IADR
INTERNATIONAL ASSOCIATION FOR DENTAL, ORAL, AND CRANIOFACIAL RESEARCH
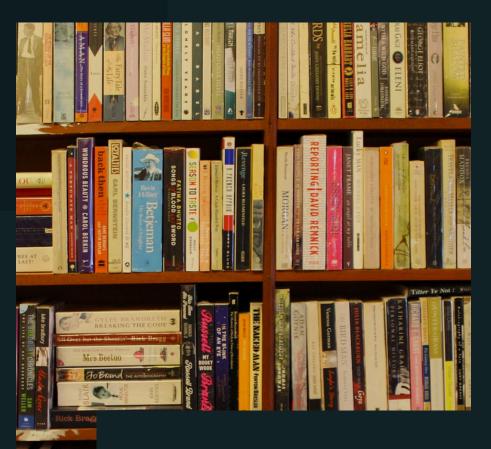MALAYSIAN SECTION

23RD ANNUAL SCIENTIFIC MEETING
26TH ANNUAL GENERAL MEETING OF THE IADR MALAYSIAN SECTION

Abstract Book

2025

Transforming Dentistry Through Digitalization and Research-Driven Innovation

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (MAIN HALL)

Saturday, 06 September 2025		Main Hall	
Presentation ID	Title & Author	Presenting author	Time
SO01	**Enhancing Denture Strength: The Influence of Fibre Loading on Kenaf—Polyamide Composites** Eraaja Rajeshwari Murthy, Johari Yap Abdullah, Nurulezah Hasbullah, Mohd Firdaus Yhaya, Norhafizah Saari	Eraaja Rajeshwari Murthy	Presenters are requested to stand by their poster for viewing session from 10:45 AM to 11:15 AM
SO02	**Role of Strontium-Based Materials in Enhancing Remineralization of Dental Hard Tissues: A Systematic Review** Maryam Saeedullah, Nozimjon Tuygunov, Noor Azlin Yahya, Muralithran Govindan Kutty, Arief Cahyanto, Hien Chi Ngo	Maryam Saeedullah	
SO03	**Enzymatic Deproteinization and S-PRG-containing Self-Etch Adhesives Enhance Dentin/Enamel Anti-demineralization and ABRZ Thickness** Citra Kusmasari, Ratna Meidyawati, Iffi Aprillia, Natasya Hillary, A'an Mi'dad Arrizza, Ahmed Abdou	Citra Kusumasari	

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (MAIN HALL)

Saturday, 06 September 2025		Main Hall	
Presentation ID	Title & Author	Presenting author	Time
SO04	**Deterioration of Diamond Rotary Instruments after Repeated Cuts on Indirect Dental Composites** Selva Malar Munusamy, Yee Shien Chung	Selva Malar Munusamy	Presenters are requested to stand by their poster for viewing session from 11:30 AM to 12:00 PM
SO05	**Teeth: Our Personel ID** Samiya Riaz, Ahmad Badruddin, Johari Yap Abdullah	Samiya Riaz	
SO06	**Evaluating Frozen PRF Microstructure and PDGF-AB Growth Factor Release for Clinical Translation** Wan Nur Irdina Rusman , Siti Noor Fazliah Mohd Noor, Nurul 'Izzah Mohd Sarmin, Wong Tin Wui, Nurul Aida Ngah	Wan Nur Irdina Rusman	

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (MAIN HALL)

Saturday, 06 September 2025		Main Hall	
Presentation ID	Title & Author	Presenting author	Time
SO07	**Printed vs Milled Hybrid Ceramic indirect restorations: Impact on Marginal fit and Fracture Resistance** Ahmed Abdou, Citra Kusumasari, Aditya Wisnu Putranto, Iffi Aprillia, Astrid Anggia, Christopher Christopher, Amr Rizk	Ahmed Abdou	Presenters are requested to stand by their poster for viewing session from 12:15 PM to 12:45 PM
SO08	**Renal and Hepatic Effects of Platelet-Derived Extracellular Vesicles in Rats with Ligature-Induced Periodontitis** Bing-Huan Chuah, Yan-Rou Farm, Sook-Luan Ng, Jia-Xian Law, Xin-Fang Leong, Kok-Lun Panga, Masfueh Razali	Bing Chuah	
SO09	**Modulation of Inflammatory Gene Expression by Platelet-Derived Extracellular Vesicles in Ligature-Induced Periodontitis Rats** Yan-Rou Farm, Bing-Huan Chuah, Sook-Luan Ng, Jia-Xian Law, Xin-Fang Leong, Kok-Lun Pang, Masfueh Razali	Yan Rou Farm	

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (MAIN HALL)

Saturday, 06 September 2025		Main Hall	
Presentation ID	Title & Author	Presenting author	Time
SO10	**Angiogenic Evaluation and Endothelial Differentiation Potential of 3D-Printed Hydroxyapatite-Acrylated Palm Olein Composite Scaffolds** Chen Xi, Nik Aziz Nik Madihah, Mohd Masri Syafira, Razali Masfueh	Chen Xi	Presenters are requested to stand by their poster for viewing session from 02:00 PM to 02:30 PM
SO11	**The Impact of Digitalization on Oral Health Literacy and Information Sources among Urban Poor Communities in Kuala Lumpur** Alias Abd Aziz, Najihah Lokman, Marhazlinda Jamaludin, Rohana Jani	Alias Abd Aziz	
SO12	**PLA-Modified Hydroxyapatite–Carbonate Apatite Scaffold for Dental Bone Regeneration** Asmak Abdul Samat, Badrul Hisham Yahaya, Nurulain 'Atikah Kamalaldin, Mariati Jaafar, Zuratul Ain Abdul Hamid	Asmak Abdul Samat	

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (MAIN HALL)

Saturday, 06 September 2025		Main Hall	
Presentation ID	Title & Author	Presenting author	Time
SO13	**Synthesis and Incorporation of Novel Chlorhexidine Spheres in RMGIC to Impart Anticariogenic Property** Arouba Tariq, Maleeha Nayyer, Saroash Shahid, Muhammad Kaleem	Maleeha Nayyer	Presenters are requested to stand by their poster for viewing session from 02:45 PM to 03:15 PM
SO14	**"Who Talks Biostat?": Mapping Peer Influence and Learning Interest Using a Sociocentric Network Approach** Izyan Hazwani Baharuddin	Izyan Hazwani Baharuddin	
SO15	**Finite Element Analysis of Cuspal Coverage Restorations in Root-treated Premolars Using Fibre Composite Materials** Yong Chi Phoy, Jasmina Qamaruz Zaman, Beh Yew Hin, Mohd Nurul Amin Adnan	Yong Chi Phoy	

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (MAIN HALL)

Saturday, 06 September 2025		Main Hall	
Presentation ID	Title & Author	Presenting author	Time
SO16	**Preliminary Ex Vivo Evaluation of Fibre Laser and Conventional Soft Tissue Cutting Using Surface Profilometry** Jaloliddin Patkhiddinov, Nik Syahirah Aliaa Nik Sharifulden, Noor Azlin Yahya, Zamri Radzi	Jaloliddin Patkhiddinov	Presenters are requested to stand by their poster for viewing session from 03:30 PM to 04:00 PM
SO17	**Empowering Change: Cross-Cultural Adaptation of a Betel Quid Cessation Tool in Malaysia's High-Risk Community** Mary Melissa Sarimuthu, Jennifer Geraldine Doss, Amer Siddiq Amer Nordin	Mary Melissa Sarimuthu	
SO18	**DIAGNOdent Assessment of Enamel Remineralisation Using SAP P11-4, Fluoride, and CPP-ACPF in Induced Occlusal Lesions** Karisha Sivam, S Nagarajan MP Sockalingam, Jasmina Qamaruz Zaman, Ahmad Shuhud Zakaria, Alida Mahyuddin	Karisha Sivam	

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (MAIN HALL)

Saturday, 06 September 2025		Main Hall	
Presentation ID	Title & Author	Presenting author	Time
SO19	**Exploring Knowledge Barriers Among Sports School Teachers in Managing Tooth Avulsion in School Children** Puteri Nur Ameera Farahin Md Amin, Nabihah Dziaruddin, Shani Ann Mani, Sabri Musa	Puteri Ameera Farahin Md Amin	Presenters are requested to stand by their poster for viewing session from 04:15 PM

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (BILIK IRAMA 8)

Saturday, 06 September 2025		Bilik Irama 8	
Presentation ID	Title & Author	Presenting author	Time
S020	**Exploring Children's Perceptions of Digital Impressions: A Qualitative Study** Nur Adlina Diyana Md Ismail, Noorhidayah Zainal Aalam, Lily Azura Shoaib	Nur Adlina Diyana Md Ismail	Presenters are requested to stand by their poster for viewing session from 02:30 PM to 03:00 PM
S021	**Barriers to IADT Guideline Implementation Among Malaysian Dental Students: A Mixed-Methods Study** Bikash Chaurasia, Mark Low Jun Fay	Bikash Chaurasia	
S022	**Development and Usability of an Oral Health Education Module for Pakistani Parents delivered via Social Media** Ushna Shameen, Elavarasi Kuppusamy, Farinawati Yazid, Haslina Rani	Ushna Shameen	

PRESENTATION SCHEDULE
SENIOR ORAL PRESENTATION (BILIK IRAMA 8)

Saturday, 06 September 2025		Bilik Irama 8	
Presentation ID	Title & Author	Presenting author	Time
S023	**Use of YouTube as Learning Modality for Clinical Procedures Among Dental Students in Malaysia: A National Study** Muhd Akman MA, Kamazan MI, Noviaranny IY, Abdullah NM, Kherul Anuwar AH, Sonjaya D, Arief EM, Sukmasari S	Indah Noviaranny	Presenters are requested to stand by their poster for viewing session from 03:15 PM to 03:30 PM
S024	**Comparison of Wire-Bending Skills of General Dentist Pre- and Post- Workshop** Emad Rasheed, Rasheed Abdulsalam, Jubaidh Musa	Emad Rasheed	

PRESENTATION SCHEDULE
SENIOR POSTER PRESENTATION
(FRONT OF IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
SP01	**α-Mangostin as a Natural Disinfectant for Dental Impressions: An In Vitro Study** Ros Anita Omar, Mohd Amirul Fahmi Che Mohd Fadzilah, Hong Teng Ching, Wan Himratul Aznita Wan Harun	Mohd Amirul Fahmi Che Mohd Fadzilah	Presenters are requested to stand by their poster for viewing session from 10:45 AM to 11:15 AM
SP02	**Effect of Cosmos Caudatus on p53 Expression in Oral Squamous Cell Carcinoma Cell Lines** Kelvin Sin Hou Liaw, Nurul Inaas Mahamd Apandi, Alida Mahyuddin, Norliwati Ibrahim, Sook Luan NG, Eng Wee Chua, Yee Xing You	Kelvin Sin Hou Liaw	
SP03	**Augmented Reality in Dental Prosthesis Care: Insights from the Patient's Perspective** Anisya Hanum Othman, Nik Rahayyu Nik Zulkifeli, Nazurah Nik Eezammuddeen, Nurul Hanim Othman, Aiemeeza Rajali	Anisya Hanum Othman	

PRESENTATION SCHEDULE
SENIOR POSTER PRESENTATION
(FRONT OF IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
SP04	**Effect of Toothbrushing on The Monomer Elution and The Fluoride Release of CAD/CAM Resin Composite Block** Fazliza Mohd Fathoni, Siti Mariam Abd Ghani, Zethy Hanum Mohamed Kassim	Fazliza Mohd Fathoni	
SP06	**Effects of Thermocycling on the Physico-Mechanical Properties of Resin-Coated High Viscosity Glass Ionomer Cement** Azwatee Abdul Aziz, Noor Azlin Yahya, Tavan Al Zangana	Tavan Al Zangana	Presenters are requested to stand by their poster for viewing session from 11:30 AM to 12:00 PM
SP07	**Physico-Mechanical Properties of GIC with Hydroxyapatite Synthesized from Camel Bone Waste: A Pilot Study** Malokhat Patkhiddinova, Noor Azlin Yahya, Rana Abdelbaset Lotfy Diab, Anas Hakimee Ahmad Ubaidillah, Zohaib Khurshid	Malokhat Patkhiddinova	

PRESENTATION SCHEDULE
SENIOR POSTER PRESENTATION
(FRONT OF IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
SP08	**Prevalence of TMD Symptoms in Prospective Orthodontic Patients and Their Association with Biopsychosocial Factors** Aziz Khakimov, Adrian Ujin Yap, Alias Abd Aziz, Kathreena Kadir, Zamri Radzi	Aziz Khakimov	
SP09	**Coffee Thermocycling and Printing Parameters Affect Color Stability of 3D-Printed Denture Resins** Muhamad Faizran Loo Szen Fadly Loo, Aiemeeza Rajali, Nik Noor Idayu Nik Ibrahim, Nadia Kartikasari, Siti Mariam Ab Ghani, Shuib, Solehuddin Shuib, Rohana Ahmad	Muhamad Faizran Loo Szen Fadly Loo	Presenters are requested to stand by their poster for viewing session from 12:15 PM to 12:45 PM
SP10	**Effects of Palm Mixed-Carotenes on Viability of Human Periodontal Ligament Cells In Vitro** Sun Yixin, Ng Sook Luan, Leong Xin Fang	Yixin Sun	

PRESENTATION SCHEDULE
SENIOR POSTER PRESENTATION
(FRONT OF IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
SP11	**Post-Delivery Digital Denture Geriatric Oral Health Assessment Index (GOHAI) in Nilai, Negeri Sembilan Community Service: A Pilot Study** Nusima Mohamed, Norlela Yacob, Laila Azwa Hassan	Nusima Mohamed	Presenters are requested to stand by their poster for viewing session from 02:00 PM to 02:30 PM
SP12	**Effects of Cleaning Agents on Flexural Modulus and Light Transmittance of Polypropylene Dental Material** Liang Huey Liew, Eunice Xinwei Soh, Noor Azlin Yahya, Roziana Mohd Razi	Liang Huey Liew	
SP13	**Students' Self-Reported Confidence Level Post Completion of General Surgery and General Medicine Module: Preliminary Study in UiTM** Mohammed Gh Al Naser, Andrean Husin	Mohammed Gh Al Naser	

PRESENTATION SCHEDULE
SENIOR POSTER PRESENTATION
(FRONT OF IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
SP14	**Electronic Vibrating Devices Modulate the Injection Pain of Local Anaesthesia — A Systematic Review** Hany Suraya Ab Sukor, Tan Su Keng, Faezah Sabirin	Hany Suraya Ab Sukor	
SP15	**Orthodontic Miniscrews Insertion between the Roots of First and Second Molar: A Randomised Clinical Trial** Arron Lim, Murshida Marizan Nor, Khairil Aznan Mohamed Khan	Arron Lim	Presenters are requested to stand by their poster for viewing session from 02:45 PM to 03:15 PM
SP16	**Development of a PCL-PDA-Cu Nanofibre Scaffold with Controlled Release of Copper Ions for Antibacterial and Osteogenic Synergy** Tongbin Liu, Akram Hassan, Matheel Zhair Yousif Alwaras, Zaihan Ariffin	Tongbin Liu	

PRESENTATION SCHEDULE
SENIOR POSTER PRESENTATION
(FRONT OF IRAMA 8)

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PRESENTATION SCHEDULE
JUNIOR ORAL PRESENTATION
(BILIK IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
J001	**Effects of Finishing and Polishing on Gloss Retention of Single Vs. Multi-Shade Composites Following Toothbrushing** Nur Ezzati Syakirah Ahmad Ramizun, Nurul Hanisah Hamsah, Zethy Hanum Mohamed Kassim, Siti Mariam Ab Ghani	Nur Ezzati Syakirah Ahmad Ramizun	
JO02	**Investigation on the Adaptation of Customized Fibre Post in Wide Canals** Siti Norhajar Rozeine Mohd Dalib, Nur Humaidah Mohd Zulkifli, Melati Mahmud, Siti Mariam Ab Ghani	Siti Norhajar Rozeine Mohd Dalib	Presenters are requested to stand by their poster for viewing session from 10:45 AM to 11:15 AM
JO03	**Dimensional Accuracy and Stability of 3D-Printed Casts Fabricated from Three Resin Brands** Ryan B Gallora, Jamalia Rose T Siasat, Chrisbel Joyce T Francisco, Marinela M Misa, Eldrick Syrus S Maceren, Diane Kate H Tiangco, Juliah C Arcangel, Joanne D Plandez	Ryan B Gallora	

PRESENTATION SCHEDULE
JUNIOR ORAL PRESENTATION
(BILIK IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
J004	**Surgical Efficiency and Stability of the Surgery-First Approach in Class II Cases: A Review** Audadi Abdul Rahman Law, Afida Izzati Mat Aris, Azmeel Mazlee Anuar, Yiu Yan Leung, Su Keng Tan	Audadi Abdul Rahman Law	
JO05	**Novel c-Axis Crystal Modification of Dentin Hydroxyapatite: Spin Orbital Dynamics and Wave Entanglement** Shahad Daood, Mei Litt, Sahar Fatima, Jukka Matinlinna, Salvatore Sauro, Ove Peters, Cynthia Yiu, Igor Blum, Umer Daood	Shahad Daood	Presenters are requested to stand by their poster for viewing session from 11:30 AM to 12:00 PM
JO06	**Mental Health and Quality of Life among Parents with Cleft Lip and Palate Children** Nur Thaqifah Alyaa Mohd Tawfid, Abdul Raziq Md Yassin@Md Norazni, Aufa Dahlia Bahar, Noorhidayah Zainal Aalam	Nur Thaqifah Alyaa Mohd Tawfid	

PRESENTATION SCHEDULE
JUNIOR ORAL PRESENTATION
(BILIK IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
J007	**Comparative In Vitro Study of Unfortified and Calcium Sulphate Fortified Chickpea Milk on the Remineralisation of Citric Acid Eroded Enamel Surface** Vimuthen Balaram, Muhammad Amirul Naim Shaiful Kamarul, Khayrin Suraya Muhammad Hussain, Mariati Abdul Rahman, Aliah Zannierah Mohsin, Zahirrah Begam Mohamed Rasheed	Muhammad Amirul Naim	Presenters are requested to stand by their poster for viewing session from 12:15 PM to 12:45 PM
JO08	**Effect of Food-Simulating Liquids on the Surface Properties of Tooth-Coloured Restorative Materials** Muhammad Zulhilmi Shamsudin, Wong Wei Shen, Noor Azlin Yahya, Zamri Radzi	Muhammad Zulhilmi Shamsudin	
JO09	**Psychosocial and Aesthetic Outcomes of Surgery-First Approach in Class II Orthognathic Patients: A Review** Afida Izzati Mat Aris, Audadi Abdul Rahman Law, Azmeel Mazlee Anuar, Yiu Yan Leung, Su Keng Tan	Afida Izzati Mat Aris	

PRESENTATION SCHEDULE
JUNIOR ORAL PRESENTATION
(BILIK IRAMA 8)

Saturday, 06 September 2025		Front of Irama 8	
Presentation ID	Title & Author	Presenting author	Time
J010	**Implications Of Financial Burden on the Mental Health Among Undergraduate Dental Students in Malaysia** Anis Sofea Afznizam, Kang Jing Lim, Siti Fauzza Ahmad, Ros Anita Omar	Anis Sofea Afnizam	Presenters are requested to stand by their poster for viewing session from 02:00 PM to 02:15 PM
JO11	**Smile Attractiveness Perception by Three Malaysian Ethnic Groups Related to Upper Midline Deviation** Yan MH, Tan Khai Li, Nimbalkar S, Patil P	Tan Khai Li	

SENIOR ORAL ABSTRACT (01)

SO01

Enhancing Denture Strength: The Influence of Fibre Loading on Kenaf–Polyamide Composites

Eraaja Rajeshwari M[1]*, Norhafizah Saari[1], Mohd Firdaus Yhaya[1], Johari Yap Abdullah[1], Nurulezah Hasbullah[1]

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Introduction: Commercial denture base materials like PMMA are widely used, yet their poor fracture resistance and non-biodegradability remain concerns. Natural fibre-reinforced polymers offer sustainable alternatives with promising mechanical properties. Kenaf, a lignocellulosic fibre with high tensile strength, is well-suited for reinforcement. Biodegradable polyamides (PA) are competitive alternatives to commercial polymers. While PA6 and PA6,6 are commonly studied with kenaf, PA12—with its lower melting point—is more compatible, as kenaf degrades around 200 °C. However, optimal fibre loading for dental applications remains underexplored, highlighting a gap in developing clinically relevant composites. **Objective:** This study investigates the effect of different fibre loadings on mechanical properties of injection-moulded kenaf reinforced PA12 composites for dental applications. **Methods:** Kenaf fibres were pre-treated and incorporated into PA12 matrix at four fibre loadings (2.5, 5.0, 7.5 and 10 wt%) using injection moulding. Composite specimens were tested for flexural strength per ISO 4049:2000 standards. Additional specimens underwent compressive and tensile strength tests. Structural and chemical analyses were conducted using X-ray Diffraction (XRD) and Fourier-Transform Infrared Spectroscopy (FTIR). **Results:** Preliminary findings show enhanced flexural strength for the 10 wt% kenaf–polyamide composite (64.89 MPa) versus neat polyamide (42.45 MPa). Comparatively, 10 wt% fibre loading produced improved properties. **Discussion:** The improvement is attributed to fibre–matrix interaction and effective stress transfer, suggesting kenaf's potential as a reinforcement material for dentures. **Conclusion:** Initial data supports the feasibility of kenaf fibre incorporation in polyamide denture bases. Mechanical characterisation across fibre loadings will provide insight into optimal concentration for functional performance and clinical reliability.

Keywords: Denture base, Kenaf fibre, Mechanical properties, Polyamide 12 composite

SENIOR ORAL ABSTRACT (02)

SO02

Role of Strontium-Based Materials in Enhancing Remineralization of Dental Hard Tissues: A Systematic Review

Maryam Saeedullah[1], Nozimjon Tuygunov[2], Noor Azlin Yahya[1]*, Muralithran Govindan Kutty[1], Arief Cahyanto[3, 4], Hien Chi Ngo[5]

[1]Department of Restorative Dentistry, Faculty of Dentistry, University of Malaya, Kuala Lumpur 50603, Malaysia
[2]Faculty of Medicine, Kimyo International University in Tashkent, Tashkent 100001, Uzbekistan
[3]Department of Restorative Dentistry, College of Dentistry, Ajman University, Ajman, P.O. Box 346, United Arab Emirates
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Introduction: In dentistry, strontium has proven to be highly versatile. Specific doses of strontium have been shown to significantly enhance proliferation, odontogenic differentiation, and mineralization processes in vitro, primarily through the calcium sensing receptor pathway. The review aimed to assess the evidence supporting the use of strontium-based compounds in promoting dental remineralization. **Methodology:** Studies investigating strontium's incorporation into various dental materials, including dentifrices, restorative products, and biomaterials, were analyzed. A comprehensive search of electronic databases, including PubMed-MEDLINE, Scopus, and Web of Science, was conducted following PRISMA guidelines. The risk of bias was evaluated using the RoBDEMAT tool. **Results:** Findings indicate that strontium enhances the formation of acid-resistant dentinal plugs, promotes hydroxyapatite formation, and aids in the osteogenic and odontogenic differentiation of dental cells. Additionally, strontium's ability to substitute calcium in biomaterials contributes to its efficacy in reinforcing dental hard tissues. **Conclusion:** These results underscore the potential of strontium-based materials in improving oral health and managing dental caries. However, further longitudinal and clinical studies are required to establish the long-term effectiveness and safety of strontium-enhanced formulations in dental practice.
Keywords: Strontium, tooth remineralization, apatite formation, dental biomaterials, caries management.

SENIOR ORAL ABSTRACT (03)

SO03

Enzymatic Deproteinization and S-PRG-containing Self-Etch Adhesives Enhance Dentin/Enamel Anti-demineralization and ABRZ Thickness

Citra Kusmasari[1]*, Ratna Meidyawati[1], Iffi Aprillia[1], Natasya Hillary[1], A'an Mi'dad Arrizza[1], Ahmed Abdou[2]

[1]Department of Conservative Dentistry, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia.
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Objective: To determine how smear-layer deproteinization with papain enzyme gel, used alone or combined with a surface prereacted glass ionomer (S-PRG)–containing self-etch adhesive, influences demineralization resistance and marginal gap formation to enamel and dentine after pH cycling, and the characteristics of the acid–base-resistant zone (ABRZ). **Methods:** Standardized cervical cavities were prepared in 32 extracted premolars. Cavities were pre-treated for 60 s with either (i) papain-based gel (Papacarie Duo, n = 16) or (ii) no treatment (n = 16), for each pre-tremant, the cavities were bonded with one of two adhesives: an S-PRG-based (FL-Bond II, n =8) or a silica-filled self-etch adhesive (Clearfil SE Bond 2, n =8). Flowable resin composite were applied to the cavities. All groups were subjected to a 4-day pH cycling regimen (6 h demineralization / 8 h remineralization). Rhodamine-B–labelled sections were examined by confocal laser scanning microscopy to measure wall-lesion depth (WLD), outer-lesion depth (OLD), full-depth demineralization, and marginal-gap length. ABRZ thickness and ultrastructure were assessed with scanning electron microscopy. **Results:** For enamel: Irrespective of pretreatment, the S-PRG adhesive produced significantly smaller WLD, OLD, and complete-demineralization zones than the silica-based adhesive ($p < 0.05$); while marginal-gap depth did not differ ($p > 0.05$). For dentin: Without deproteinization, the silica-based adhesive showed greater complete demineralization and higher gap than the deproteinized S-PRG group ($p < 0.05$). Papain pretreatment increased ABRZ thickness for both adhesives, but ABRZ thickness for S-PRG was significantly higher than silica-based adhesive. **Conclusions:** S-PRG fillers improve self-etch adhesives acidic challenge resistance at the mid/high micron level. Enzymatic smear-layer deproteinization with Papain-gel further increases the ABRZ at the micron level.
Keywords: Papain, smear layer deproteinization, Acid-Base Resistant Zone, pH cycling, Dental adhesion

SENIOR ORAL ABSTRACT (04)

SO04

Deterioration of Diamond Rotary Instruments after Repeated Cuts on Indirect Dental Composites

Selva Malar Munusamy[1]*, Yee Shien Chung[1]

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Introduction: Deterioration of diamond rotary instrument refers to short service life and necessitates the need for replacements. **Objectives:** Assess and compare the deterioration of coarse-grit and medium-grit diamond rotary instruments after repeated cuts on indirect dental composites. **Methods:** Medium-grit (NTI, Germany, grit size 115 μm) and coarse-grit (NTI, Germany, grit size 150 μm) diamond rotary instruments were tested on Shofu Ceramage (CM) and 3M ESPE Lava Ultimate (LU) specimens (14 × 15 × 2 mm) and divided into four groups (n=8): LU-Coarse, LU-Medium, CM-Coarse, and CM-Medium. A high-speed handpiece with constant cutting load (0.9 N), speed (400,000 rpm), and water flow rate (25 mL/min) was used. The diameters of the diamond rotary instruments were measured using digital calipers (Mitutoyo Corporation, Kawasaki, Japan) at baseline and cut-10. The differences between the measurements were recorded and the mean percentage (%) of deterioration was calculated. Representative diamond rotary instrument from each group were examined at 50× and 200× magnifications using scanning electron microscopy (SEM; Fei Quanta 450) at baseline and cut-10. Data were statistically analyzed at significance level $p < 0.05$ using One-way ANOVA and Tukey's HSD for multiple comparisons, with paired samples t-test for intra-group differences. **Results:** A significant decrease in mean diameter was observed across all groups from baseline to Cut-10 with coarse-grit showing statistically significant higher mean diameter ($p < 0.05$) than medium-grit diamond rotary instruments at baseline. LU-Coarse group exhibited the highest mean deterioration value (7.0 ± 0.93%). Significant differences ($p < 0.05$) in mean deterioration were observed between baseline and Cut-10 for all groups. Coarse-grit diamond rotary instruments showed more pronounced attritious wear and diamond particle pull-out than medium-grit instruments at Cut-10. **Conclusions**: Coarse-grit diamond rotary instruments showed greater deterioration and wear patterns than medium-grit during prolonged cut (Cut-10). Medium-grit instruments can be suggested for prolonged use (Cut-10) on indirect dental composites before replacement.
Keywords: Deterioration, diamond rotary instruments, indirect dental composites, wear.

SENIOR ORAL ABSTRACT (05)

SO05

Teeth: Our personal ID

Samiya Riaz[1]*, Ahmad Badruddin[2], Johari Yap Abdullah[3]

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Introduction: In forensic odontology, individuality or unique features are important concepts for antemortem (AM) and post-mortem (PM) dental record comparisons. There are various studies on the individuality of soft tissue and hard tissue structures like rugoscopy, cheiloscopy, enamel rod patterns, etc. However, the data is scarce for studies specifically based on the individuality of single tooth morphology. **Objective**: To determine the individuality of morphology of the maxillary first and second premolars (PM1 and PM2) using AI segmented three-dimensional (3D) CBCT scans. **Methodology**: Sixty CBCT scans (30 male and 30 female) were selected for segmentation. Inclusion criteria were healthy fully developed PM1 and PM2. Exclusion criteria were teeth with any anomaly or trauma obscuring the tooth morphology, restored teeth, and distorted scans. Maxillary arch teeth were segmented from the remaining CBCT scan using AI segmentation tool and saved as STL files, mimicking AM data. The same CBCT scans were then segmented again to mimic PM data. Next, PM1 and PM2 were segmented from the STL files using 3-Matic software. The AM and PM sets of scans were decoded by examiner A. One hundred and twenty pairs of each PM1and PM2 were made by examiner A and superimposed by examiner B using CloudCompare software. The pairs included 60 matched and 60 non-matched pairs for each tooth type. A root mean square (RMS) threshold was used as the standard criterion to determine the acceptability of the decision. **Results:** There was statistically significant difference between the RMS of matched and non-matched pairs for both PM1 and PM2. Based on the threshold of RMS value, Examiner B gave the correct decision for all the pairs, and PM1 and PM2 showed 100% uniqueness of their morphology. **Conclusions**: Maxillary PM1 and PM2 exhibit the uniqueness of tooth morphology and thus may be used for human identification.
Keywords: AI, superimposition, maxillary premolars, tooth morphology, uniqueness

SENIOR ORAL ABSTRACT (06)

SO06

Evaluating Frozen PRF Microstructure and PDGF-AB Growth Factor Release for Clinical Translation

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Background: Platelet-rich fibrin (PRF) is a widely used material in regenerative medicine because of its biocompatibility, autologous origin, and capacity to facilitate and accelerate bone healing and regeneration. Nevertheless, fresh PRF has a limited storage life and necessitates immediate application. In contrast, frozen PRF (FPRF) has been suggested as a more stable alternative for regenerative medicine. However, this biomaterial has yet to undergo a comprehensive analysis to ascertain its functionality in bone tissue engineering. **Objectives:** This study aimed to evaluate whether FPRF preserves the structural characteristics, pore size distribution, and cellular components of fresh PRF while simultaneously improving its kinetic release of growth factor. **Methods:** Fresh PRF was frozen overnight to generate FPRF from blood collected from healthy individuals. Subsequently, laboratory techniques were employed to investigate the fibrin structure, pore characteristics, and presence of cells. A plate-based immunoassay with antibody-antigen binding properties was employed to analyse the kinetic release of growth factor, which is essential for early-stage bone regeneration. **Results:** The FPRF exhibited a microstructure that was advantageous for cell migration, adhesion, and proliferation, as it maintained a high level of porosity and interconnected structures. Additionally, the prevalence of cells, such as leukocytes and platelets, was preserved in abundance. The kinetic release of growth factor was observed to be gradual, which subsequently extended its applicability in bone regeneration. **Conclusion:** FPRF maintains the biological attributes that are critical for bone regeneration while preserving the important structural features of fresh PRF. Consequently, this biomaterial can be used as a suitable alternative for long-term storage and bone tissue engineering applications.
Keywords : Lyophilised Platelet-rich Fibrin, Tissue Engineering, Bioscaffold, Tissue Regeneration, Hard Tissue

SENIOR ORAL ABSTRACT (07)

SO07

Printed vs Milled Hybrid Ceramic indirect restorations: Impact on Marginal fit and Fracture Resistance.

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Objectives: To assess marginal adaptation and fracture strength after thermocycling of overlay and full-coverage crowns on maxillary premolars, using hybrid ceramics made with additive and subtractive manufacturing. **Materials and Methods:** Twenty-eight extracted maxillary first premolars were prepared with a standardized 2 mm occlusal reduction and randomly assigned to two groups (n=14) according to preparation design: overlay with no axial reduction and butt-joint finishline (OB),and full-coverage crown with 0.8 mm deep chamfer finishline (FC). Each group was further subdivided based on fabrication technique into two subgroups (n=7), additively manufactured using a 3D-printed hybrid ceramic resin (Printed, Ceramic Crown, SprintRay Inc., USA) or by subtractive manufactured (Milled, Grandio blocs, Voco GmbH, Germany). The restorations were then bonded with dual-cure self-adhesive resin cement. Marginal adaptation was assessed before and after thermocycling (5,000 cycles between 5 °C and 55 °C) using stereomicroscopic. While fracture strength was evaluated using a universal testing machine after thermocycling. Data tested with the Mann-Whitney U test and Weibull analysis (α = 0.05). **Results:** Thermocycling significantly increased marginal gaps in all groups ($p < 0.001$). Milled group showed smaller gaps than printed for both designs ($p < 0.001$). Preparation design had no significant effect within each material group ($p > 0.05$). Fracture strength was significantly higher in milled restorations ($p < 0.05$). While no difference between different designs in each material. Favorable fractures were more common in printed restorations. **Conclusion:** Milled hybrid ceramic restorations demonstrated better marginal adaptability and fracture resistance than printed counterparts. Butt-margin overlay design showed a competitive performance to full coverage, indicating that they are a feasible conservative option to full coverage crowns. **Keywords:** Additive manufacturing, CAD-CAM, Resin-based ceramics, Permanent resin, Subtractive manufacturing, Weibull.

SENIOR ORAL ABSTRACT (08)

SO08

Renal and Hepatic Effects of Platelet-Derived Extracellular Vesicles in Rats with Ligature-Induced Periodontitis

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Objectives: This study aimed to evaluate the effects of human platelet-derived extracellular vesicles (hPLT-EVs) on liver and kidney function in rats with ligature-induced periodontitis (LIP). **Methods**: hPLT-EVs were isolated from platelet-rich plasma using tangential flow filtration and characterized by nanoparticle tracking analysis and Western blotting for CD41, CD63, and TSG101. Male Wistar rats were randomly assigned to two groups (n=3 per group): SHAM and LIP treated with 30×10^6 hPLT-EV particles. Ligature-induced periodontitis was established by placing 4-0 silk sutures around the maxillary second molars bilaterally for 14 days. Following ligature removal, rats received weekly palatal gingival injections of hPLT-EVs for 28 days. On day 28, animals were euthanised, and blood samples were collected for analysis of liver and kidney function markers (alanine transaminase, aspartate transaminase, creatinine, and urea). Liver and kidney tissues were processed for histological evaluation using hematoxylin and eosin staining. **Results**: Biochemical analysis revealed no significant elevation in alanine transaminase, aspartate transaminase, creatinine and urea levels in hPLT-EV-treated rats compared to controls. Histological examination of the liver and kidney revealed intact lobular architecture, preserved glomerular and tubular structures, and absence of inflammation, necrosis, or structural abnormalities in both organs across all groups. **Conclusions**: hPLT-EV administration did not adversely affect liver or kidney function or structure in rats with periodontitis, supporting their potential safety and suitability as an adjunctive therapeutic agent in periodontal treatment.
Keywords: Platelet-derived extracellular vesicles; ligature-induced periodontitis; kidney function; liver function

SENIOR ORAL ABSTRACT (09)

SO09

Modulation of Inflammatory Gene Expression by Platelet-Derived Extracellular Vesicles in Ligature-Induced Periodontitis Rats

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Objective: This study aimed to evaluate the effects of hPLT-EV treatment on the gene expression of inflammatory markers in gingival tissues of rats with ligature-induced periodontitis (LIP). **Methods:** LIP was induced in Wistar rats by placing 4-0 silk ligatures around both maxillary second molars for 14 days. Rats received weekly palatal injections of 30×10^6 hPLT-EV particles for 28 days. Gingival tissues from the left maxillary molars were harvested for RNA extraction, followed by cDNA synthesis and quantitative PCR analysis. Expression levels of IL-1β, IL-6, IL-8, IL-10, IL-13, and TNF-α were assessed, with β-actin as the housekeeping gene. **Results:** hPLT-EV treatment significantly downregulated the expression of pro-inflammatory cytokines, including IL-1β, IL-6, IL-8, and TNF-α, compared to untreated controls. A modest upregulation of anti-inflammatory cytokines IL-10 and IL-13 was also observed. **Conclusion:** hPLT-EVs modulate inflammatory cytokine expression in gingival tissues, demonstrating their potential as an adjunctive therapeutic approach for managing inflammation in periodontitis.
Keywords: Extracellular vesicles, periodontitis, inflammatory gene expression, platelet

SENIOR ORAL ABSTRACT (10)

SO10

Angiogenic Evaluation and Endothelial Differentiation Potential of 3D-Printed Hydroxyapatite-Acrylated Palm Olein Composite Scaffolds

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Introduction: Vascularization remains a key challenge in periodontal tissue engineering. Functional scaffolds that can promote angiogenic signaling and support endothelial differentiation are essential for successful tissue regeneration. Biomaterial-based strategies incorporating biocompatible components and optimized architecture may enhance neovascular integration and therapeutic outcomes.
Objectives: This study aimed to assess the angiogenic potential of 3D-printed hydroxyapatite-acrylated palm olein (HA-APO)-based scaffolds in endothelial cells and evaluate their ability to induce endothelial differentiation in human periodontal ligament stem cells (hPDLSCs). **Methods:** Three scaffold groups of different concentration of hydroxyapatite namely 5%, 7%, and 10% hydroxyapatite were produced using extrusion-based 3D printing with 5% acrylated palm olein. Human umbilical vein endothelial cells (HUVECs) were seeded on the scaffolds to assess vascular endothelial growth factor (VEGF) secretion using ELISA. Data were analysed using the Kruskal-Wallis H test due to non-normal distribution. To evaluate endothelial differentiation, human periodontal ligament stem cells (hPDLSCs) were seeded on the same scaffolds (1.5×10^5 cells/scaffold) and cultured in endothelial growth medium (EGM-2) for 21 days. HUVECs were used as a control group and observed at Day 7. VEGF and CD31 expression were examined using immunocytochemical staining, followed by secondary antibody labeling, DAPI counterstaining, and confocal microscopy. **Results:** Among HUVEC groups, the 5% HA scaffold showed the highest VEGF secretion ($p = 0.00077$, Kruskal-Wallis H test), followed by 7% and 10%. All hPDLSC-seeded scaffolds demonstrated positive VEGF and CD31 expression at Day 21. Marker expression was also observed in HUVECs at Day 7. **Conclusions:** 3D-printed HA-APO scaffolds demonstrated both angiogenic and endothelial differentiation potential, supporting their application in periodontal tissue regeneration.
Keywords: angiogenesis, endothelial differentiation, hydroxyapatite, 3D-bioprinting

SENIOR ORAL ABSTRACT (11)

SO11

The Impact of Digitalization on Oral Health Literacy and Information Sources Among Urban Poor Communities in Kuala Lumpur

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Introduction: Enhancing public oral health literacy through effective engagement strategies is crucial for improving oral health outcomes across diverse socioeconomic groups. **Objective:** This study aims to evaluate oral health literacy levels among urban poor communities in Kuala Lumpur and identify their primary sources of oral health information, with a particular focus on the impact of digitalization on the dissemination of information. **Methods:** Approximately 200 participants were recruited from Perumahan Awam and Program Perumahan Rakyat residential areas in Kuala Lumpur. Data were collected through face-to-face interviews using a structured, printed questionnaire. The Malay version of the 14-item Health Literacy in Dentistry Scale (HeLD-14) was used to assess oral health literacy. Data analysis was performed using IBM SPSS Version 29. **Results:** The findings indicate that 59.0% of participants demonstrated high oral health literacy, while 11.5% exhibited low levels of oral health literacy. Oral health literacy was significantly associated with marital status and generational cohort. In addition, a significant correlation was found between the generational groups (Generation Z, Millennials, Generation X, and Baby Boomers) and primary sources of oral health information, which have been shaped by digitalization. Generation Z and Millennials primarily accessed oral health information via social media. In contrast, Generation X and Baby Boomers utilized a broader range of sources, including social media, traditional media, and outreach programs. **Conclusion:** Oral health practitioners should consider the role of digitalization in information dissemination among younger populations to design more effective educational interventions. There is also a need to increase awareness of artificial intelligence-based methods, such as social media analytics, to better assess youth perceptions and monitor their understanding of oral health issues. These strategies can support the development of targeted health education initiatives and improve oral health literacy in underserved urban communities.
Keywords: Digitalization, Generation, Oral Health Literacy, Social Media, Urban Poor

SENIOR ORAL ABSTRACT (12)

SO12

PLA-Modified Hydroxyapatite–Carbonate Apatite Scaffold for Dental Bone Regeneration

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Regenerative strategies for dental bone defects require scaffolds that emulate native bone architecture while offering adequate mechanical strength and bioactivity. This study presents the fabrication of a porous scaffold composed of hydroxyapatite (HA) and carbonate apatite (CO_3Ap), incorporating polylactic acid (PLA) as both porogen and surface modifier. **Objectives:** This study aimed to fabricate and characterize a porous scaffold composed of hydroxyapatite (HA) and carbonate apatite (CO_3Ap), utilizing polylactic acid (PLA) as both a porogen and a surface modifier. The goal was to enhance mechanical strength, optimize porosity, and emulate the mineral composition of natural bone for dental bone regeneration. **Methods:** A composite of 70 wt% HA and 30 wt% β-tricalcium phosphate (β-TCP) was mixed with PLA microspheres (572–841 μm) and fabricated using freeze casting, followed by sintering at 1115°C. Hydrothermal treatment with 5M Na_2CO_3 at 200°C for five days facilitated conversion of β-TCP to CO_3Ap. PLA coatings (6%, 8%, 10%) were applied under vacuum. Characterization included FTIR spectroscopy, SEM, Archimedes' porosity test, and compressive testing. **Results:** FTIR confirmed B-type CO_3Ap formation. SEM revealed lamellar and hexagonal structures. Scaffolds exhibited interconnected porosity averaging $51.59 \pm 1.63\%$, conducive to cell infiltration. PLA significantly increased compressive strength, with the 8% PLA-coated scaffold achieving 2.90 ± 0.22 MPa. The 10% coating resulted in superficial coverage due to higher viscosity, limiting internal infiltration. **Conclusion:** The use of PLA as both porogen and surface modifier successfully produced HA/CO_3Ap scaffolds with improved mechanical integrity and bone-mimicking architecture. These findings support its potential use in dental and craniofacial bone regeneration, warranting further biological validation.
Keywords: Bone scaffold, carbonate apatite, hydroxyapatite, PLA, dental regeneration.

SENIOR ORAL ABSTRACT (13)

SO13

Synthesis and Incorporation of Novel Chlorhexidine Spheres in RMGIC to Impart Anticariogenic Property

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Objectives: Resin-modified glass ionomer cements (RMGIC) are prone to secondary caries, as inevitable polymerization shrinkage may lead to the formation of micro gaps. Fluoride release from these materials is also limited. The objective of this study was to impart sustained anticariogenic property to RMGIC by incorporating synthesized chlorhexidine (CHX) spheres in varying concentrations. **Methods:** Synthesis of chlorhexidine spheres was carried out via precipitating chlorhexidine diacetate in calcium chloride solution. Characterization of these spheres was carried out through Scanning electron microscopy, Energy dispersive Xray spectroscopy and Fourier Transform Infrared Spectroscopy. Three major groups were outlined for incorporation in RMGIC: EGA, EGB and CG. In experimental group (EGA), synthesized CHX spheres were incorporated in two concentrations: 1.5% and 3%. Whereas, in EGB, only chlorhexidine diacetate salt was incorporated at a concentration of 1.5%. Control group (CG) comprised of cured RMGIC samples without any chlorhexidine. Fifty-one samples of RMGIC were prepared (n=3 for each test). Antimicrobial susceptibility testing was carried out against *Streptococcus mutans* (ATCC 25175). Release of chlorhexidine from spheres was evaluated via UV-vis spectroscopy over a period of 63 days. Vickers microhardness of RMGIC was evaluated by using 100 g load and 10 s dwell time. All the tests were done in triplicates and were analyzed quantitatively. **Results:** Disk diffusion and direct contact test revealed that anticariogenic potential of experimental RMGIC samples was significantly greater $(p \leq 0.05)$ than that of control group. EGA3 exhibited the highest zone of inhibition at all-time points. Sustained release of chlorhexidine from all the experimental groups was observed over a period of 63 days with highest release from EGA3. There was no statically significant difference $(p \geq 0.05)$ in the microhardness of experimental groups and control group. **Conclusions:** The novel experimental RMGIC samples displayed good anticariogenic potential and exhibited sustained release of chlorhexidine for a period of two months.
Keywords: Resin modified glass ionomer cement, Chlorhexidine spheres, Sustained release, Anticariogeni

SENIOR ORAL ABSTRACT (14)

SO14

"Who Talks Biostat?": Mapping Peer Influence and Learning Interest Using a Sociocentric Network Approach

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Background: Biostatistics is an important component of evidence-based dental practice, yet many students find it difficult to engage with or enjoy. This study aimed to examine peer discussion networks related to biostatistics among Year 3 dental students and their learning interest in the subject. A sociocentric approach was used to map peer discussions and explore whether students in more central network positions expressed greater interest in learning biostatistics. **Methods:** A sociocentric survey was conducted in a biostatistics class involving 78 students. Each student reported their gender and rated the relevance, usefulness, and interest in biostatistics using a five-point Likert scale. Peer nominations were collected using the roster method, allowing each student to select up to five classmates from the class list with whom they regularly discussed biostatistics. A directed network was constructed and analysed in R using the igraph package. Students not connected to others were excluded. Key metrics included degree, betweenness, closeness, clustering, and geodesic distance. **Results:** The final network comprised 59 students and 209 directed ties. Network density was 0.061, and edgewise reciprocity was 0.612, forming one connected component. The mean degree was 7.08. Six students were identified as the top 10 percent most central actors. Among respondents, 72.1% were female. For relevance, 44.3% somewhat agreed and 24.6% agreed. For usefulness, 42.6% agreed and 37.7% strongly agreed. Interest levels varied. Among the most central actors, four strongly agreed, one somewhat agreed, and one strongly disagreed with being interested in biostatistics. **Conclusion:** The peer network was moderately dense and reciprocal, with varied interest in learning despite generally positive perceptions of relevance and usefulness. Central actors with strong interest may serve as catalysts for peer-led strategies to enhance engagement with biostatistics.
Keywords: Biostatistics, Learning interest, Sociocentric network, Dental Education, Peer influence

SENIOR ORAL ABSTRACT (15)

SO15

Finite Element Analysis of Cuspal Coverage Restorations in Root-treated Premolars Using Fibre Composite Materials

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Objective: To compare stress distribution patterns resulting from different restoration techniques applied to root-treated mandibular premolars with standardized Class II cavities and 2 mm cuspal coverage using Finite Element Analysis (FEA). **Materials and Methods:** A three-dimensional model of a mandibular premolar was generated from micro-computed tomography (micro-CT). A standardized Class II cavity with 2 mm cuspal coverage was prepared across five groups, each differing in restorative configuration: Group 1: Lithium disilicate restoration. Group 2: Particulate composite resin throughout. Group 3: Particulate composite resin with short fibre reinforced composite (EverX Flow™, GC Corp., Tokyo, Japan) as the central core. Group 4: Particulate composite throughout with *Ribbond*® (Ribbond Inc., Seattle, WA, USA) circumferentially around the central core. Group 5: Particulate composite resin with Ribbond fibre circumferentially around the short fibre reinforced composite central core. The periodontal ligament (PDL) and surrounding alveolar bone were also modelled. A total of 300 N axial load was applied (150 N on the buccal cusp tip, 150 N on the mesial marginal ridge). Stress distribution in enamel, dentine, and restoration was analysed using ANSYS Workbench. **Results:** Among the five groups analysed, Group 2 (particulate composite only) demonstrated the most balanced stress distribution across all regions, with no significant concentration on tooth structures or restoration itself. Group 1 (lithium disilicate) showed the lowest stress in enamel but transmitted higher stress to the dentine and core. Group 5 (EverX Flow + Ribbond) recorded the lowest internal stress in the core, though this was offset by increased stress in the enamel and occlusal surface. Groups 3 and 4 exhibited similar performance, with moderate internal stress improvement but no clear benefit over Group 2. **Conclusion:** The finite element analysis revealed that different restoration techniques resulted in varying stress distribution patterns, with particulate composite alone providing the most balanced overall performance in root-treated mandibular premolars with Class II cavities and 2 mm cuspal coverage.
Keywords: Finite element analysis, Cusp coverage, Lithium disilicate, Fibre reinforcement

SENIOR ORAL ABSTRACT (16)

SO16

Preliminary Ex Vivo Evaluation of Fibre Laser and Conventional Soft Tissue Cutting Using Surface Profilometry

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Laser-assisted techniques are increasingly used in oral soft tissue surgery due to their ability to cut and coagulate simultaneously, offering potential advantages over conventional methods. Scalpels and electrocautery remain common but are associated with increased bleeding, thermal injury, and variable incision quality. Diode lasers offer moderate improvements, while the newer 2 μm fibre laser, with its high absorption in water-rich tissues, may provide greater precision and reduced collateral damage. However, comparative ex vivo data on incision quality remain limited. **Objective:** This study aimed to compare the surface roughness and incision quality of four cutting modalities: scalpel, electrocautery, diode laser, and 2 μm fibre laser using surface profilometry. **Methods:** Standardised linear incisions were performed on fresh chicken muscle tissue using each technique ($n = 3$ per group). Surface morphology was assessed using Alicona 3D profilometry, focusing on arithmetical mean roughness (Ra) as the primary parameter. One-way ANOVA followed by Tukey's post hoc test was used to identify statistically significant differences between groups. **Results:** Electrocautery produced the roughest incisions ($Ra \approx 6.0 \pm 0.5$ μm) with pronounced thermal damage. Diode laser incisions showed moderate roughness ($Ra \approx 2.0 \pm 0.3$ μm), while scalpel incisions were smoother but more variable ($Ra \approx 1.4 \pm 0.6$ μm). The 2 μm fibre laser yielded the smoothest incisions ($Ra < 1.0 \pm 0.2$ μm). Statistically significant differences were observed between all groups ($p < 0.05$). **Conclusion:** The 2 μm fibre laser demonstrated superior cutting precision compared to conventional methods. These preliminary ex vivo findings suggest its potential clinical advantage in soft tissue procedures and support further investigation in in vivo settings.
Keywords: Fibre laser, Diode laser, Electrocautery, Oral Soft Tissue, Surface Roughness

SENIOR ORAL ABSTRACT (16)

SO16

Preliminary Ex Vivo Evaluation of Fibre Laser and Conventional Soft Tissue Cutting Using Surface Profilometry

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Laser-assisted techniques are increasingly used in oral soft tissue surgery due to their ability to cut and coagulate simultaneously, offering potential advantages over conventional methods. Scalpels and electrocautery remain common but are associated with increased bleeding, thermal injury, and variable incision quality. Diode lasers offer moderate improvements, while the newer $2\,\mu m$ fibre laser, with its high absorption in water-rich tissues, may provide greater precision and reduced collateral damage. However, comparative ex vivo data on incision quality remain limited. **Objective:** This study aimed to compare the surface roughness and incision quality of four cutting modalities: scalpel, electrocautery, diode laser, and $2\,\mu m$ fibre laser using surface profilometry. **Methods:** Standardised linear incisions were performed on fresh chicken muscle tissue using each technique ($n = 3$ per group). Surface morphology was assessed using Alicona 3D profilometry, focusing on arithmetical mean roughness (Ra) as the primary parameter. One-way ANOVA followed by Tukey's post hoc test was used to identify statistically significant differences between groups. **Results:** Electrocautery produced the roughest incisions (Ra $\approx 6.0 \pm 0.5\,\mu m$) with pronounced thermal damage. Diode laser incisions showed moderate roughness (Ra $\approx 2.0 \pm 0.3\,\mu m$), while scalpel incisions were smoother but more variable (Ra $\approx 1.4 \pm 0.6\,\mu m$). The $2\,\mu m$ fibre laser yielded the smoothest incisions (Ra $< 1.0 \pm 0.2\,\mu m$). Statistically significant differences were observed between all groups ($p < 0.05$). **Conclusion:** The $2\,\mu m$ fibre laser demonstrated superior cutting precision compared to conventional methods. These preliminary ex vivo findings suggest its potential clinical advantage in soft tissue procedures and support further investigation in in vivo settings.
Keywords: Fibre laser, Diode laser, Electrocautery, Oral Soft Tissue, Surface Roughness

SENIOR ORAL ABSTRACT (17)

SO17

Empowering Change: Cross-Cultural Adaptation of a Betel Quid Cessation Tool in Malaysian High-Risk Community

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Introduction: Betel quid chewing is a long-standing and deeply ingrained cultural practice associated with a high prevalence of oral cancer mortality. Despite this, efforts to develop and adapt betel quid cessation programs in Malaysia remain limited. **Objectives:** This study aimed to cross-culturally adapt a betel quid cessation program for a high-risk Malaysian community. Since structured questionnaires are key tools for gathering meaningful data, tailoring them to the community's cultural context is essential. **Methods:** Two questionnaires were primarily adapted from the Betel Nut Intervention Trial (NCT02942745) by University of Hawaii and Guam. Content validation was conducted by a smoking cessation expert and a dental public health specialist. Forward translation was performed by a Malay-speaking school teacher and dentist, followed by backward translation by two bilingual educators to ensure linguistic accuracy. Pretesting involved 17 Bajau participants; assessing the questionnaire's administration, organisation, and content. **Results:** All but five items exceeded the acceptable cut-off score of 0.80 in content validity index. Participants reported improved comprehension and ease of use. Respondents unanimously agreed that the questionnaires were well-organized, with logical flow and alignment with research objectives. Items were perceived as accurate, jargon-free, and when medical terms appeared, the trained facilitators provided clear and culturally-relevant explanations. However, three participants found the follow-up questionnaire unclear and confusing due to ambiguous wording and limited response options. **Discussion:** The adapted questionnaires demonstrated strong content validity. Revisions made simplified medical jargons, restructured complex or lengthy items, and increased relevant response options; improving clarity and completeness of responses. Back-translation revealed no major discrepancies, confirming strong semantic equivalence. Overall, the final version of the questionnaires was well-adapted, culturally appropriate, and ready for use in intervention studies. **Conclusion:** Careful cross-cultural adaptation is essential for creating valid and reliable tools that accurately reflect culturally-nuanced behaviours. This process ensures meaningful data collection, ultimately improving the success of cessation programs designed for high-risk communities.
Keywords: Betel quid cessation, cross-cultural adaptation, questionnaire.

SENIOR ORAL ABSTRACT (18)

SO18

DIAGNOdent Assessment of Enamel Remineralisation Using SAP P11-4, Fluoride, and CPP-ACPF in Induced Occlusal Lesions

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Background: White spot lesions (WSLs) are early caries marked by subsurface enamel loss, often reversible with remineralisation. While most studies focus on smooth surfaces, evidence on occlusal enamel is limited. Biomimetic agents like self-assembling peptides show promise for more effective treatment. **Objective:** To evaluate and compare the remineralisation potential effects of SAP P11-4, 5% sodium fluoride (NaF), CPP-ACP, and their respective combinations on artificially induced enamel lesions using DIAGNOdent. **Method:** Sound premolars extracted for orthodontic reasons were collected and screened for defects. Artificial enamel lesions were induced on the occlusal surface using a demineralising solution for 96 hours. Samples were randomly divided into six groups (n=10): control (no treatment), SAP P11-4, 5% NaF varnish, CPP-ACPF varnish, SAP P11-4 + NaF, and SAP P11-4 + CPP-ACPF. Remineralising agents were applied per manufacturer instructions and stored in artificial saliva (pH 7) for 28 days. Surface changes were measured at baseline, post-demineralisation, and post-treatment using DIAGNOdent. **Results:** Paired samples t-tests, correlations, and effect sizes across six treatment groups (n=10) demonstrated significant reductions in DIAGNOdent readings post-treatment, indicating effective enamel remineralisation. All treatment groups (2–6) showed statistically significant differences ($p<0.001$), while the control group (1) showed no statistically significant change ($p=0.140$). One-way ANOVA revealed statistically significant differences in remineralisation between intervention groups ($p=0.006$, $\eta^2=0.269$). Post hoc analysis showed that P11-4 combined with Fluoride or CPP-ACP significantly improved remineralisation compared to Fluoride alone ($p<0.05$). **Conclusion:** All remineralising agents tested showed significant effects in promoting enamel repair on occlusal surfaces. The combination of SAP P11-4 with NaF or CPP-ACPF demonstrated enhanced outcomes, suggesting a synergistic benefit for managing early occlusal enamel lesions. These findings support combining biomimetic and conventional therapies to manage early occlusal enamel lesions.
Keywords: early enamel lesion, occlusal surface, pit and fissure, remineralisation, P11-4

SENIOR ORAL ABSTRACT (19)

SO19

Exploring Knowledge Barriers Among Sports School Teachers in Managing Tooth Avulsion in School Children

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Introduction: Permanent tooth avulsion, a severe dental injury, necessitates immediate and appropriate management for a favourable prognosis. In sports school settings, where dental injuries are common, teachers and coaches are often first responders. However, quantitative studies consistently report an inadequate level of awareness and low knowledge among school teachers regarding dental trauma management, particularly tooth avulsion. Despite this, research exploring teachers' perceived knowledge and preparedness in handling such emergencies remains limited, highlighting a significant gap in understanding their lived experiences and challenges. **Objective:** This qualitative study aimed to explore the knowledge barriers perceived by sports school teachers and coaches in managing avulsed permanent teeth in schoolchildren. **Methods:** A qualitative study using focus group discussions was conducted with 20 purposively sampled teachers and coaches from Sekolah Sukan Bukit Jalil, Malaysia. Data were thematically analysed to identify knowledge barriers. **Results:** Three key knowledge barriers emerged: (1) Lack of practical knowledge, including unfamiliarity with emergency procedures and uncertainty over appropriate storage media; (2) Misconceptions about replantation, such as beliefs that avulsed teeth cannot be saved and concerns about disease transmission; and (3) Misinformation from external sources, including reliance on unverified digital platforms and inaccurate advice from healthcare providers. These factors collectively contributed to hesitation, mismanagement, and the deprioritization of dental trauma. **Conclusion:** This study highlights how perceived knowledge gaps, misinformation, and misconceptions profoundly hinder the ability of sports school teachers and coaches to manage tooth avulsion effectively. Therefore, it is imperative that these significant impediments are addressed through a multifaceted strategy encompassing targeted dental trauma education and training, alongside accessible educational resources, to strengthen their emergency response and improve outcomes for affected schoolchildren.
Keywords: teachers, coaches, tooth avulsion, qualitative study

SENIOR ORAL ABSTRACT (20)

SO20

Exploring Children's Perceptions of Digital Impressions: A Qualitative Study

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Objectives: Dental impressions can be challenging for children, especially when conventional materials cause discomfort, fear, and anxiety. This study aimed to explore children's lived experiences and preferences regarding digital impressions using an intraoral scanner compared to conventional alginate impressions. **Methods:** A qualitative study involving six paediatric patients aged 7–11 years was conducted at the Paediatric Dental Clinic, Universiti Malaya. Each participant underwent both conventional and digital impressions, during which video was recorded throughout the procedure, together with an observation by the researcher. A semi-structured interview was conducted after the completion of both types of impressions. Data were analysed using inductive thematic analysis. Triangulation of interviews, observations, and field notes enhanced reliability. **Results:** Two main themes emerged: (1) Sensory and Emotional Responses to Impression Techniques and (2) Cooperation, Engagement, and Impression Preferences. Children expressed greater comfort and cooperation during digital impressions. Although some children experienced minor discomfort with the intraoral scanner, digital impressions were consistently preferred over conventional methods. **Conclusions:** Children demonstrated a clear preference for digital impressions due to improved comfort and engagement. Non-verbal cues provided critical insight into their experiences, suggesting that intraoral scanning may offer a more child-friendly alternative in paediatric dentistry.

Keywords: Digital impression, intraoral scanner, paediatric dentistry, qualitative study, patient preference.

SENIOR ORAL ABSTRACT (21)

SO21

Barriers to IADT Guideline Implementation Among Malaysian Dental Students: A Mixed-Methods Study

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Objectives: The International Association of Dental Traumatology (IADT) guidelines provides standardized protocols for managing traumatic dental injuries (TDIs), yet their clinical adoption among dental students remains underexplored. This study aimed to investigate the barriers faced by Malaysian dental students in implementing IADT guidelines using a mixed-methods approach. **Methods:** A convergent parallel mixed-methods study was conducted among 242 clinical-year dental students from public and private Malaysian dental schools. A validated questionnaire assessed students socio-demographic profiles, knowledge of IADT guidelines, and perceived barriers. The questionnaire was adapted to reflect local educational structures, clinical exposure, and resource availability. Quantitative data were analyzed using descriptive statistics, while qualitative data from open-ended responses were thematically analyzed and integrated with quantitative findings. **Results:** Although 65% of students demonstrated fair knowledge of IADT guidelines, only 42% felt confident appliying them. Key barriers included limited clinical exposure to TDI cases (70%), inadequate practical training (62%), and limited access to resources like splinting materials, radiographs (55%). Qualitative analysis highlighted gaps in curriculum emphasis on TDIs, inadequate faculty supervision, and difficulty accessing updated IADT guidelines. Integrated analysis revealed a gap between theoretical knowledge and clinical application, driven by educational and systemic constraints. **Conclusion:** Malaysian dental students face significant educational, clinical, and resource-related challenges in implementing IADT guidelines. Targeted interventions such as hands-on TDI simulations, curriculum enhancements, and improved faculty support, are essesntial to enhance knowledge translation and strengthen dental trauma education in Malaysia.
Keywords: dental trauma, International Association of Dental Traumatology, Malaysian dental students, mixed-methods study, dental education, clinical practice

SENIOR ORAL ABSTRACT (22)

SO22

Development and Usability Testing of a Social Media-Based Oral Health Education Module for Pakistani Parents

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Introduction: Although preventable, dental caries remains one of the most prevalent childhood diseases. Parental involvement and knowledge play a critical role in maintaining optimal oral health among children. Social media has emerged as a promising platform for disseminating oral health education. **Objective:** This study was conducted in three phases to develop and validate an oral health education (OHE) module for Pakistani parents, delivered via Facebook due to its widespread use in the country. **Methods:** In Phase 1, a bilingual questionnaire (Urdu and English) was developed and pretested among 40 parents, then administered to 440 parents to assess their OHE needs. The questionnaire consisted of four domains: a) demographic details, b) children's dental health status, c) barriers to receiving oral health information, and d) sources of oral health information. Phase 2 involved the development of an Urdu-language OHE module addressing six core topics. In Phase 3, usability was evaluated using the System Usability Scale among 15 parents. **Results:** Findings revealed that 87.3% of parents were aware of their children's dental issues, and 56.4% had previously received oral health education. Although 88.2% reported receiving oral health information from social media, only 8.9% found it detailed and comprehensive. A majority (92.3%) expressed the need for age-specific guidance. Identified barriers included lack of awareness (39%), being too busy (31%), and insufficient information (14%). The Item-level Content Validity Index (I-CVI) ranged from 0.83 to 1, and the scale-level Content Validity Index (S-CVI) was 0.97. The Face Validity Index was also 0.97. Usability testing yielded a mean score of 76.5, indicating good usability. **Conclusion:** The developed module demonstrated strong content and face validity. Delivery via Facebook was user-friendly and showed potential to improve children's oral health by equipping parents with accessible, evidence-based information. Leveraging digital platforms with targeted interventions can enhance parental awareness and improve long-term oral health outcomes in children.
Keywords: Oral health education, parental knowledge, Facebook, digital health, usability assessment, health promotion, Pakistan.

SENIOR ORAL ABSTRACT (23)

SO23

Use of YouTube as Learning Modality for Clinical Procedures Among Dental Students in Malaysia: A National Study

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Objectives: This national cross-sectional study investigates the use of YouTube as a learning tool for clinical procedures among dental students in Malaysia. It evaluates how frequently Malaysian undergraduate dental students use YouTube to prepare for clinical procedures. This study aims to identify the specific types of clinical procedures that students search for on the platform and to understand their motivations for selecting YouTube as a learning modality. **Methods:** A validated 22 questionnaire was utilized for this study. It was distributed into four categories: demographic, evaluation of YouTube video sharing and validity, general YouTube usage, and using YouTube as a tool to gain awareness of clinical processes. The questionnaire was disseminated online to the 13 dental faculties within the Malaysian Dental Student Association. Data on demographics, frequency of use, content preferences, and perceptions were analysed using descriptive statistics and chi-square tests to identify associations among the variables. **Results:** From 154 participants, 60.4% responded to the questionnaire, indicated they were very likely to refer to a YouTube video when preparing for a procedure that they had never performed before. A total of 17.3% selected YouTube because it is a convenient and accessible platform. Additionally, 20.6% indicated that their primary viewing interest was in clinical procedures of prosthodontics, whereas 18.4% concentrated on endodontics. **Conclusions:** YouTube is widely utilized as a supplementary learning tool among dental students in Malaysia. Concerns about its accuracy and reliability highlight the need for academic educators to guide students toward credible, evidence-based resources. This study emphasizes the importance of integrating reliable, evidence-based online educational materials into the dental curriculum to enhance clinical learning and improve student competency.
Keywords: YouTube, learning modality, clinical procedures, dental education, Malaysia

SENIOR ORAL ABSTRACT (24)

SO24

Comparison of Wire Bending Skills of General Dentist Pre- and Post-Workshop

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Introduction: Workshops is designed to offer practical instruction that improves skills. They are essential for enhancing dental procedures like wire bending. Workshops, as opposed to lectures, actively involve participants, and boost their competence and confidence. **Objective:** In this study my performance was evaluated before and after a targeted workshop. The main objective of this study is to compare the wire bending skills precision of dentist before and after attending an intensive wire-bending workshop. **Methods:** Wire bending of five active and passive components 1) Adams Clasps, 2) Hawley Arch, 3) Z – Spring, 4) Buccal Canine Retractor, and 5) Finger Spring, were done before workshop by a general dentist. Two full days wire bending workshop was conducted in Lincoln University College. After the workshop all the five components repeated by same dentist. Orthodontic specialist used standard rubrics to evaluate each of five active and passive component pre and post workshop. The rubrics score was 0 (unsatisfactory), 1 (good) and 2 (excellent). **Result:** The paired t-test was used for the finding of wire bending pre and post workshop, the p-value is 0.0161. Since the p-value is less than 0.05, the result showed that statistically significant difference between pre and post workshops in wire bending skills scores. **Conclusion:** In summary, the study supports past studies which indicated that receiving intensive hands-on-workshops significantly improves the participant in hand skills such as wire-bending. The information from the study figures out the basis not only for future research, but also for encourage the dentist to attend hands-on-workshop to improve the skills.
Keywords: Wire bending, orthodontic workshop, skill assessment.

SENIOR POSTER ABSTRACT (01)

SP01

α-Mangostin as a Natural Disinfectant for Dental Impressions: An In Vitro Study

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Introduction: Disinfection of dental impressions is essential to prevent cross-contamination. Although chemical disinfectants are widely used, they may pose toxicity and environmental risks. Natural antimicrobials like α-mangostin, derived from *Garcinia mangostana*, has demonstrated antimicrobial activity, yet its application as a disinfectant for dental impressions has not been investigated. **Aim:** The purpose of this *in vitro* study was to investigate the disinfectant effect of α-mangostin on dental impression materials. **Methods:** The minimum inhibitory concentration (MIC) of α-mangostin and the positive control, Dentasept, was determined using the broth microdilution method with incubation at 37°C for 24 hours. Alginate samples were then coated with five selected oral commensal bacteria to simulate clinical contamination. These samples were subsequently treated with one of four disinfectant groups: (1) sterile distilled water (negative control), (2) Dentasept (positive control), (3) 5 mg/mL α-mangostin (MIC), and (4) 10 mg/mL α-mangostin (2× MIC). After treatment, microbial load reduction was quantified and compared among groups. **Results:** α-Mangostin demonstrated a MIC of 5 mg/mL, comparable to that of Dentasept. At concentrations of 5 mg/mL and 10 mg/mL, α-mangostin reduced bacterial load on alginate samples by 97.52% and 98.22%, respectively. Dentasept achieved complete bacterial elimination (100%). However, the difference in bacterial reduction between α-mangostin (10 mg/mL) and Dentasept was not statistically significant ($p > 0.05$). In contrast, sterile distilled water showed significantly lower bacterial load reduction (89.32%, $p < 0.05$). **Conclusion:** α-Mangostin exhibits promising antibacterial activity against oral commensals on dental impression materials, with performance comparable but not equivalent to a commercial disinfectant. While these findings support its potential as a natural alternative, further studies are warranted to assess material compatibility, and validate efficacy under clinical conditions.
Keywords: α-mangostin; Antimicrobial activity; Dental impressions; Disinfectant agent; *Garcinia mangostana* Linn

SENIOR POSTER ABSTRACT (02)

SP02

Effect of *Cosmos Caudatus* on p53 Expression in Oral Squamous Cell Carcinoma Cell Lines

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Introduction: *Cosmos caudatus* (Ulam Raja) is a local herb known for its antioxidant, antibacterial, and anticancer properties. Although it has demonstrated anticancer effects in several cancer types, its impact on oral squamous cell carcinoma (OSCC) remains underexplored. **Objectives:** This study aimed to evaluate the 50% inhibitory concentration (IC_{50}), p53 gene expression, and p53 protein levels in OSCC cell lines following treatment with *Cosmos caudatus* extract. **Methods:** OSCC cell lines were treated with various concentration of *Cosmos caudatus* extract. Cell viability was assessed using the MTT assay. p53 gene expression was analysed via real-time quantitative polymerase chain reaction (RT-qPCR), while p53 protein levels were quantified using enzyme-linked immunosorbent assay (ELISA). Immunocytochemistry (ICC) was performed to visualize changes in p53 protein expression following treatment. **Results:** The IC_{50} value of *Cosmos caudatus* treated OSCC cells was determined to be 58 mg/mL ($p < 0.05$). Treated cells showed significant downregulation of p53 at both the mRNA and protein levels. ICC staining showed markedly reduced nuclear p53 immunoreactivity compared to untreated controls. **Discussions:** The MTT assay demonstrated a dose-dependent reduction in OSCC cell viability indicating the cytotoxicity potential of *Cosmos caudatus* extract. Consistently, RT-qPCR and ELISA results showed significant downregulation of p53 at both the gene and protein levels, suggesting a suppressive effect of the extract on p53 expression. ICC further supported these findings by showing reduced nuclear localization of p53 protein in treated cells. Although p53 is classically known as a tumour suppressor, its overexpression or mutation in cancer cells may contribute to tumour progression. Therefore, the observed downregulation may reflect activation of cell death mechanisms. **Conclusion:** Cosmos caudatus demonstrates promising anticancer activity against OSCC by reducing cell viability and downregulating p53 expression, supporting its potential as adjunctive agent in the cancer treatment.
Keywords: Oral squamous cell carcinoma, *Cosmos caudatus*, p53

SENIOR POSTER ABSTRACT (03)

SP03

Augmented Reality in Dental Prostheses Care: Insights from the Patient's Perspective

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Background: Augmented Reality (AR) has found its place in the use of enhancing patient education regarding the care of dental prostheses. However, the readiness, acceptance and expectancy of dental patients toward AR remain largely uncharted. Knowledge of the above aspects is crucial to effective implementation. **Objective:** To explore the readiness, acceptance and expectancy of dental patients regarding the use of Augmented Reality in dental prostheses care education. **Methods:** A qualitative study was conducted using in-depth interviews with dental patients from UiTM Sungai Buloh and private clinics in Selangor and Kuala Lumpur. The selection of participants with removable or fixed prostheses was done by the convenience sampling method. The thematic analysis of their responses led to the extraction of major patterns and insights. **Result:** A total of ten individuals took part in this study, comprising mostly females (8 out of 10), with participants ranging in age from 27 to 69 years. Most were of Malay ethnicity, while one participant identified as Indian. Three major themes analyzed were: 1. Readiness: patients recognized the accessibility and engagement advantages of AR but pointed to digital illiteracy and internet access as concerns; 2. Acceptance: Many patients preferred an interactive, easy-to-use, AR-based education format compared to traditional means; 3. Expectancy: AR was expected to enhance prosthesis care and oral hygiene, and other challenges were noted such as cost and adaptation. **Conclusion:** Although patients view augmented reality as a helpful way to teach about prostheses care, tremendous barriers are present concerning affordability, accessibility, and digital skills for it to be widely adopted. Future research should focus on developing user-friendly augmented reality applications that are tailored to the needs of the patients.
Keywords: Augmented Reality, Dental Prostheses Care, Patient Education.

SENIOR POSTER ABSTRACT (04)

SP04

Effect of Toothbrushing on The Monomer Elution and The Fluoride Release of CAD/CAM Resin Composite Block

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Objective: This study aimed to evaluate the monomer elution and fluoride release of a newly developed CAD/CAM resin composite block with different filler contents and characteristics when subjected to thermocycling and a 3-body wear test using a locally manufactured toothbrushing simulator. **Material and method:** 30 samples each of edelweiss (EDL) and KZR-CAD HR 3(KZR) RCBs as well as CEREC felspathic block (CB) -control group were sectioned into blocks measuring (14 x 12 x 18 mm) and divided into No Treatment (NT) group, Toothbrushing (TB) group, and Thermocycling and Toothbrushing (TC+TB) group for the test of monomer elution. 20 samples of Compoglass (COM) blocks measuring (14 x 12 x 5 mm) together with EDL and KZR RCBs were also divided into NT and TB groups, and fluoride was measured after the samples were tested based on the designated groups. All the parameters were separately analysed using repeated measures analysis of variance (ANOVA) with a probability of less than 0.05, which was considered significant. **Result:** After the toothbrush wear test, The High-Performance Liquid Chromatography (HPLC) chromatograms analysis demonstrated that none of the monomers were detectable in any of the experimental groups and The KZR CAD HR3 material consistently exhibited the highest fluoride release across all time points. **Conclusion:** Both EDL and KZR showed biocompatibility in monomer release. However, KZR had higher fluoride release, especially after thermocycling and toothbrushing.
Keywords: Monomer Elution, fluoride release, toothbrushing, CAD/CAM, resin composite block.

SENIOR POSTER ABSTRACT (06)

SP06

Effects of Thermocycling on the Physico-Mechanical Properties of Resin-Coated High Viscosity Glass Ionomer Cement

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High-viscosity glass ionomer cements (HVGICs) are widely used in restorative dentistry due to their biocompatibility, fluoride release, and chemical adhesion to tooth structure. The application of nano-filled resin coatings has been introduced to enhance their surface characteristics, wear resistance, and long-term performance. However, the effects of thermal ageing, such as those encountered in the oral environment, on the physico-mechanical and aesthetic properties of coated HVGICs remain insufficiently explored. **Objectives:** This study aimed to assess the effects of thermocycling-induced ageing on the physico-mechanical properties of HVGIC (EQUIA Forte® HT), with and without nano-filled resin coatings. **Methods:** A total of 180 specimens were prepared and divided into three main groups: uncoated, coated with EQUIA Forte Coat, and coated with G-COAT PLUS. Each group was further subdivided based on thermocycling phases (0, 5000, and 10,000 cycles), simulating 0, 6, and 12 months of intraoral ageing, with n = 20 per test per phase. Surface roughness, colour stability, microhardness, and flexural strength were measured. **Results:** Thermocycling significantly affected all tested parameters. All groups showed increased surface roughness and colour change, and decreased microhardness and flexural strength with more cycles. G-COAT PLUS consistently outperformed the other groups by maintaining smoother surfaces, better colour stability, and higher mechanical properties across all phases. SEM analysis confirmed the morphological stability of G-COAT PLUS, with minimal surface disruption and no delamination observed. **Conclusion:** Resin coatings play a critical role in protecting HVGIC restorations during their vulnerable early phase. The study also highlights the importance of optimising coating retention time to reduce long-term degradation. G-COAT PLUS demonstrated superior performance, supporting its use in clinical applications requiring durable and aesthetic restorations.
Keywords: glass ionomer cements, mechanical properties, nano-filled coating, surface roughness, thermocycling.

SENIOR POSTER ABSTRACT (07)

SP07

Physico-Mechanical Properties of GIC with Hydroxyapatite Synthesized from Camel Bone Waste: A Pilot Study

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Glass ionomer cements (GICs) are widely used in restorative dentistry but are limited by modest mechanical performance. Camel bone derived hydroxyapatite (CBHA) contains bioactive trace elements such as magnesium and carbonate, offering a sustainable alternative to synthetic fillers. **Objectives:** To evaluate the effect of CBHA incorporation on the physico-mechanical properties of a high-viscosity GIC (Riva Self Cure HV). **Methods:** CBHA extracted by removing organic components through chemical treatments, defatting and heat treatments at 650 °C in a muffle furnace for 8 hours at King Faisal University, Saudi Arabia then annealed and wet-milled using a planetary ball mill at the University of Malaya, Malaysia. Material characterization was performed using particle size distribution (PSD), field emission scanning electron microscopy (FESEM), energy-dispersive X-ray spectroscopy (EDX), and Fourier-transform infrared spectroscopy (FTIR) on CBHA powder, powder blends with 5% and 10% CBHA (by weight), and the corresponding solidified GICs. Standardized specimens ($n = 3$ per group) were tested for initial setting time, surface hardness, flexural strength, and compressive strength. **Results:** The initial setting time increased progressively with higher CBHA content, rising from 5.1 minutes in the control group to 5.8 minutes and 6.5 minutes in the 5% and 10% groups, respectively. A gradual decline in surface hardness was observed with higher levels of CBHA incorporation. (control: 55.7 ± 3.2; 5%: 44.5 ± 2.7; 10%: 39.7 ± 3.9; $p < 0.01$), accompanied by a significant improvement in flexural strength (control: 9.2 ± 1.4 MPa; 5%: 10.8 ± 1.7 MPa; 10%: 14.5 ± 2.1 MPa; $p < 0.05$). Compressive strength increased (control: 43.1 ± 10.2 MPa; 5%: 55.9 ± 20.2 MPa; 10%: 51.0 ± 20.1 MPa), though the difference was not significant ($p = 0.55$). **Conclusions:** These findings suggest that CBHA can enhance the flexural and compressive strength of GIC, potentially improving resistance to fracture under functional loading. However, reduced surface hardness and extended setting time highlight the need for further optimization.
Keywords: Camel Bone, Glass Ionomer Cement, Hydroxyapatite, Mechanical Properties

SENIOR POSTER ABSTRACT (08)

SP08

Prevalence of TMD Symptoms in Prospective Orthodontic Patients and Their Association with Biopsychosocial Factors

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Introduction: Temporomandibular disorders (TMDs) are multifactorial conditions involving the temporomandibular joint and masticatory system, often influenced by psychological and behavioral factors. While malocclusion has been proposed as a contributing factor, its clinical relevance remains debated, particularly in orthodontic populations where aesthetic concerns and psychosocial distress may intersect. **Objectives:** This study aimed to assess the prevalence of TMD symptoms in prospective orthodontic patients, examine their associations with malocclusion severity and psychosocial indicators, and evaluate their impact on oral health-related quality of life (OHRQoL). **Methods:** In a prospective observational design, 296 patients (mean age 21.6 ± 5.6 years; 57.8% female) attending a university orthodontic clinic were recruited. TMD symptoms were assessed using the Short form- Fonseca's Anamnestic Index (S-FAI), malocclusion severity via the Index of Orthodontic Treatment Need (IOTN), and OHRQoL with the Oral Health Impact Profile-14 (OHIP-14). Psychological distress, somatic symptoms, and oral behaviors were evaluated using the Patient Health Questionnaire-4 (PHQ-4), Somatic Symptom Scale-8 (SSS-8), and Oral Behavior Checklist-21 (OBC-21). **Results:** TMD symptoms were present in 42.9% of participants. Significant associations were found with psychological distress ($p < 0.001$), somatic symptoms ($p < 0.001$), oral behaviors ($p = 0.002$), and aesthetic component of IOTN ($p = 0.014$), but not with dental health component. Multivariate logistic regression identified psychological distress (OR = 2.3, 95% CI: 1.5–3.6) and gender (OR = 1.8, 95% CI: 1.2–2.9) as independent predictors of TMD. Participants with TMD reported significantly poorer OHRQoL. **Conclusions:** TMD symptoms are prevalent among orthodontic patients and are closely linked to aesthetic concerns, psychological distress, and behavioral habits. These findings underscore the importance of incorporating routine TMD screening and psychosocial evaluation into orthodontic assessment protocols. Early identification of at-risk individuals may enhance treatment planning and improve both functional and psychosocial outcomes.
Keywords: Malocclusion, Orthodontics, Psychosocial Factors, Quality of Life, Temporomandibular Disorders

SENIOR POSTER ABSTRACT (09)

SP09

Coffee Thermocycling and Printing Parameters Affect Colour Stability of 3D-Printed Denture Resins

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Purpose: This study aimed to evaluate the effect of water and coffee thermal cycling on colour stability of 3D-printed flexible denture resins fabricated with different build orientations, layer thicknesses, and support structures. **Materials and Methods:** Disc specimens (15×2 mm) were fabricated using 3D-printed denture base resin (Graphy Resin THD), 3D-printed flexible denture resins (Graphy Resin TFDH and 3Dresyn OD FDB), and conventional heat-cured PMMA. Printing was performed using an LCD-SLA printer with variations in build orientation (30°, 40°, 45°), layer thickness (50 μm, 100 μm), and support structure (partial, full). Specimens underwent 5000 cycles of water or coffee thermocycling. Colour changes (ΔE) were measured using a spectrophotometer and assessed against perceptibility (1.72) and acceptability (4.08) thresholds. Data were analyzed using robust ANOVA and Bonferroni multiple comparison tests ($\alpha=0.05$). **Results:** All materials exhibited colour changes within clinically acceptable limits ($\Delta E <1.77$) after water thermocycling. Coffee thermocycling significantly increased colour change ($p<0.05$), particularly in 3Dresyn OD FDB ($\Delta E=9.754\pm3.337$) compared to heat-cured PMMA ($\Delta E00=4.779\pm0.597$). Specimens printed at 45° build orientation, 100 μm layer thickness, and full support structure showed the highest discoloration, exceeding acceptability limits ($\Delta E>3.3$). **Conclusion:** Coffee thermocycling markedly compromises the colour stability of 3D-printed flexible denture resins, with the degree of discoloration influenced by build orientation, layer thickness, and support structure. Printing at higher angles (45°), with thicker layers (100 μm) and full support structures, increases susceptibility to staining. Acknowledgement: This study was supported by the Fundamental Research Grant Scheme- EC under the Ministry of Higher Education, Malaysia (MOHE), Grant No. FRGS-EC/1/2024/SKK11/UITM/03/1.
Keywords: Coffee, Printing, Colour stability, Denture Resin

SENIOR POSTER ABSTRACT (10)

SP10

Effects of Palm Mixed-Carotenes on Viability of Human Periodontal Ligament Cells In Vitro

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Objectives: Periodontal tissue regeneration remains a major challenge in dentistry, prompting the search for novel bioactive agents. Palm mixed-carotenes (PMC), natural antioxidants derived from palm oil, have shown proliferative effects in various cell types. This preliminary study aimed to evaluate the effects of PMC on human periodontal ligament cell (hPDLC) viability, used as an indirect indicator of proliferation, and to determine the optimal concentration in vitro. **Methods:** hPDLCs were isolated from sound extracted premolars and cultured to passage 5. Cells were treated with PMC at concentrations of 1.56 to 100 µg/mL for 72 hours. Cell viability, an indirect indicator of proliferation, was assessed using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay, which measures mitochondrial activity. Absorbance was measured at 570 nm. Data were analysed using SPSS version 29. One-way ANOVA followed by Tukey's post hoc test was performed, with $p < 0.05$ considered statistically significant. **Results:** PMC exhibited a concentration-dependent effect on hPDLC viability. The highest viability was observed at 6.25 µg/mL, which was significantly greater than all other tested concentrations ($p < 0.05$). Both lower (1.56 to 3.13 µg/mL) and higher ($\geq$ 12.5 µg/mL) concentrations resulted in reduced viability, indicating a narrow optimal range. **Conclusions:** PMC enhances hPDLC viability in a concentration-dependent manner, with 6.25 µg/mL identified as the optimal concentration in this preliminary study. These findings suggest PMC may have potential as a bioactive agent for periodontal regeneration, warranting further mechanistic and in vivo investigations.
Keywords: Human periodontal ligament cells, palm mixed-carotenes, periodontal regeneration, proliferation, viability

SENIOR POSTER ABSTRACT (11)

SP11

Post-Delivery Digital Denture Geriatric Oral Health Assessment Index (GOHAI) in Nilai, Negeri Sembilan Community Service: A Pilot Study

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Objectives: Digital denture technology is increasingly applied in community service settings due to its time-saving, precision, and increasing patient satisfaction. In community service settings, assessing the oral health-related quality of life (OHRQoL) is essential among elderly populations. This study employed the Geriatric Oral Health Assessment Index (GOHAI) to evaluate patient-perceived benefits after receiving digital dentures. **Methods:** A cross-sectional survey was conducted using a modified GOHAI questionnaire among geriatric patients who received complete or partial dentures in the community dental service. The questionnaire, consisting of demographic assessment and 12 items assessing functional limitation, pain or discomfort, and psychosocial aspects; was administered 6 months post-treatment. Responses were analysed to determine the frequency and mean scores of individual GOHAI items, as well as the relationship between each GOHAI domain. **Results:** The mean GOHAI score was 41.05 (SD = 3.54), indicating a moderate level of oral health-related quality of life. 87.5% of patients have positive GOHAI scores. However, 58.3% of patients have low GOHAI scores with mechanical or denture fitting issues. No statistically significant correlation was found with the demographic variables on GOHAI scores, with p-values > 0.05. Wilcoxon signed rank test showed no significant difference in the domain scores of the GOHAI survey ($\chi 2(3) = 134$, $p < .001$). **Conclusions:** The GOHAI scores suggest that digital dentures delivered through a community service model may enhance oral function and satisfaction in geriatrics which highlights the importance of further research to explore the factors that influence denture satisfaction and function in this population. Results on the relationship between domains showed the importance to focus on improving the physical function aspects of digital dentures particularly through denture design, materials, or patient education.
Keywords: GOHAI, digital denture, quality of life, community service

SENIOR POSTER ABSTRACT (12)

SP12

Effects of Cleaning Agents on Flexural Modulus and Light Transmittance of Polypropylene Dental Material

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Introduction: Polypropylene is commonly used as a clear plastic retainer in orthodontics. Maintaining translucency and rigidity is crucial for aesthetic and preventing relapses. While prior studies focused on commercial cleansers, the effects of baking soda, vinegar and Polident® Pro Retainer & Guard remain unexplored. **Objectives:** The study aimed to evaluate the effects of baking soda, vinegar, and Polident® Pro Retainer & Guard as cleaning agents on the flexibility and translucency of polypropylene dental materials. The objectives were to analyse the mean difference in flexural modulus and light transmittance among the cleaning agents after a 30-day period. **Methodology:** Eighty-five 1-mm-thick thermoformed polypropylene thermoforming foil (Erkolign, Erkodent®), measuring 50.8 mm x 12.7 mm (A) and 50.0 mm x 35.0 mm (B) were exposed to different cleaning agents (10% baking soda solution, 2.5% vinegar, 5.0% vinegar, Polident® Pro Retainer & Guard, and distilled water) for 30 days. Specimens sized (A) and (B) were tested for their flexural modulus and light transmittance respectively at baseline and at the 30-day period, Mean difference in flexural modulus and light transmittance among cleaning agents were analysed using Analysis of Variance. **Results**: All cleaning agents significantly decrease polypropylene flexural modulus ($p < 0.05$) and increase light transmittance ($p < 0.001$). Baking soda significantly reduced ($p = 0.019$) the flexural modulus more than 5.0% vinegar. Regarding light transmittance, 2.5% vinegar differed significantly from other cleaning agents except for 5.0% vinegar. **Discussion and Conclusions:** Constant exposure to cleaning agents may have induced alterations in the polypropylene structure. Baking soda, vinegar, and Polident® Pro Retainer & Guard reduced the flexural modulus and increased the light transmittance of polypropylene dental material, indicative of increased flexibility and translucency. 5.0% vinegar can be an alternative cleaning agent for polypropylene dental material, while the use of 10% baking soda solution should be approached with caution.
Keywords: Dental Materials, Orthodontic Retainers, Polypropylenes

SENIOR POSTER ABSTRACT (13)

SP13

Students' Self-Reported Confidence Level Post Completion of General Surgery and General Medicine Module: Preliminary Study in UiTM

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Objectives: There is a paucity of information about the self-confidence levels of third-year dental students in the General Medicine and General Surgery (GMGS) module. Hence, this study aimed to measure the self-assessed confidence of third-year dental students in the GMGS module. **Methodology:** Dental students from the Faculty of Dentistry, UiTM, were recruited at the beginning of Year Four to participate in this study. The calculated sample size was 46. A questionnaire consisting of 26 items was adopted, modified, and distributed through the Google Forms platform. The questionnaire had three parts: demographic characteristics, clinical skills, and cognitive skills. Data from respondents were tabulated in Excel and analysed using SPSS (Version 30) with descriptive statistics and item correlation. **Results:** Responses were provided by 59 students (15 men and 44 women, 25.42% and 74.58%, respectively). The mean score was slightly higher in men compared to women (92.67% vs. 89.16%). However, the independent t-test showed no significant difference between men and women. The results showed that students' confidence in their clinical skills mostly ranged from "average" to "good," with four components showing a low percentage of "very poor" responses. Meanwhile, the cognitive and behavioural attitudes of students showed better results, with higher responses in each component, more "very good" responses, and no "very poor" responses. **Conclusion:** The students' level of confidence in their clinical skills might be due to having just entered their clinical years. Therefore, further research is required to link students' clinical skill performance results to their confidence responses. Furthermore, this preliminary study resulted in a new questionnaire tool, which can be implemented nationally and internationally for comparing students' responses.
Keywords: General Surgery and General Medicine, student confidence, students' self-reported.

SENIOR POSTER ABSTRACT (14)

SP14

Electronic Vibrating Devices Modulate the Injection Pain of Local Anaesthesia – A Systematic Review

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Introduction: Intraoral local anesthesia (LA) is commonly used in dentistry to relieve pain, yet the injection process itself is often painful and anxiety-inducing, especially in children, contributing to needle phobia. Vibration techniques have been introduced to ease this discomfort, though evidence of their effectiveness remains mixed. **Aim:** To evaluate effectiveness of electronic vibration devices that were used to reduce injection pain, anxiety and physiological parameters during intraoral LA among published randomised controlled trials (RCTs) among children. **Methodology:** This systematic review was conducted in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. A comprehensive search was carried out across four databases (PubMed, Web of Science, Cochrane, and Scopus) for studies published between 2022 and 2025, using combined keywords of "vibration," "injection pain," and "local anaesthesia". The assessment on the quality of eligible studies was performed using Cochrane risk-of-bias tool for RCTs (RoB2). The qualitative appraisals were then made. **Results:** Twelve studies were included in the systematic review from 205 identified articles. The shortlisted studies were predominantly presented with some concern and high risk of bias based on ROB2. Qualitatively, 50% (n=6/12) of the included studies used intraoral devices in which majority of them (86%; n=6/7) produced significant reductions on pain perceived, but only 33% (n=1/3) of them contributed to reduction in anxiety. As for studies that use the extraoral vibrating device, all studies reported significant reductions in the pain perceived but none of them evaluated on anxiety status. Mixed finding on physiological parameters was reported in intra- and extraoral device applications. **Discussion:** Although gender differences could be a factor of the measured parameters, only one study investigated on this matter and reported no difference. **Conclusion:** The findings from this qualitative appraisal supports the use of electronic vibration devices in modulating injection pain during LA, particularly in children.
Keywords: vibration, injection pain, local anaesthetic, local anaesthesia

SENIOR POSTER ABSTRACT (15)

SP15

Orthodontic Miniscrews Insertion between the Roots of First and Second Molar: A Randomised Clinical Trial

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Objectives: The interradicular area between the maxillary second premolar and first molar (P2M1) is commonly used for miniscrew insertion to reinforce anchorage. A more posterior site between the first and second molars (M1M2) may offer advantages for simultaneous maxillary buccal segment distalization and intrusion. This study aimed to compare miniscrew insertion in the two sites. **Methods:** 40 miniscrews (1.6mm × 8mm; AbsoAnchor®, Dentos, Korea) were inserted in fixed appliance patients allocated to P2M1 and M1M2 groups. Survival rate and complications of miniscrews were compared clinically and radiographically at one month (T1) and two month (T2) review. Patient perceptions of miniscrew experience were obtained using a validated questionnaire at one-month review (T1). **Results:** The sample comprised 60% (24) females (mean age 21.6±6.6). Majority (45%) had upper first premolar extraction. At T1, both groups had 95% miniscrew stability (p>0.05). At T2, M1M2 showed higher stability (100%) than P2M1 (90%)(p>0.05). P2M1 had higher incidence of moderate-to-severe gingival inflammation around the miniscrews (20%) compared to M1M2 (5%) (p>0.05). Powerchain embedment was significantly greater in M1M2 (40%) compared to P2M1 (10%) (p<0.05). More than 70% of the cases in both groups had no miniscrew to root contact and maxillary sinus perforation (p>0.05). P2M1 reported greater pain during insertion (5.2±2.30) compared to M1M2 (3.4±2.27). At T1, M1M2 reported greater gum swelling and bleeding. P2M1 perceived higher food impaction, avoided smiling, difficulty in brushing, low confidence, and food avoidance (p>0.05). There was a significant association between powerchain embedment with reported gum swelling and bleeding (p<0.05). **Conclusion:** Both sites offer good miniscrew stability. P2M1 had a higher incidence of miniscrew failure and gingival inflammation clinically. Whereas M1M2 had significantly higher powerchain embedment, causing patients to report greater gum swelling and bleeding.
Keywords: Orthodontic miniscrews, Distalization, anchorage, temporary anchorage devices (TADs), patient-reported outcomes

SENIOR POSTER ABSTRACT (16)

SP16

Development of a PCL-PDA-Cu Nanofibre Scaffold with Controlled Release of Copper Ions for Antibacterial and Osteogenic Synergy

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Objectives: This study developed a guided bone regeneration (GBR) material composed of polycaprolactone (PCL) nanofibers coated with a uniformly deposited polydopamine (PDA) layer on its surface. The catechol groups present in PDA are capable of effectively chelating copper ions, leading to the formation of stable complexes, which in turn that enhance the biological performance of the material. **Methods:** PCL nanofiber substrates were prepared by electrospinning. A uniform PDA coating was formed on the surface through oxidative self-polymerization. Cu^{2+} ions were stably loaded via PDA's chelation ability. Material morphology, surface composition, and mechanical properties were analyzed using SEM, XPS, and a universal testing machine, respectively. Antibacterial performance was assessed using the inhibition zone and inhibition rate methods. Osteogenic activity was evaluated by measuring ARS staining on day 21, ALP activity on day 7, and osteogenesis-related gene expression in MC3T3-E1 cells. **Results:** (1) Uniformly coated PDA/PCL nanofiber materials were successfully fabricated, with EDS analysis confirming uniform Cu^{2+} distribution on the fiber surfaces. (2) The material exhibited excellent mechanical strength, surface hydrophilicity, and biocompatibility. (3) In vitro studies demonstrated strong antibacterial activity, along with enhanced ARS deposition, ALP activity, and osteogenic gene expression. **Conclusions:** The PCL-PDA-Cu composite GBR material developed in this study effectively integrates antibacterial and osteogenic functions through precise control of Cu^{2+} loading and release. With excellent mechanical properties, biocompatibility, and multifunctionality, it offers a promising strategy for clinical bone defect repair.
Keywords: Polycaprolactone; Polydopamine; Copper ions; Antibacterial properties

JUNIOR ORAL ABSTRACT (01)

JO01

Effects of Finishing and Polishing on Gloss Retention of Single Vs. Multi-Shade Composites Following Toothbrushing

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Objectives: At present, there are no studies comparing their efficacy of multistep or simplified polishing systems on multi-shade or single shade composite. The main objectives of this study are to compare gloss value immediately following finishing and polishing, gloss retention following toothbrushing wear test, and to observe the surface changes of the single and multi-shade resin composites at these intervals. **Methods:** Twenty-four resin composite slabs from Omnichroma (OMN) and Filtek Supreme Ultra Universal Restorative (FSU) composites, were divided into four subgroups (n=6) and polished either using multi-step Sof-Lex XT (SLT) and two-step Sof-Lex Diamond (SLD). After seven days in distilled water, samples underwent a toothbrush wear test. Surface gloss (GU) was measured at pre-determined intervals using a gloss meter, and surface topography was analysed via scanning electron microscope (SEM). Data were analysed using an independent t-test and repeated measures ANOVA. **Result:** A significant difference in gloss was seen for FSU between SLT and SLD (p=0.011), but not the OMN immediately following toothbrushing. The median gloss retention of the four groups following the toothbrush wear test was not significantly different (p = 0.361). SEM images revealed variations in surface finish based on composite type and polishing method. **Conclusion:** FSU revealed better gloss compared to OMN when polished with either a multi-step or simplified polishing system. However, both FSU and OMN showed good gloss retention attributed to their smooth and homogenous surfaces pre- and post-toothbrushing wear test.
Keywords: Gloss, Composites, Toothbrushing wear test.

JUNIOR ORAL ABSTRACT (02)

JO02

Investigation on the Adaptation of Customized Fibre Post in Wide Canals

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Objectives: The study aimed to investigate the adaptation of different post types within wide root canals, focusing on void formation and cement thickness. **Methods:** Twenty typodont teeth (n=5 per group) were divided into four groups according to post type: prefabricated fibre (G1), casted metal (G2), customized prefabricated fibre (G3) and customized fibre (G4). Intraoral periapical radiographs were taken pre- and post-cementation. The samples were sectioned to evaluate the existence of voids at the interface between resin cement and post and the cement thickness. Voids were classified as small (<30 µm), medium (30-60 µm) and large (>60 µm). Statistical analysis was perform using the Kruskal-Wallis test, with post-hoc comparisons for significant results. **Results:** No significant differences in void size were observed among the groups ($p = 0.219$). However, cement thickness varied significantly ($p = 0.002$), following the sequence G1>G3>G2>G4. Post-hoc analysis revealed that G1 had significantly greater cement thickness than G3 ($p = 0.024$), and G4 had the least ($p = 0.03$) compared to the other groups. **Conclusion:** Customized fibre posts (G4) demonstrated superior adaptation with minimal cement thickness, while casted metal and prefabricated posts showed greater cement gaps. Post selection is crucial to minimize cement-related complications and enhance the adaptation of posts in wide canals.
Keywords: customized fibre post, post and core, voids, canal adaptation

JUNIOR ORAL ABSTRACT (03)

JO03

Dimensional Accuracy and Stability of 3D-Printed Casts Fabricated from Three Resin Brands

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Objectives: The adoption of 3D printing in dentistry has improved prosthetic fabrication and diagnostic workflows. However, the dimensional accuracy and stability of 3D-printed working casts may vary depending on the resin used. This study aimed to evaluate and compare the accuracy and stability of casts fabricated from three general-purpose resins. **Methodology**: A Nissin typodont model was scanned using a 3Shape desktop scanner to generate a CAD reference model. Ten 3D-printed dental casts were printed for each commercially available general-purpose resin used: Anycubic, Epax, and Sunlu. A total of 30 models were fabricated using calibrated printer settings and standardized post-processing protocols. For dimensional accuracy assessment, each printed cast was scanned and superimposed onto the reference CAD model using the best-fit alignment feature in Medit Design software, with Root Mean Square (RMS) deviation values. Color mapping was used to quantify deviations. To evaluate dimensional stability, the casts were rescanned after 7, 14, and 21 days. Each scan was compared to the cast's initial scan using the same RMS-based superimposition method to identify deformation trends over time. One-way ANOVA and repeated measures ANOVA ($\alpha = 0.05$) were used to determine differences between resins used. **Results**: Epax demonstrated significantly superior dimensional accuracy (RMS $= 115.70 \pm 5.60$ µm, $p < .000$) compared to Anycubic and Sunlu (both ~163 µm), with no difference between Anycubic and Sunlu ($p = 1.000$). After 21 days, all resins showed progressive dimensional changes. Epax showed the least deviation, while Sunlu showed the highest deviation at each interval. Significant linear trends in deformation for all brands was observed, with Epax showing the most controlled and uniform deviation over time. **Conclusion:** All three resin brands remained within the designated clinically acceptable range of 200-500 µm in both the accuracy and stability tests, with Epax exhibiting the least distortion.
Keywords: 3D-printing, Dimensional accuracy, Dimensional stability, Resin, Working cast

JUNIOR ORAL ABSTRACT (04)

JO04

Surgical Efficiency and Stability of the Surgery-First Approach in Class II Cases: A Review

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Background: The Surgery-First Approach (SFA) is known to shorten treatment time in orthognathic surgery, particularly for Class III deformities. However, its clinical outcomes in skeletal Class II cases remain unclear and underreported. **Objectives**: This review aimed to evaluate clinical outcomes, including treatment duration, skeletal stability, and complication rates associated with SFA in Class II patients. **Methods**: Relevant studies were identified through a structured search of PubMed, Scopus, Web of Science, and the Cochrane Library. The review followed PRISMA-ScR guidelines, and all articles published up to July 2025 were screened using specific eligibility criteria determined a priority. **Results**: From 508 records screened, eleven case reports satisfied the inclusion criteria. Reported overall treatment duration varied between 6 and 19 months, with a median of about 12 months, notably shorter than the conventional orthodontics-first sequence described in the literature. Skeletal movements included mandibular advancement of 6–10 mm and maxillary impaction or advancement of 3–9 mm. Only 7 of the 11 case reports included stability outcomes, with follow-up periods ranging from 9 months to 3 years consistently demonstrating stable occlusion and facial profile. Only one patient experienced transient temporomandibular joint symptoms, which resolved conservatively. No instances of major relapse or surgical morbidity were reported. Interpretation, however, is limited by the reliance on isolated case-level evidence and heterogeneity in methodology. **Conclusion**: Current evidence suggests that the surgery-first protocol can be a viable option for Class II correction, achieving accelerated treatment, stable skeletal outcomes, and a low incidence of complications. These encouraging findings highlight the potential advantages of SFA, yet robust validation through controlled comparative studies and standardized long-term assessments remains essential before it can be integrated as a routine clinical pathway.
Keywords: complication, malocclusion, skeletal stability, Surgery-First Approach, treatment duration

JUNIOR ORAL ABSTRACT (05)

JO05

Novel c-Axis Crystal Modification of Dentin Hydroxyapatite: Spin Orbital Dynamics and Wave Entanglement

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Aims and Objectives: To modify dentin hydroxyapatite in oral environments using functionalized Carbon Quantum Dots (CQDs) by targeting c-axis orientation and spin–orbit interactions in entangled spacelike systems. **Materials and Methods:** Dentin blocks ($4 \times 4 \times 3$ mm) were sectioned and demineralised using methylhydroxydiphosphonate, acetic acid, calcium chloride, potassium bicarbonate, and water. CQDs were synthesized using 3g of urea and 10.5g of citric acid in ultrapure water with 100 mM NaOH, microwaved, cooled for 30 mins, and exposed to 5 V for 3 hours. Samples were categorised as $control_{saline}$, $*CQD_{0.1\%}$, $**CQD_{0.2\%}$, $***CQD_{0.3\%}$, and $*****CQD_{0.5\%}$, and stored for three months. Molecular docking was conducted using Schrödinger small-molecule drug discovery suite. TEM of dentin was performed with Raman. XRD was performed for DFT calculations and Rietveld refinement method. Solid-state NMR spectroscopy and mineralization tests were conducted on dentin samples. Microcantilever bending tests with surface and diffusion in a semi-infinite medium were calculated. Nanoindentation evaluated micromechanical properties at the collagen fibril-mineral level, with collagen orientation index determined by SAXS. Data was analyzed using one-way ANOVA. **Results:** DFT calculations summarized improved lattice parameters of Hap $***CQD_{0.3\%}$ and HAp $*****CQD_{0.5\%}$. All groups had comparable $v_1PO_4^{3-}$ value, indicating consistent phosphate intensities. Dentin crystals aligned their c-axis within 1° of the electron beam. $*****CQD_{0.5\%}$ group had highest elastic modulus and nano hardness with apatite well-aligned along collagen fibrils. XRD analysis revealed significantly higher bong lengths and angles ($p<0.05$) in all CQD groups. $***CQD_{0.3\%}$ and $*****CQD_{0.5\%}$ exhibited a collagen fiber orientation with angle distortion. Biofilms in these groups fluoresced red with no colony chain formation. Orientation index remained constant, with significant statistical differences only in $***CQD_{0.3\%}$ and HAp$*****CQD_{0.5\%}$. **Conclusion:** Dentin treated with $***CQD_{0.3\%}$ and $*****CQD_{0.5\%}$ showed notable crystallite changes, offering a novel approach for functional CQD fabrication with effective antimicrobial properties.
Keywords: collagen, crystal, cytotoxicity, dentin, hydroxyapatite, Raman.

JUNIOR ORAL ABSTRACT (06)

JO06

Mental Health and Quality of Life among Parents with Cleft Lip and Palate Children

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Background: Parents of children born with cleft lip and/or palate (CLP) may face emotional and psychological challenges that affect their mental health and overall quality of life (QoL). **Objective:** This study aimed to assess the mental health and quality of life (QoL) among parents of children with cleft lip and/or palate (CLP) and examine associations with socio-demographic factors. **Materials and methods:** This is a cross-sectional study conducted at the Combined Cleft Clinic (CCC), Faculty of Dentistry, Universiti Malaya, where 101 parents were recruited, achieving an 80% response rate. Mental health was assessed using the Depression, Anxiety, and Stress Scale (DASS-21), and QoL was measured with the WHO Quality of Life–BREF (WHOQoL-BREF). Descriptive statistics and non-parametric tests were used for data analysis. **Results:** The DASS-21 results revealed that most parents had normal levels of depression (83.2%), anxiety (77.2%), and stress (83.2%), with a significant portion reporting mild to severe distress. QoL scores varied significantly across domains with male respondents scoring higher in psychological QoL than females (p=0.002) indicating that males have a better QoL. Based on ethnicity, Malay consistently reported higher median scores than others across the social relationship, psychological, and environment domains. Higher household income groups revealed a better environment domain score (p=0.011). **Conclusion:** this study highlighted the mental health challenges and QoL differences among parents of children with CLP. Thus, tailored psychosocial assessments and support may be needed more than others.
Keywords: Mental health, Quality of Life, Cleft Lip and Palate, Anxiety, Stress

JUNIOR ORAL ABSTRACT (07)

JO07

Comparative In Vitro Study of Unfortified and Calcium Sulphate Fortified Chickpea Milk on the Remineralisation of Citric Acid Eroded Enamel Surface

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Introduction: Dental erosion from acidic foods leads to enamel demineralisation, thus increasing the risk of caries. While mounting evidence demonstrated dairy milk aids remineralisation, growing veganism preferences and lactose intolerance in the population have driven interest in plant-based milk beverage alternatives. Given their naturally low mineral levels, plant-based milks are typically fortified. This study evaluates the novel effects of unfortified (UF) and calcium-fortified (CSF) chickpea milk on enamel erosion. **Method**: Raw chickpeas were processed into milk and fortified with 2% of calcium sulphate. The resulting UF and CSF samples were then submitted for nutritional composition analysis. To mimic the *in vitro* model on the effects of the chickpea milk on the eroded enamel surface, upper permanent premolar teeth were collected from consented patients visiting the Oral Surgery Clinic, Faculty of Dentistry, UKM. The collected teeth were demineralised using 0.0312 M citric acid for 15 minutes, thrice daily, and subsequently immersed in either UF or CSF chickpea milks for 15 minutes, thrice daily, with interim storage in artificial saliva. Enamel surface microhardness, roughness, and morphology were assessed at baseline, post-citric acid exposure, and after 14 and 28 days of chickpea milk immersion. **Results**: The calcium content in the CSF chickpea milk was higher compared to the UF chickpea milk. Exposure to citric acid reduced the enamel microhardness, increased surface roughness, and SEM analysis revealed surface erosion, characterised by grooves, holes and erosive areas. Immersion of the eroded enamel in the CSF chickpea milk significantly increased enamel microhardness and decreased surface roughness, with more pronounced effects including greater calcium deposition within grooves and microporosities. **Conclusion**: Citric acid significantly erodes enamel surfaces. Both UF and CSF chickpea milk exhibited remineralising potential, suggesting their viability as plant-based alternatives to dairy milk in enamel repair.
Keywords: Chickpea milk, Fortification, Calcium Sulphate, Citric acid, Enamel, Erosion, Demineralisation, Remineralisation, Microhardness, Profilometry, SEM.

JUNIOR ORAL ABSTRACT (08)

JO08

Effect of Food-Simulating Liquids on the Surface Properties of Tooth-Coloured Restorative Materials

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Introduction: This study evaluated the effects of food-simulating liquids (FSLs) on the microhardness and surface roughness of three tooth-coloured restorative materials (TCRMs): Luna (LN), Aura Bulk Fill (AB), and Stela Automix (SA). **Objective:** To assess how FSLs affect the microhardness and surface roughness of selected TCRMs, comparing their performance after exposure to FSLs over time. **Methodology:** A total of 150 circular specimens (10×2 mm) were fabricated and divided into three groups: LN (n=50), AB (n=50), and SA (n=50). The materials were exposed to air (control) and four FSLs: artificial saliva, 50% ethanol-water solution, 0.02N citric acid, and heptane—over different time intervals. Microhardness and surface roughness were measured at baseline, 7 days, and 30 days. **Results and discussion:** Two-way ANOVA showed significant interactions between FSLs and materials for both microhardness and surface roughness ($p<0.001$). All materials exhibited reduced microhardness and increased surface roughness over time, except when exposed to air. LN had the highest microhardness and lowest surface roughness, while SA had the lowest microhardness and highest surface roughness. SA's surface roughness decreased in citric acid, likely due to its lower filler content. Ethanol and citric acid most negatively affected microhardness, while heptane caused the most significant surface roughness changes in SA. **Conclusion:** This study highlights the differential effects of FSLs on the microhardness and surface roughness of the tested TCRMs. The material-specific responses observed emphasize the importance of considering FSL exposure when evaluating the longevity and performance of dental restorations in the oral environment, particularly over time.
Keywords: tooth-coloured restorative material, microhardness, surface roughness, food-simulating liquids

JUNIOR ORAL ABSTRACT (09)

JO09

Psychosocial and Aesthetic Outcomes of Surgery-First Approach in Class II Orthognathic Patients: A Review

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Background: The Surgery-First Approach (SFA) has gained attention as a time-efficient strategy for managing skeletal discrepancies, especially in Class III cases. However, its influence on psychosocial outcomes in Class II malocclusion is less well-documented. **Objectives**: This review aimed to evaluate patient-reported outcomes, particularly quality of life, aesthetic satisfaction, and psychological well-being, in individuals undergoing SFA for skeletal Class II deformities. **Methods**: A structured search was conducted in PubMed, Scopus, Web of Science, and the Cochrane Library, following the PRISMA-ScR framework. Studies published up to July 2025 were screened based on predefined inclusion and exclusion criteria. **Results**: Out of 412 studies retrieved, six case reports were included. No randomized controlled trials or comparative cohort studies were identified. All six cases reported improvement in facial esthetics; however, only one were patient-reported, while the rest were clinician-assessed. Patient-reported outcomes included improved satisfaction in two cases, enhanced quality of life in one case, and improved self-esteem in two cases. Treatment duration ranged from 7 to 19 months across cases. Only one patient reported transient TMJ discomfort, which resolved without further complications. Despite these encouraging findings, the lack of standardized outcome measures and absence of comparative studies limit the generalizability of results. **Conclusion:** Preliminary evidence suggests that the Surgery-First Approach can provide psychosocial and aesthetic benefits for Class II patients, with shorter treatment times and high levels of patient satisfaction. Nonetheless, current evidence is restricted to isolated case reports, and further prospective comparative studies with validated psychosocial instruments are required to confirm these benefits.
Keywords: aesthetics, malocclusion, quality of life, skeletal Class II, Surgery-First Approach.

JUNIOR ORAL ABSTRACT (10)

JO10

Implications Of Financial Burden on the Mental Health Among Undergraduate Dental Students in Malaysia

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Introduction: Previous studies show a link between financial burden and mental health issues like anxiety and depression in university students. Financial strain due to rising living and study cost has been particularly documented among dental students; however, the effect of financial burden on mental health is unclear. **Objective**: The purpose of this study was to assess the financial background of undergraduate dental students in Malaysia, identify the financial problems they face, and assess the impact of financial burden implications on their mental health. **Methodology:** A cross-sectional study was conducted across two public and one private dental institutions. Participants were selected using stratified random sampling from Universiti Malaya (UM) (n=67), Universiti Sains Malaysia (USM) (n=63) and AIMST University (n=77). Data were analysed based on questionnaires on sociodemographic, financial status, financial problems, financial anxiety, and Depression, Anxiety, and Stress Scale 21(DASS-21). The adapted questionnaire was validated through expert validation and face validation before distribution to the participants. Descriptive statistics were calculated to tabulate the data. Chi-square tests were used to examine the relationships between students' financial burden and financial anxiety (α=0.05). **Results:** There is significant link between financial anxiety and financial burden ($p<0.001$), with most students coming from the M40 income group. UM students reported the highest living expenses (RM941.42) among all universities. The main reason for the undergraduate dental students having financial problems was that their expenses exceeding their income. **Conclusion:** Financial burden contributes to financial anxiety on dental undergraduates which could be a factor that affect mental health. **Keywords:** dental students, financial burden, mental health, Malaysia

JUNIOR ORAL ABSTRACT (11)

JO11

Smile Attractiveness Perception by Three Malaysian Ethnic Groups Related to Upper Midline Deviation

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Introduction: Upper dental midline is a critical component of smile attractiveness; however, dental practice guidelines on midline shift and its influence on smile attractiveness are inadequate. **Objectives:** This study aimed to compare smile attractiveness perceptions related to upper midline deviations amongst 3 facial types by 3 ethnic groups in Malaysia. **Methods:** Smiling images of 1 man and 1 woman with adequate smile characteristics and Mesoprosopic face were selected by panel of 3 orthodontists. Selected images were modified into 2 different facial types (Euryprosopic, Leptoprosopic) and 6 upper midline deviations (0mm, 1mm, 2mm, 3mm, 4mm, 5mm). Total 36 images were evaluated using 100mm visual analogue scale by 150 Malaysian raters [Malay, Chinese, Indian (50 each)] (average age 18-50 years). Scores were compared statistically using One-Way-ANOVA, Tukey's HSD and paired t-test (p<.05). **Results:** No statistically significant differences observed in attractiveness scores for female subject across all 3 facial types with 5 midline deviations. Smile attractiveness of male with 5mm midline deviation in Leptoprosopic face showed statistically significant difference (p=.01) among 3 rater groups. Pairwise comparison found statistically significant difference (p=.02) between Indians and Malays - Indians were less critical than Malays. Smile attractiveness of female amongst 3 major ethnic groups was found significantly higher in all midline deviations and 3 facial types compared with male smile. Higher statistically significant differences found between smile attractiveness perception of both genders in normal face compared to short and long faces. **Conclusions:** Smile attractiveness of female was not influenced by midline deviations and facial types. 5mm midline deviation in Leptoprosopic male impacted smile attractiveness perception. Gender of individual affects perception of smile attractiveness related to upper midline deviation among 3 major Malaysian ethnic groups. Midline deviation is more noticeable in normal facial type for both genders, than short and long facial types.
Keywords: Smile attractiveness, upper midline deviation, ethnicities.