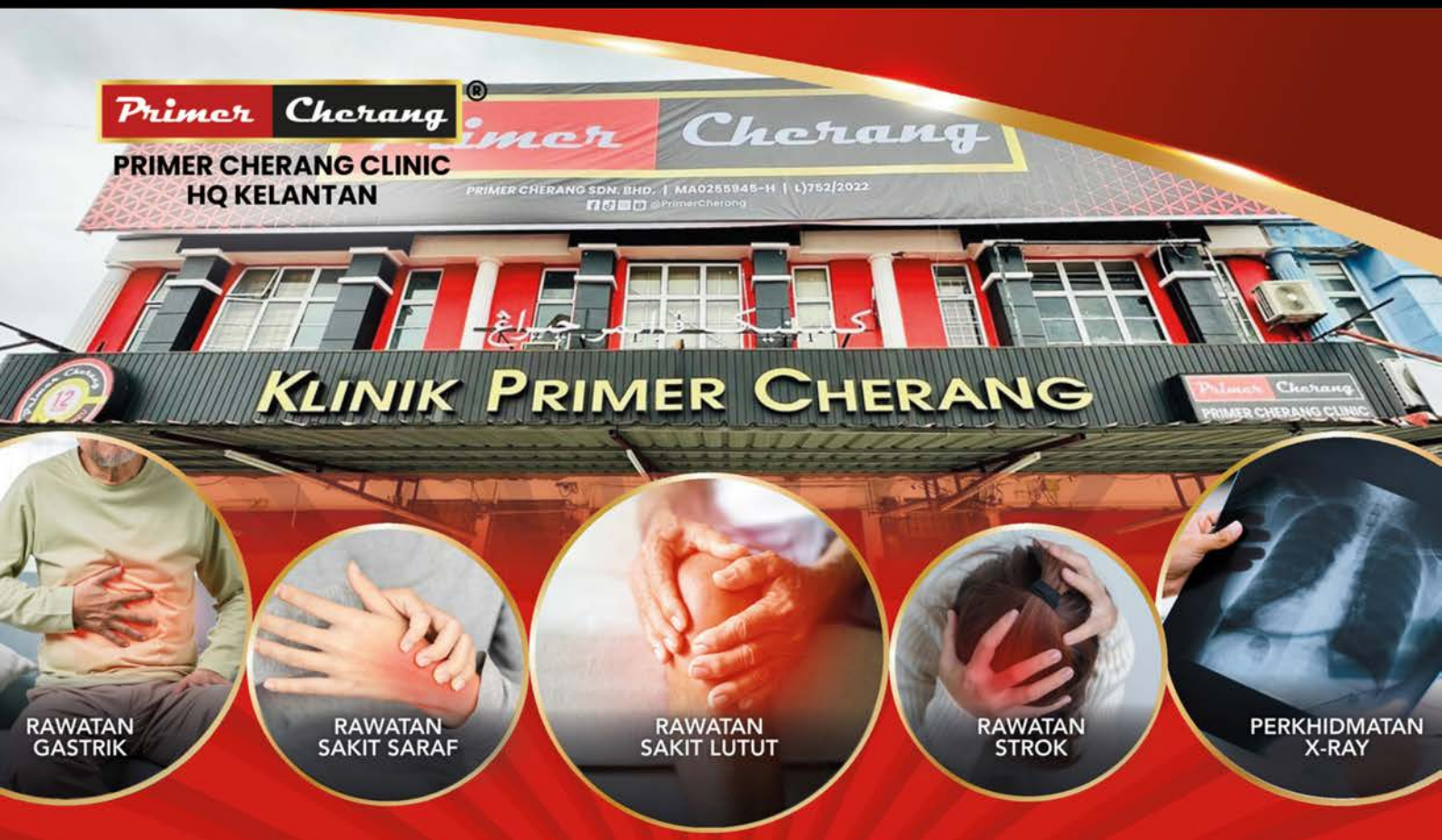

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Traditional Thai Massage: Rm170 / Slot 2 jam

Rawatan seluruh badan yang menggabungkan teknik akupresur, regangan Thai dan tekanan berirama tanpa penggunaan minyak. Dilakukan di atas tilam, terapis akan menggunakan tangan, siku, lutut dan kaki untuk melepaskan ketegangan, melancarkan aliran tenaga (Sen), dan seimbangkan semula tubuh anda.

Thai Spot Massage: Rm180 / Slot 2 jam

Rawatan seluruh badan yang menggabungkan teknik akupresur, regangan Thai dan tekanan berirama tanpa penggunaan minyak. Dilakukan di atas tilam, terapis akan menggunakan tangan, siku, lutut dan kaki untuk melepaskan ketegangan, melancarkan aliran tenaga (Sen), dan seimbangkan semula tubuh anda.

Thai Yoga Stretching: Rm180 / Slot 2 jam

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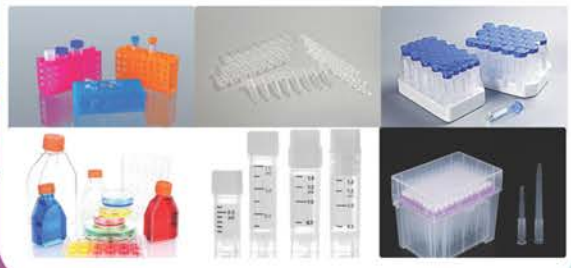

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PRESENTATION SCHEDULE

Oral Presentation
e-Poster Presentation

Presenter Schedule

Oral Presentation

5 July 2025 (Saturday)
Lecture Hall 1, School of Dental Sciences, USM

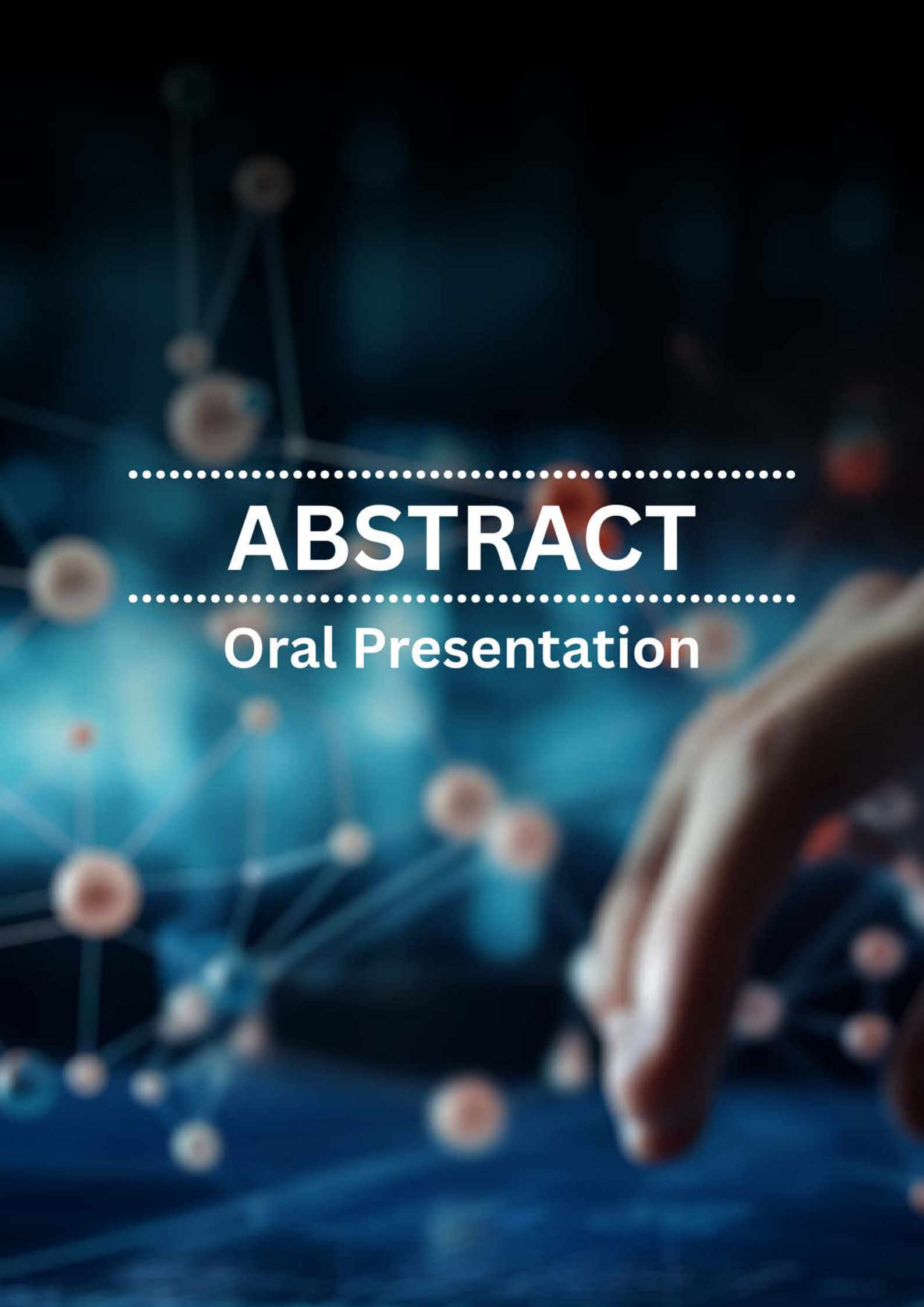
NO	TIME	PRESENTERS	TITLE
OP1	9.45	Ubadah Zamry, Siti Nabilah Huda Mohamad Nor, Dinie Qurratuaini Zulkifly, Mohd Haikal Muhamad Halil	FRACTURE RESISTANCE OF ENDODONTICALLY TREATED TEETH RESTORED WITH DIFFERENT RESTORATIVE TECHNIQUES: AN IN VITRO ANALYSIS
OP2	10.00	Gwee Xiang Qi, Shammie Kong Yan Zhi, Arvin Ling Ting Yung, Terrance Tan Xuan Yu, Venkata Bharathwaj, Karthik Kannaiyan	DIAGNOSTIC TEST ACCURACY OF COLOR GRAB™ APP AND WHAT A COLOR?™ APP FOR PORCELAIN SHADE SELECTION
OP3	10.15	Uzair Yusoff Ahmad Raflis, Siti Noor Adnalizawati Adnan	ANTIBACTERIAL ACTIVITY OF STINGLESS BEE (*Heterotrigona itama*) BEEHIVE CRUDE EXTRACTS AGAINST *Streptococcus mutans* AND *Staphylococcus aureus* AND PHYTOCHEMICAL ANALYSIS OF THE MOST POTENT EXTRACT
OP4	10.30	Andek Nurul Hafizah Andek Jelantek, Siti Nuriah Mohd Noor, Noor Khairiena Mohamad, Kannan Thirumulu Ponnuraj	EVALUATION OF ANTIMICROBIAL ACTIVITY OF KELULUT HONEY AGAINST ORAL PATHOGENS
OP5	10.45	Amanda Chiong Swee Yee, Ethan Ting Sheng, Sofya Zulkifli, Noor Azlin Yahya	CHAMELEON EFFECT AND COLOUR STABILITY OF NANO-FILLED RESIN COMPOSITES
OP6	11.00	Win Nie Lim, Xin Yuan Chong, Fong Fong Liew, Der Jiun Ooi	EXPLORING BIOSURFACTANTS FOR SUSTAINABLE AND EFFECTIVE TOOTH WHITENING
OP7	11.15	Sneha Ananda Raja, Sriwarrni V.Ravi Varman, Tan Hui Yu, Tang Hao Siang, Aravind Kalambettu	EVALUATING THE EFFECTIVENESS OF ULTRAVIOLET LIGHT DISINFECTANT- PRE MARKET ANALYSIS
OP8	11.30	Liew Jin Wen, Low Swee Ling, Spoorthi Ravi Banavar, Prashanti Chippagiri, Wan Siti Halimatul Munirah Wan Ahmad, Elaine Chan Wan Ling, Khoo Suan Phaik	DEVELOPMENT OF A CONVOLUTIONAL NEURAL NETWORK (CNN)-BASED DEEP LEARNING MODEL FOR CLINICAL IMAGE-BASED PREDICTION OF ORAL POTENTIALLY MALIGNANT DISORDERS (OPMDS)
OP9	11.45	Siti Hadifah Aunie Hishamuddin, Nurnabihah Khairiyah Ariff Shahrul Hisham, Norhayati Mohamad Zain, Indah Mohd Amin	ANTICANCER POTENTIAL OF PLANT EXTRACTS IN ORAL SQUAMOUS CELL CARCINOMA (OSCC) CELL LINE IN VITRO STUDIES: A SYSTEMATIC REVIEW
OP10	12.00	Tirukkumarran Thana Balan, Rathnaa Segar, Nik Fatin Sarah Nik Mhd Abdul Nasser, Syafira Masri, Masfueh Razali	CONCENTRATION-DEPENDENT EFFECT OF NANOHYDROXYAPATITE-INFUSED HYDROGELS ON INFLAMMATORY AND OXIDATIVE RESPONSES OF HUMAN PERIODONTAL LIGAMENTS STEM CELLS

Presenter Schedule

e-Poster Presentation

5 July 2025 (Saturday)
Seminar Room, School of Dental Sciences, USM

NO	TIME	PRESENTERS	TITLE
EP1	9.45	Syamimi Firzanah Zulkifli, Nur Rasha Muhammad Nor Fadhil, In Meei Tew, Yew Hin Beh	THE EFFECT OF BLEACHING ON A RESIN INFILTRATED ENAMEL: AN IN-VITRO STUDY
EP2	10.00	Norilham Shafiq Abdul Rahim, Siti Nurul Ainina Mohd Sahrum, Ahmad Badruddin Ghazali, Mohamad Shafiq Mohd Ibrahim, Cheong Joo Ming	COMPARATIVE EVALUATION OF NASAL PARAMETERS IN VARIOUS VERTICAL SKELETAL DIMENSIONS AMONGST MALAY FEMALE ORTHODONTIC PATIENTS
EP3	10.15	Divyesri Ramu, Yanti Johari, Nor Ain Fatihah Azlisham, Mohamad Syahrizal Halim	PHYSICAL AND MECHANICAL PROPERTIES OF NEWLY DEVELOPED COMPOSITE RESIN REINFORCED WITH POLYPROPYLENE FIBER
EP4	10.30	Ayuni Maisarah Ridzuan, Nik Sumayyah Nik Abdull Muhaimin, Azrul Hafiz Abdul Aziz, Ainuddin Yushar Yusof	THE COMPARISON OF ACCURACY BETWEEN INTRA-ORAL SCANNERS (DIGITAL STUDY MODEL) AND CONVENTIONAL STUDY MODEL
EP5	10.45	Yeoh Wanyu, Nur Aisyah Mohd Saudi, Aufa Dahlia Bahar, Ainol Haniza Kherul Anuwar	UNDERSTANDING PARENTS' QUALITY OF LIFE AND PERCEPTIONS ON HEALTHCARE SUPPORT FOR CHILDREN WITH CLEFT LIP/PALATE: AN IN-DEPTH INTERVIEW
EP6	11.00	Muhammad Syafiq Mohd Zain, Amielia Yusrina Mohd Azizi, Andrean Husin, Mohammed Gh Abd Ali Al-Naser	ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION: PERFORMANCE OF CHATGPT-3.5 IN HUMAN DISEASE MODULE EXAMINATION COMPARED TO UITM DENTAL STUDENTS
EP7	11.15	Elwin Lee Zhao Qian, Emily Yap Yi Yuan, Foo Yau Zi, Gan Tone Xu, Mohammed Meera Riyaz	PERCEPTION OF A MALAYSIAN PRIVATE UNIVERSITY DENTAL UNDERGRADUATE STUDENTS TOWARDS THE USAGE OF CBCT DURING DIAGNOSIS AND TREATMENT PLANNING IN DENTISTRY
EP8	11.30	Seah Mai Ting, Manreenajit Kaur, Tan Hock Soon, Hariny Padamanathan, Jasmine Dhatt, Noorliza Mastura Ismail, Sharol Lail Sujak, Venkata Bharathwaj	EFFECTIVENESS OF PUPPETRY IN ENHANCING ORAL HEALTH KNOWLEDGE AMONG PRESCHOOL CHILDREN IN MELAKA
EP9	11.45	Daniel Afiq Nathan, Nurul Ashyira, Kong Kai Hui, Sai Prannoy Nagella	MANAGING DENTAL ANXIETY IN STRONG-WILLED PEDIATRIC PATIENTS USING THAUMATURGIC TECHNIQUES
EP10	12.00	Shahad Ahmed Daood, Martha Then Xin Yi, Nicole Wen Ce Mun, Sharjeel Ilyas, Lee Yin Shien, Oh Jia En, Syed Saad Bin Qasim, Yichen Dai, Mei Litt, Gopu Sriram, Ranjeet Ajit Bapat, Zeeshan Sheikh, Umer Daood	FROM ANTIMICROBIAL TO 3D-PRINTED HETEROGENOUS SCAFFOLDS: AN IN-VITRO EVALUATION TO STIMULATING BONE CHARACTERISTICS



ABSTRACT

Oral Presentation

ORAL PRESENTATION

OP1

FRACTURE RESISTANCE OF ENDODONTICALLY TREATED TEETH RESTORED WITH DIFFERENT RESTORATIVE TECHNIQUES: AN IN VITRO ANALYSIS.

Ubadah Zamry, Siti Nabilah Huda Mohamad Nor, Dinie Qurratuaini Zulkifly, **Mohd Haikal Muhamad Halil.**

Department of Restorative Dentistry, Kulliyyah of Dentistry, International Islamic University Malaysia, 25200 Kuantan, Pahang, Malaysia.

Introduction: Root canal procedure weakens the remaining tooth structures and raises the possibility of fracture in endodontically treated tooth (ETT). Type of post-endodontic restoration technique is significantly important as to consider the mechanical properties of remaining dentine which obviously differ from non-treated teeth.

Objectives: To measure and compare fracture resistance on different types of composite restorative techniques in intact tooth and ETT.

Methods: 76 sound-extracted mandibular premolars collected and divided into four groups. One group as control and the other three; sandwich technique, Nayyar core, and semi-direct onlay underwent standardized root canal treatment. Single-cone obturation technique done with matched-taper gutta-percha and sealer followed by composite restoration with respective restorative techniques. All teeth are then submitted for 2500 thermal cycles under 5°C, 37°C, and 55°C with 30 seconds dwell time and seconds transfer time. The teeth were mounted on cold-cure acrylic resin in its parallel axis before tested under constant occlusal load until fractured using Universal Testing Machine. Force that caused the tooth to fracture recorded as fracture resistance (kN). Data analysis done using One-way ANOVA complimented by post hoc Dunnett T3 test.

Results: Significant differences were observed ($p<0.05$) across the group with Group 1 exhibit the greatest resistance to fracture followed by Group 2, Group 3, and Group 4. Significant differences were found between Group 1 with Group 4 and Group 2 with Group 4.

Conclusion: Intact teeth exhibited the highest fracture resistance. Among ETT groups, the sandwich technique provided the best fracture resistance.

Keywords: fracture resistance, endodontically treated tooth, sandwich technique, Nayyar core composite, semi-direct onlay.

ORAL PRESENTATION

OP2

DIAGNOSTIC TEST ACCURACY OF COLOR GRAB™ APP AND WHAT A COLOR?™ APP FOR PORCELAIN SHADE SELECTION.

Gwee Xiang Qi, Shammie Kong Yan Zhi, Arvin Ling Ting Yung, Terrance Tan Xuan Yu, **Venkata Bharathwaj, Karthik Kannaiyan.**

Faculty of Dentistry, Manipal University College Malaysia, 75150 Melaka, Malaysia.

Introduction: Accurate shade selection is crucial in aesthetic dentistry. While the visual method is most commonly used, its biggest disadvantage is the subjectivity. Spectrophotometer offers precise color measurements but their cost limits everyday use. Mobile applications like Color Grab™ and What A Color?™ offer more accessible options, but their accuracy has not been validated for the use of dentistry. This study compares these apps to spectrophotometric standards to assess their reliability for porcelain shade matching.

Objectives: To determine the diagnostic accuracy of Color Grab™ app and What A Color?™ app for porcelain shade matching of dental restorations.

Methods: A predetermined spectrophotometric L*a*b* values Vita Classical™ Shade Guide (VC) was used as gold standard readings. Color Grab™ app and What A Color?™ app was used to capture all 16 shades of VC under standardised light intensity in a photobooth setting, L*a*b* values were recorded down. Readings from both apps were compared to gold standard for assessing diagnostic test accuracy.

Results: The diagnostic test accuracy of Color Grab™ app showed 48.91%, and for What A Color?™ app showed 48.09%. Cohen kappa analysis of both apps was 0.179 and 0.172 respectively, indicating slight agreement. There was no diagnostic relationship between both apps and spectrophotometer.

Conclusion: The accuracy and reliability of Color Grab™ app and What A Color™ app in dental shade matching are still questionable and requires development and optimization. More studies and modifications by software companies are needed for these apps to be used in shade matching and shade selection in dentistry.

Keywords: fshade selection, diagnostic test accuracy, mobile applications, spectrophotometer, L*a*b* values.

ORAL PRESENTATION

OP3

ANTIBACTERIAL ACTIVITY OF STINGLESS BEE (*Heterotrigona itama*) BEEHIVE CRUDE EXTRACTS AGAINST *Streptococcus mutans* AND *Staphylococcus aureus* AND PHYTOCHEMICAL ANALYSIS OF THE MOST POTENT EXTRACT.

Uzair Yusoff Ahmad Raflis, **Siti Noor Adnalizawati Adnan**.

Faculty of Dentistry, Universiti Sains Islam Malaysia, Persiaran MPAJ, Jalan Pandan Utama, 55100, Kuala Lumpur, Malaysia.

Introduction: The stingless bee industry focuses mainly on honey and beebread, despite the beehive containing valuable bioactive compounds. Valuable beehives are often discarded. Although some antibacterial properties have been reported, data on the beehive's composition and its effects on oral pathogens remain limited and poorly documented.

Objectives: This study aimed to identify the solvent yielding the highest extract quantity from stingless bee beehives and evaluate the extracts' antibacterial activity against *Staphylococcus aureus* and *Streptococcus mutans*. Additionally, the study aimed to investigate the phytochemical composition of the most active extract.

Methods: Beehive samples were extracted using cold maceration with hexane, methanol, dichloromethane, and water. Extract yields were measured, and their minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) were determined against *S. aureus* ATCC 25923 and *S. mutans* ATCC 25175. Morphological changes in the affected *S. aureus* cells were examined using scanning electron microscopy (SEM), and the chemical composition of the most active extract was analysed via gas chromatography-mass spectrometry (GC-MS).

Results: The aqueous extract had the highest yield (9.56%), but the hexane extract showed the strongest antibacterial activity against *S. aureus* (MIC 6.25 mg/mL; MBC 12.5 mg/mL). GC-MS analysis identified 64 compounds in the hexane extract, with 9,19-Cyclolanost-24-en-3-ol, acetate, (3α)- as the most abundant (32.18%). SEM revealed disrupted *S. aureus* morphology at MIC and complete lysis at MBC.

Conclusion: The hexane extract of stingless bee beehive exhibits significant antibacterial activity, particularly against *S. aureus*, suggesting its potential for development as a natural antibacterial agent.

Keywords: stingless bee beehive, biochemical composition, antibacterial properties, *Staphylococcus aureus*, *Streptococcus mutans*.

ORAL PRESENTATION

OP4

EVALUATION OF ANTIMICROBIAL ACTIVITY OF KELULUT HONEY AGAINST ORAL PATHOGENS.

Andek Nurul Hafizah Andek Jelantek, Siti Nuriah Mohd Noor, Noor Khairiena Mohamad, **Kannan Thirumulu Ponnuraj**.

School of Dental Sciences, Universiti Sains Malaysia, Kampus Kesihatan, 16150 Kubang Kerian, Kelantan, Malaysia.

Introduction: Kelulut honey produced by stingless Trigona bees exhibits antimicrobial properties attributed to its osmotic effect, low pH, and presence of peroxide and non-peroxide bioactive compounds.

Objectives: This study evaluated the antimicrobial properties of local Kelulut honeys against oral pathogens using agar well diffusion method.

Methods: Kelulut honey was obtained from Malaysian Agriculture Research and Development Institute (MARDI) and Tangkak, Johor, Malaysia. They were mixed with sterile deionised water to produce concentrations of 250%, 200%, 150%, 100% and 75% and tested for their antimicrobial properties against *Streptococcus mutans (S. mutans), Staphylococcus aureus (S. aureus), Candida albicans (C. albicans) and Candida tropicalis (C. tropicalis)* using agar well diffusion method. *S. mutans* and *S. aureus* were grown on Mueller-Hinton agar and incubated at 37°C in a CO_2 incubator, while *C. albicans and C. tropicalis* on Sabouraud Dextrose agar at 25°C for 48 hours. Sterile deionised water acted as the negative control, and 0.2% chlorhexidine as the positive control. After incubating the plates at 37°C for 24 hours, zones of inhibition were measured.

Results: Both MARDI and Tangkak Kelulut honeys showed zones of inhibition at 250, 200 and 150% against *S. mutans*, while for *S. aureus*, it was noticed only at 250 and 200%. However, inhibition zones were not observed for *C. albicans* and *C. tropicalis* at any of the concentrations.

Conclusion: It can be concluded that both the Kelulut honeys showed antibacterial properties against *S. mutans* and *S. aureus* but did not demonstrate antifungal activity against *C. albicans* and *C. tropicalis*.

Keywords: antimicrobial, antifungal, Kelulut honey, oral pathogens.

ORAL PRESENTATION

OP5
CHAMELEON EFFECT AND COLOUR STABILITY OF NANO-FILLED RESIN COMPOSITES.

Amanda Chiong Swee Yee, Ethan Ting Sheng, **Sofya Zulkifli, Noor Azlin Yahya**.

Department of Restorative Dentistry, Faculty of Dentistry, Universiti Malaya, 50603, Kuala Lumpur, Malaysia.

Introduction: Achieving a natural look between restorative materials and tooth structure is essential for aesthetic success. While nano-filled resins offer improved physical and mechanical properties, the chameleon effect and stain resistance still show variability, needing further study.

Objectives: To evaluate the chameleon effect and colour stability of three resin composites: SOLARE Sculpt (SL), SimpliShade (SS), and Essentia (ES), by assessing colour changes after immersion in distilled water, Coke, coffee, and turmeric over varying time periods.

Methods: Twenty Class III restorations (shade A2) were placed on acrylic maxillary central incisors using each resin composite. The chameleon effect was measured with digital colorimeter. A total of 120 circular specimens (10x2mm) per material (n=40 per group) were immersed in distilled water (control), Coke, coffee, and turmeric for 1, 7, and 30 days. Colour changes were recorded using spectrophotometer. Statistical analysis was conducted using the independent t-test and Kruskal-Wallis test.

Results: No significant differences were found in the chameleon effect across the three materials ($p>0.05$). However, there were significant differences in colour stability between the SL and ES at days 7 and 30 ($p<0.05$). Coffee and turmeric caused the most staining, while distilled water and Coke caused minimal discolouration ($p<0.05$).

Conclusion: While the chameleon effect was similar across all materials, colour stability varied, with coffee and turmeric leading to more noticeable staining. This information can help clinicians choose materials based on patients' diets and highlight the importance of regular restorative care for lasting aesthetic results.

Keywords: chameleon effect, blending effect, colour stability, staining, resin composite.

ORAL PRESENTATION

OP6
EXPLORING BIOSURFACTANTS FOR SUSTAINABLE AND EFFECTIVE TOOTH WHITENING.

Win Nie Lim, Xin Yuan Chong, Fong Fong Liew, **Der Jiun Ooi**.

Department of Preclinical Sciences, Faculty of Dentistry, MAHSA University, 42610 Selangor, Malaysia.

Introduction: Tooth discoloration is a major aesthetic issue, driving demand for sustainable whitening treatments. Traditional whitening agents,carbamide peroxide (oxidation) and sodium metabisulfite (reduction), combined with surfactants to improve stain removal.Growing environmental awareness is boosting interest in eco-friendly, biocompatible biosurfactants over synthetic options.

Objectives: To study the effect of incorporating biosurfactants and industrial surfactants on the whitening efficacy of sodium metabisulfite and carbamide peroxide.

Methods: This study evaluates both industrial surfactants (Polysorbate 20, CTAB, SLS, Cocamidopropyl Betaine) and biosurfactants (Rhamnolipids, alkyl polyglycoside, Propylene Glycol, Brij S100) at 0.1% concentration for their whitening effect. Reactions with tannic acid were monitored using UV-Vis spectrophotometry over 20 minutes. Further testing involved 36 extracted teeth stained with 0.47 M tannic acid, cleaned and treated with whitening agents. Whitening efficacy was assessed using colorimetric analysis (Konica Minolta digital color spectrophotometer) measuring L*, a*, and b* values, with total colour change (ΔE*ab) calculated. Statistical analysis was conducted using one-way ANOVA ($\alpha = 0.05$).

Results: Amongst the surfactants tested, alkyl polyglycoside, a biosurfactant; significantly enhanced tooth-whitening, showing a greater ΔE value than carbamide peroxide alone ($p<0.05$). The colour change was also found significant between alkyl polyglycoside and propylene glycol ($p<0.01$). This is the first evidence that biosurfactants can outperform industrial non-ionic surfactants in whitening efficacy within a 20-minute treatment period.

Conclusion: This study highlights the potential of biosurfactants, especially alkyl polyglycoside, in enhancing the tooth-whitening efficacy of carbamide peroxide. Further studies should investigate long-term effects, safety, and formulation optimization for commercial applications.

Keywords: tooth-whitening, biosurfactants, alkyl polyglycoside, whitening efficacy, aesthetic dentistry.

ORAL PRESENTATION

OP7

EVALUATING THE EFFECTIVENESS OF ULTRAVIOLET LIGHT DISINFECTANT- PRE MARKET ANALYSIS.

Sneha Ananda Raja, Sriwarrni V.Ravi Varman, Tan Hui Yu, Tang Hao Siang, **Aravind Kalambettu**.

Faculty of Dentistry, AIMST University, 08100 Kedah, Malaysia.

Introduction: In dental clinics, ultraviolet (UV) light disinfection has emerged as a promising method of decontaminating dental instruments and surfaces efficiently without harmful residues. This study evaluates the disinfection efficacy of the 'AI Spotless UV Disinfectant' on surfaces subjected to both direct and indirect UV exposure.

Objectives: To assess the effectiveness of the AI Spotless UV device on bacterial cultures through direct and indirect UV exposures and to determine the optimal exposure parameters for effective UV disinfection.

Methods: The experimental setup included a biosafety cabinet, bacterial culture media specific to bacterial species (*Bacillus cereus, Bacillus subtilis, Escherichia coli*, and *Pseudomonas aeruginosa*), and the Spotless AI UV lamp. Two key variables were tested: exposure duration and the angle of exposure (direct vs. indirect). Bacterial colony counts were analysed post-exposure to determine the outcome of the experiment.

Results: The results demonstrated that direct UV exposure for 10 minutes effectively prevented the growth of *Bacillus cereus*, while *Escherichia coli* and *Bacillus subtilis* required 15 minutes exposure for eradication, and *Pseudomonas aeruginosa* required 20 minutes of UV exposure. Although indirect exposure to UV showed a significant reduction in bacterial presence, it did not achieve complete eradication even after 20 minutes of exposure.

Conclusion: The 'AI Spotless UV Disinfectant' presents a viable and effective solution for microbial control in dentistry. Its implementation in dental clinics could significantly reduce the risk of nosocomial infections, improve disinfection of non-critical instruments, and contribute to safer and more sustainable infection control practices in modern dental care.

Keywords: UV-C disinfection, AI Spotless UV Disinfectant, direct UV exposure, indirect UV exposure, exposure duration.

ORAL PRESENTATION

OP8

DEVELOPMENT OF A CONVOLUTIONAL NEURAL NETWORK (CNN)-BASED DEEP LEARNING MODEL FOR CLINICAL IMAGE-BASED PREDICTION OF ORAL POTENTIALLY MALIGNANT DISORDERS (OPMDS).

Liew Jin Wen, Low Swee Ling, Spoorthi Ravi Banavar, Prashanti Chippagiri, Wan Siti Halimatul Munirah Wan Ahmad, Elaine Chan Wan Ling, **Khoo Suan Phaik**.

School of Dentistry, International Medical University, Bukit Jalil, 57000 Kuala Lumpur, Malaysia.

Introduction: Oral potentially malignant disorders (OPMDs) are conditions with varying risks of malignant transformation into oral cancer, making early detection critical for improving prognosis. Recent advancements in deep learning, particularly through convolutional neural networks (CNNs), present opportunities in revolutionising the early detection of OPMDs and oral cancer.

Objectives: To develop CNN-based clinical predictors to predict clinical images of oral lesions as OPMD or non-OPMD, to evaluate the performance of the CNN models against a dataset of clinical images of oral lesions, and to highlight the regions within the images that are involved in decision-making through automated heat maps/segmentation masks.

Methods: A total of 1,500 intraoral clinical photographs (750 OPMDs and 750 non-OPMDs), were collected from publicly available platforms and archives at the Oral Health Centre, IMU University. The dataset was arbitrarily split into training and testing datasets. Two different CNN-based architectures - DenseNet-121 classification model and YOLOv8-large-segmentation model, were trained and tested. For the YOLOv8-large-segmentation model, the lesions on each image were annotated and validated prior to training. The performance of each model was then assessed.

Results: The DenseNet-121 classification model did not meet the study's objectives, but the YOLOv8-large-segmentation model demonstrated promising results in predicting OPMDs, achieving an accuracy of 62.2%, sensitivity of 75.0%, precision of 59.7%, and specificity of 49.3%.

Conclusion: The YOLOv8-large-segmentation model demonstrated promising accuracy, sensitivity, specificity and precision, indicating its potential as an automated adjunctive tool for early detection of OPMDs. Future studies are required to optimise and enhance the model's clinical utility.

Keywords: prediction, oral potentially malignant disorders (OPMD), convolutional neural network (CNN), deep learning, instance segmentation.

ORAL PRESENTATION

OP9

ANTICANCER POTENTIAL OF PLANT EXTRACTS IN ORAL SQUAMOUS CELL CARCINOMA (OSCC) CELL LINE IN VITRO STUDIES: A SYSTEMATIC REVIEW.

Siti Hadifah Aunie Hishamuddin, Nurnabihah Khairiyah Ariff Shahrul Hisham, Norhayati Mohamad Zain, **Indah Mohd Amin**.

Centre of Preclinical Science Studies, Faculty of Dentistry, Universiti Teknologi MARA, Jalan Hospital. 47000 Sungai Buloh. Selangor, Malaysia.

Introduction: Oral squamous cell carcinoma (OSCC) is responsible for more than 90% of oral cases, with the highest rate of mortality.

Objectives: This systematic review was conducted to evaluate the in vitro anticancer efficacy of plant extracts against the OSCC cell line.

Methods: A comprehensive literature search was conducted using Scopus, ScienceDirect, and Web of Science for studies published between January 2014 to December 2024. Only full-text original articles in English were included, following PRISMA 2020 guidelines for data extraction. Inclusion criteria include in vitro studies investigating the anticancer activities of plant extracts against the OSCC cell line. Studies involved the in vivo models, ex vivo research, fungal extracts and non-OSCC cancers were excluded. The risk of bias was assessed using the QUIN Tool.

Results: Out of 82 studies identified through the PRISMA framework, 45 met the inclusion criteria. After evaluating the risk of bias using the QUIN tool, all 45 studies were included in this review, as they demonstrated either low or moderate risk. The findings indicate that plant extracts and plant-derived compounds exhibit significant cytotoxicity against OSCC; primarily through apoptosis induction, cell cycle arrest, and inhibition of proliferation.

Conclusion: This review provides a comprehensive overview of plant extracts and plant-derived compounds, and their anticancer mechanisms to highlight their potential as alternative therapeutic agents for OSCC treatment and drug discovery.

Keywords: anticancer, plants, oral squamous cell carcinoma (OSCC).

ORAL PRESENTATION

OP10

CONCENTRATION-DEPENDENT EFFECT OF NANOHYDROXYAPATITE-INFUSED HYDROGELS ON INFLAMMATORY AND OXIDATIVE RESPONSES OF HUMAN PERIODONTAL LIGAMENTS STEM CELLS.

Tirukkumarran Thana Balan, Rathnaa Segar, Nik Fatin Sarah Nik Mhd Abdul Nasser, Syafira Masri, **Masfueh Razali**.

Department of Restorative Dentistry, Faculty of Dentistry, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.

Introduction: Despite their promising application in periodontal regeneration, nanohydroxyapatite (nHA)-based bone scaffolds raise concerns related to nanotoxicity and potential inflammatory responses in the periodontium. Since inflammation precedes healing, an excessive or prolonged inflammatory phase may impair both periodontal and bone regeneration.

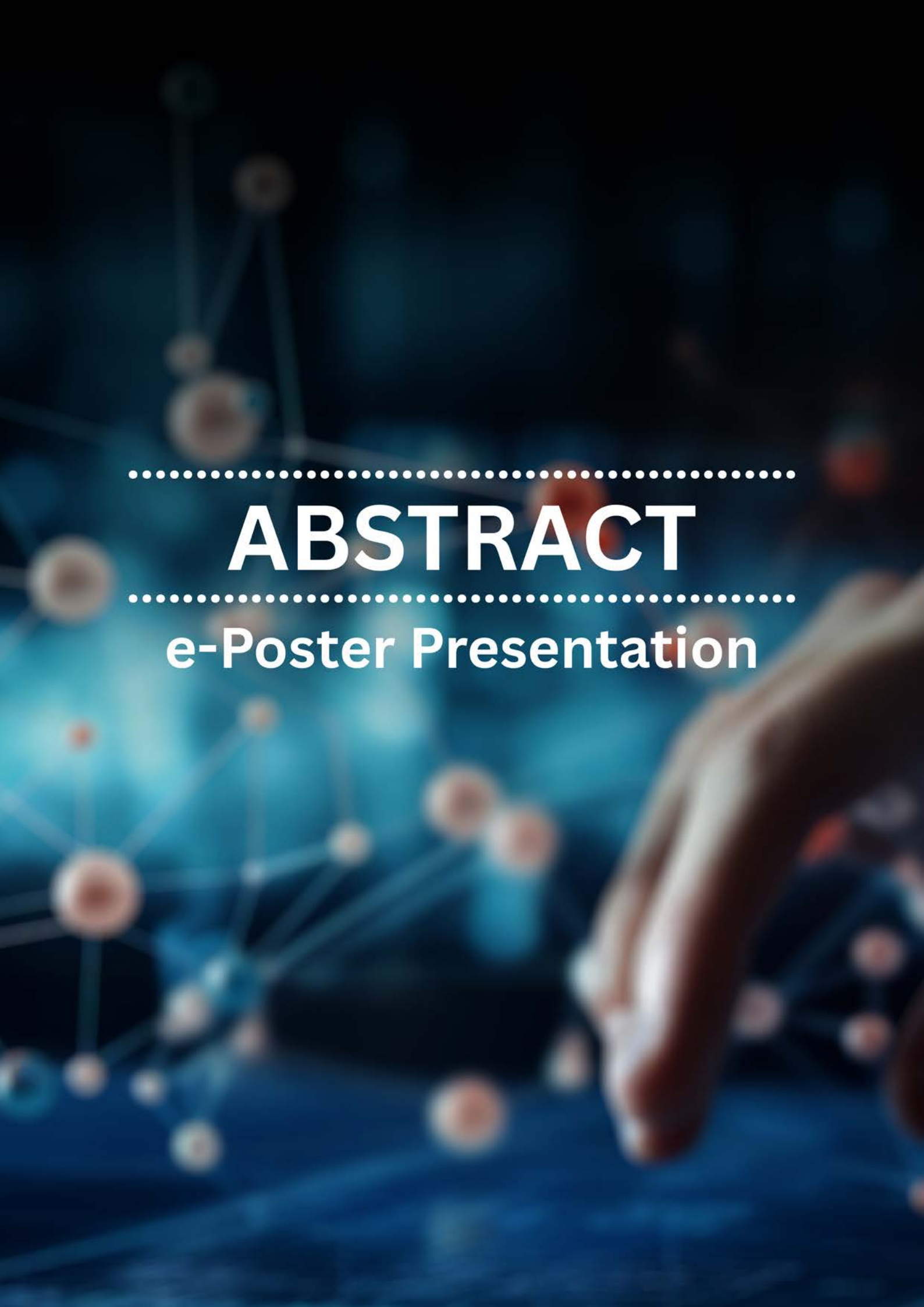
Objectives: This study aimed to assess the inflammatory reaction of hPDLSCs to nHA scaffolds through pro-inflammatory expressions and oxidative stress analyses and structural integrity assessment.

Methods: hPDLSc cells were cultured on nHA scaffolds of varying concentrations (5%, 7%, 10%) fabricated with alginate and acrylated palm olein. The interleukin-1 beta (IL-1β) was quantified using enzyme-linked immunosorbent assay (ELISA) while ROS was assessed using a fluorescence-based assay. Scanning electron microscopy (SEM) was used to examine scaffold structure and cellular morphology. Data were statistically analyzed using one-way ANOVA.

Results: hPDLSc adhered successfully to nHA scaffolds with no observable cytotoxic effects. No significant IL-1β upregulation or ROS production was detected. SEM analysis confirmed that the scaffold maintained its structural integrity across all nHA concentrations, with no significant degradation or collapse observed. Additionally, hPDLSc cell morphology transitioned from a rounded to a spindle-shaped structure with emerging lamellipodia, suggesting healthy cell adaptation to the scaffold environment.

Conclusion: This study confirms that higher concentrations of nHA do not alter hPDLSc morphology or induce a significant inflammatory response, reinforcing its biocompatibility for periodontal applications. Additionally, scaffold structural integrity was maintained, supporting its potential as a safe and effective biomaterial for periodontal regeneration.

Keywords: bone scaffold, inflammation, interleukin-1β, nanohydroxyapatite, periodontal ligament.



ABSTRACT

e-Poster Presentation

e-POSTER PRESENTATION

EP1
THE EFFECT OF BLEACHING ON A RESIN INFILTRATED ENAMEL: AN IN-VITRO STUDY.

Syamimi Firzanah Zulkifli, Nur Rasha Muhammad Nor Fadhil, In Meei Tew, **Yew Hin Beh**.

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Introduction: White spot lesions (WSLs) are a significant aesthetic burden in dentistry nowadays. This can be effectively managed non-invasively by resin infiltration. Due to various reasons, the shade of the resin-infiltrated teeth may be modified by dietary stains, which increases the necessity for shade enhancement treatment like bleaching.

Objectives: This study aims to evaluate the effectiveness of 10% carbamide peroxide on artificially created white spot lesions (WSLs) treated with resin infiltration after staining by common dietary sources.

Methods: This in-vitro study was conducted using 44 extracted premolars with artificially created WSLs randomly distributed into four groups, including a control group. The lesions underwent resin infiltration followed by staining with coffee, tea, and turmeric. The specimens subjected to a two-week at-home bleaching using 10% carbamide peroxide, and the colour changes were measured using a spectrophotometer (CIE L*a*b* system).

Results: All groups showed an increase in ΔL post-bleaching, with no significant difference from baseline except for the control group. Δa values shifted significantly from positive to negative, indicating a greener hue. Despite bleaching, Δb values remained significantly elevated, indicating yellowish colour retention in all test groups. The ΔE between baseline and post-bleaching indicates a perceptible colour change, with the turmeric group exhibiting the greatest change, followed by coffee and tea.

Conclusion: Within the limitations of this study, resin-infiltrated enamel was susceptible to dietary staining but responsive to 10% carbamide peroxide bleaching. Post-bleaching lightness (ΔL) increased, and a greenish hue (Δa) emerged, while yellowish discolouration (Δb) intensified. The extent of bleaching efficacy varied with the types of stain.

e-POSTER PRESENTATION

EP2

COMPARATIVE EVALUATION OF NASAL PARAMETERS IN VARIOUS VERTICAL SKELETAL DIMENSIONS AMONGST MALAY FEMALE ORTHODONTIC PATIENTS.

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Introduction: Nasal analysis is essential for understanding facial harmony, particularly in relation to vertical skeletal patterns. However, cephalometric normative values for the Malay population remain limited.

Objectives: To establish cephalometric norms for various nasal parameters in skeletal normodivergent Malaysian Malay adult females, and to compare nasal parameter differences across normo-, hypo-, and hyperdivergent vertical skeletal dimensions.

Methods: This retrospective study analysed 156 pre-orthodontic lateral cephalometric radiographs of skeletal Class I Malay females aged 18 to 30 years (mean age = 24.12 ± 3.38). Cephalograms were categorised into normodivergent (MMPA: 24.8° ± 6.7°), hypodivergent (<18.1°), and hyperdivergent (>31.5°). Sixteen nasal parameters were manually traced, comprising nine linear and seven angular parameters. One-way ANOVA with Bonferroni post-hoc test ($p < 0.05$) was used to compare mean nasal parameters across the three vertical skeletal groups. Intra- and inter-examiner reproducibility was assessed using Intraclass Correlation Coefficient (ICC), with remeasurements made after one week.

Results: ICC analysis demonstrated excellent intra- and inter-examiner reliability (0.93 and 0.91, respectively). No significant differences were observed in linear nasal parameters across all groups except nasal depth 2 ($p=0.02$) which was significantly greater in normodivergent than hyperdivergent group. No significant differences were found in angular nasal parameters.

Conclusion: Nasal cephalometric norms in normodivergent Malaysian Malay females were established, providing an essential new reference dataset for nasal assessment. Nasal depth 2 significantly varies across all groups, suggesting that vertical skeletal patterns can influence this specific nasal measurement, which is clinically important for enhancing orthodontic and surgical treatment planning in the Malay population.

Keywords: nose, cephalometry, vertical dimension, Malay, orthodontics.

e-POSTER PRESENTATION

EP3

PHYSICAL AND MECHANICAL PROPERTIES OF NEWLY DEVELOPED COMPOSITE RESIN REINFORCED WITH POLYPROPYLENE FIBER.

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Introduction: Fiber-reinforced composite resin restoration offers not only high strength to weight ratio, but also exceptional properties such as high durability; stiffness; damping property; flexural strength; and resistance to corrosion, wear, and impact. Synthetic fibres are the most popular choice as reinforcement materials due to their superior physical and mechanical properties compared to other fibre types. Polypropylene is a versatile and fastest-growing class of commodity thermoplastics due to its compatibility with various processing techniques. This pilot study aimed to assess the physical and mechanical properties of composite resin upon reinforce with polypropylene fibre co-filler.

Objectives: To investigate the use of polypropylene fibres to improve physical and mechanical strength of composite resin.

Methods: Silanised polypropylene fiber was mixed with urethane dimethacrylate (UDMA) and triethylene glycol dimethacrylate (TEGDMA) and silica filler in different percentages (Group 1: control, Group 2: 0.5wt% PP fibre, Group 3: 1wt% PP fibre, and Group 4). The depth of cure, surface roughness and microhardness were evaluated, and comparison was made with commercial composite GC everX Posterior. The data obtained were recorded and analysed with one-way analyses of variance (ANOVA) with significance level set at 0.05.

Results: 0.5% and 1% of polypropylene fibres produce significant difference in depth of cure and microhardness compared with the control group. However, the results showed that the surface roughness test was not significant.

Conclusion: : It was observed that incorporation of polypropylene fibres was beneficial regarding the tested properties to improve the physical and mechanical properties of composite resin.

Keywords: polypropylene fibres, composite resin, microhardness, surface roughness, depth of cure.

e-POSTER PRESENTATION

EP4

THE COMPARISON OF ACCURACY BETWEEN INTRA-ORAL SCANNERS (DIGITAL STUDY MODEL) AND CONVENTIONAL STUDY MODEL.

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Introduction: Study models are essential in orthodontics, with elastomeric materials being the gold standard for obtaining conventional impressions. Intra-oral scanners (IOS) are non-invasive devices that capture optical impressions to create 3D digital models, stored as .stl files for seamless transfer and orthodontic applications. IOS integration offers benefits like improved comfort, faster processing, and global data sharing, though their effectiveness depends on accuracy, reproducibility, and operator experience.

Objectives: This study aimed to investigate the accuracy between digital study models and conventional study models in measurement of intercanine and intermolar width.

Methods: In this study, 29 sets of digital and conventional study models for both upper and lower arches of year 4 undergraduate dental students in Faculty of Dentistry, USIM were taken, and to compare the accuracy between these two types of study models by measuring their intercanine and intermolar widths.

Results: The mean for maxillary intercanine width for IOS is 35.78 ± (2.50), for conventional is 35.43 ± (2.41), mean for maxillary intermolar width for IOS is 54.28 ± (3.74), for conventional is 54.02 ± (3.43), mean for mandibular intercanine width for IOS is 27.20 ± (2.11), for conventional is 26.81 ± (1.77), and mean for mandibular intermolar width for IOS is 49.32 ± (4.28), for conventional is 48.66 ± (4.21).

Conclusion: Based on our study, there is no significant difference in accuracy between IOS and conventional study models.

Keywords: intra-oral, conventional, intercanine width, intermolar width.

e-POSTER PRESENTATION

EP5

UNDERSTANDING PARENTS' QUALITY OF LIFE AND PERCEPTIONS ON HEALTHCARE SUPPORT FOR CHILDREN WITH CLEFT LIP/PALATE: AN IN-DEPTH INTERVIEW.

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Introduction: Parents of children with cleft lip and/or palate (CLP) often face psychological challenges that significantly impact their quality of life (QoL).

Objectives: This study aimed to understand the various dimensions of QoL among parents of children with CLP and to explore their perceptions regarding improvements in healthcare support for their children.

Methods: A qualitative study design was employed using in-depth interviews (IDIs). Purposive sampling was used to recruit parents of children with CLP. A semi-structured topic guide, focusing on QoL and perceptions of healthcare support, was used to guide the interviews. All interviews were audio-recorded, transcribed verbatim, and triangulated with field notes. Thematic analysis was conducted, with manual coding used to identify emerging themes and sub-themes. Diverse perspectives were analysed to ensure rigour and consistency.

Results: Parents described a spectrum of emotions, from initial distress to eventual acceptance. Key concerns included feeding difficulties, general health, social acceptance, developmental issues, and financial burdens. Community support emerged as a critical coping resource. While parents generally reported positive experiences with healthcare services, they also identified several systemic challenges. Personalised and responsive communication from healthcare personnel was highly valued. Parents proposed multiple recommendations to improve their healthcare experience.

Conclusion: Parental QoL was influenced by both mental support from social networks and physical support from community associations. The study offers practical recommendations to enhance healthcare support for families affected by CLP.

Keywords: cleft lip and palate, orofacial cleft, non-syndromic, psychological well-being, quality of life.

e-POSTER PRESENTATION

EP6

ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION: PERFORMANCE OF CHATGPT-3.5 IN HUMAN DISEASE MODULE EXAMINATION COMPARED TO UITM DENTAL STUDENTS.

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Objectives: This study aims to evaluate the performance and accuracy of ChatGPT-3.5 in answering multiple choice questions (MCQs) related to the Human Disease Module against UiTM clinical dental students who had completed their Human Disease Module.

Methods: A cross-sectional study was conducted using 50 MCQs divided into general medicine (20), traumatology (10), and general surgery (20). The test involved 66 Year 4 students, 72 Year 5 students, and ChatGPT-3.5 tested in 72 sessions. Data were compiled and analyzed using SPSS, including descriptive statistics, Mann- Whitney U test, and Kruskal-Wallis test.

Results: In the Overall Performance: ChatGPT-3.5 vs. Students, ChatGPT-3.5 had a mean score of 33.12 ± 1.67, while students scored 23.60 ± 5.20. In the Performance by Academic Year: Year 4 vs. Year 5 vs. ChatGPT-3.5, Year 4 students scored 24.78 ± 4.08, Year 5 students scored 22.50 ± 5.86, and ChatGPT-3.5 achieved 33.12 ± 1.67. In the Performance by Subject Area: ChatGPT-3.5 vs. Students, ChatGPT-3.5 scored 12.83 ± 1.160 in General Surgery compared to 9.50 ± 2.61 for students, 11.91 ± 1.17 in General Medicine compared to 7.71 ± 2.51 for students, 8.38 ± 0.82 in Traumatology compared to 6.38 ± 1.70 for students.

Conclusion: In our limited study, ChatGPT-3.5 performed better than students in answering MCQ-based questions in GMGS modules. Despite the repetition in prompting the same questions 72 times, ChatGPT-3.5 did not achieve perfect scores or improve scores. This finding suggests the need for further investigation into how AI responds to repeated testing and its implications for educational assessments.

Keywords: artificial intelligence, ChatGPT-3.5, dental students.

e-POSTER PRESENTATION

EP7

PERCEPTION OF A MALAYSIAN PRIVATE UNIVERSITY DENTAL UNDERGRADUATE STUDENTS TOWARDS THE USAGE OF CBCT DURING DIAGNOSIS AND TREATMENT PLANNING IN DENTISTRY.

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Introduction: Cone Beam Computed Tomography (CBCT) is increasingly adopted in dentistry for its superior three-dimensional imaging capabilities. Understanding dental students' perception of CBCT is essential to ensure they are adequately prepared for its clinical application.

Objectives: This study aimed to evaluate the knowledge, confidence, and perception of dental undergraduate students towards CBCT and to examine any differences based on academic year and gender.

Methods: A questionnaire based cross-sectional survey was conducted among 102 undergraduate dental students at AIMST University. The instrument included sections on awareness, training exposure, perceived knowledge, usage, and attitudes towards CBCT. Data were analysed using descriptive statistics and inferential tests including Chi-square and ANOVA, with significance set at $p<0.05$.

Results: All respondents reported awareness of CBCT, yet only 47% had received formal training. Nearly half (49.5%) rated their knowledge as average, with only 9.9% reporting good knowledge. Students recognized the diagnostic advantages of CBCT (mean score range 4.29–4.60), but self-reported confidence remained low, particularly among junior students. A statistically significant difference was observed in confidence levels across academic years ($p=0.047$), while no significant differences were noted in knowledge scores ($p=0.281$) or between genders. Key concerns included cost (41.8%), interpretation complexity (29.3%), and lack of training (35.4%). Interest in additional training was expressed by over 90% of participants.

Conclusion: The findings highlight a gap between awareness and practical confidence in CBCT among dental undergraduates. There is a strong need to enhance CBCT education through formal training and clinical integration within the undergraduate curriculum.

Keywords: CBCT, dental education, students, perception, radiography.

e-POSTER PRESENTATION

EP8

EFFECTIVENESS OF PUPPETRY IN ENHANCING ORAL HEALTH KNOWLEDGE AMONG PRESCHOOL CHILDREN IN MELAKA.

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Introduction: Dental caries affects 60-90% of children globally. 70% of children suffer from dental caries in Malaysia. Early childhood oral education is crucial to lifelong oral hygiene habits. Traditional educational methods may not capture the attention and interest of preschool children. Thus, puppetry can be an engaging and creative learning tool to enhance comprehension and retention of oral health messages among preschool children.

Objectives: We aim to inculcate oral health knowledge among preschool children.

Methods: A cross-sectional study was conducted at Ar Rayyan Integrated Smart Caliph Melaka, Malaysia, among 51 preschool children aged 4 to 6 years old using the purposive sampling method. A questionnaire was used to identify the oral health knowledge score in 4 intervals (before and after on day 1, day 7, and day 14). A live puppet show was performed on day 1 after the pre-test questionnaire was completed, followed by a video recording of the puppet show played daily for the preschool children after day 1 till day 14.

Results: Results showed significant improvement of mean oral health knowledge scores of 2.71 and 3.53 (pre- and post-test) on day 1 with a p-value of <0.0015. Subsequently, the mean knowledge score was 4.00 on day 7 and 4.27 on day 14. All five knowledge areas showed sustained improvement ($p<0.001$) over the spaced time.

Conclusion: The study found that puppetry significantly improved and sustained oral health knowledge among preschool children over a 14-day period. The sustained increase in mean knowledge scores highlights its potential as an innovative tool in early childhood oral health education.

Keywords: puppetry education, early childhood health education, oral hygiene education, preschool health promotion.

DOI: https://doi.org/10.35882/ijahst.v5i2.453

e-POSTER PRESENTATION

EP9
MANAGING DENTAL ANXIETY IN STRONG-WILLED PEDIATRIC PATIENTS USING THAUMATURGIC TECHNIQUES.

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Introduction: Dental anxiety is a common barrier to successful treatment in children, especially those who are strong-willed and uncooperative. This study explores the use of thaumaturgic techniques as an alternative to conventional behavior management strategies.

Objectives: To evaluate the effectiveness of magic-based distraction methods in reducing dental anxiety in paediatric patients.

Methods: A case-control study was conducted at Mahsa University's Year 4 Student Dental Clinic with 52 children aged 2–13 years. Participants were divided into three age groups (2–7, 7–11, 11–13) and four intervention groups: (1) Control, (2) Thumb and Light Trick, (3) Magic Water Coloring Book, and (4) Magic Trick. Anxiety levels were assessed before and after treatment using a validated anxiety rating scale. Data were analysed using paired t-testsand one-way ANOVA.

Results: Thaumaturgic techniques significantly reduced anxiety levels compared to control group with the greatest effect observed in younger children (2–7 years). These techniques effectively engaged children, improving cooperation during dental procedures.

Conclusion: Thaumaturgic techniques offer a promising, engaging, and effective approach to managing dental anxiety in paediatric patients, particularly those who are difficult to manage using conventional methods.

Keywords: paediatric dentistry, dental anxiety, behaviour management, thaumaturgic techniques, magic tricks.

e-POSTER PRESENTATION

EP10

FROM ANTIMICROBIAL TO 3D-PRINTED HETEROGENOUS SCAFFOLDS: AN IN-VITRO EVALUATION TO STIMULATING BONE CHARACTERISTICS.

Shahad Ahmed Daood, Martha Then Xin Yi, Nicole Wen Ce Mun, Sharjeel Ilyas, Lee Yin Shien, Oh Jia En, Syed Saad Bin Qasim, Yichen Dai, Mei Litt, Gopu Sriram, Ranjeet Ajit Bapat, Zeeshan Sheikh, **Umer Daood**.

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Objectives: The study aims to develop a novel 3D-printed scaffold and assess key characteristics for its application in periodontal regenerative therapy via investigating the potential of β-tricalcium phosphate (β-TCP) combined with the antimicrobial silane K21 to enhance endogenous bone regeneration.

Methods: Three groups of bioink scaffolds were prepared; control, 0.1% CHX, and 0.1% K21. The scaffolds were fabricated using a commercial extrusion bioprinter with a pneumatic printhead, fitted with a 21G conical nozzle. The pore printability index (Pr), area, perimeter of the pores within the grid patterns, and porosity were quantified using the liquid displacement method. Mechanical properties were detected using AFM in the tapping Mode. Raman imaging and mapping were conducted with two distinct Raman spectrometers. SEM was used to evaluate the printed scaffolds' shape, dimensions, and human gingival fibroblastic cell morphologies. Lactobacillus biofilms were grown to check the cytotoxicity of the scaffold and examined using confocal microscopy.

Results: All formulations showed successful 3D printing as higher porosity did not affect cell attachment, but increased cell proliferation. Additionally, 0.1% K21 scaffolds showed superior structural consistency and exhibited homogenous geometry. Raman revealed enhanced mineralization ($p<0.05$) with the addition of K21. SEM analysis demonstrated the highest adhesion and proliferation of fibroblastic cells in the 0.1% K21 group. 0.1% K21 reduced bacterial load, preventing the release of virulence factors.

Conclusion: 3D-printing technologies with 0.1% K21 represent a significant advancement over conventional regenerative medicine techniques for bone-related treatments.

Keywords: bone, collagen, antimicrobial, tri-calcium phosphate, Raman, cytotoxicity.

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REVOLUTIONISING ORAL HEALTH THROUGH AI