Abstracts presented at the

4th i-DENT 2025

Theme: Advancements in Dentistry: Shaping Tomorrow's Smiles

Date: 3rd - 4th February 2025

Venue: Bangi Resort Hotel, Bandar Baru Bangi, Selangor, Malaysia

Organiser: Faculty of Dentistry, Universiti Sains Islam Malaysia

Chief Editor: AP Dr Rohazila Mohamad Hanafiah

Editor: AP Dr Siti Aisyah Abd Ghafar
AP Dr Haslinda Ramli
AP Dr Normaliza Ab Malik
AP Dr Azlan Jaafar
AP Dr Azrul Hafiz Abdul Aziz
Dr John Chong Keat Hon
Dr Wan Nor Syariza Wan Ali

CASE PRESENTATION (CP)

CP01: MANAGEMENT OF GINGIVAL ENLARGEMENT IN A PERINATAL PATIENT

Pathmaprasath Pathmamortie[1], Lim Ei Leen[1], Salina Din[2]

[1]Unit Pakar Periodontik, Klinik Pergigian Anika Klang, Selangor, Malaysia
[2]Unit Stomatologi, Institut Penyelidikan Perubatan, Institut Kesihatan Negara, Malaysia

Email: pathmaprasath1986@gmail.com

Introduction: Gingival Enlargement (GE) is a common pathology in pregnant women and presents as a localized or generalized form. Prevalence of GE during pregnancy ranges from 21% to 43% and frequently observed in the 3rd trimester. **Case Presentation:** A 32-year-old fit and healthy female was referred for a persistent mass in the lower front teeth area, which had gradually increased in size over the last 3 years. History revealed that the lesion started growing during her 3rd pregnancy but had proliferated during her 4th pregnancy. Clinical examination revealed a large reddish pink, fibrous, and sessile mass measuring about 2.0 cm x 1.8 cm. The growth involves the buccal interdental papilla and attached gingiva of 41-43 extending lingually causing displacement of teeth. Interproximal bone loss at 42-43 was observed radiographically. The patient was diagnosed with unstable periodontitis (stage III grade C) and with a provisional diagnosis of fibrous epulis. Full mouth scaling and debridement were performed followed by an excisional biopsy. The histopathological examination confirmed a diagnosis of Calcifying Fibroblastic Granuloma (CFG). **Discussion:** Hormonal changes during pregnancy and the presence of local irritants can present as a risk factor for the development of GE. Untreated localized GE in perinatal patients may lead to alveolar bone loss and displacement of teeth resulting in aesthetic issues. Although, CFG can be managed by surgical excision, the risk of recurrence is up to 20%. **Conclusion:** In conclusion, early detection and timely management of GE and periodontitis during pregnancy is essential to prevent possible dental complications.

Keywords: Pregnancy, Fibrous Epulis, Gingival Enlargement (GE), Calcifying Fibroblastic Granuloma

CP02: CASE SERIES: DELAYED PULP EXTIRPATION FOLLOWING DENTAL TRAUMA AND ITS MANAGEMENT WITH MINERAL TRIOXIDE AGGREGATE

Yuen Choong Yow[1], Ratna Radhiah binti Mohd Fauzi[1], Samsanizah binti Azman[1], Dewi Mayang Sari binti Kamarozaman[2]

[1]Unit Restoratif, Pusat Pakar Pergigian Seremban
[2]Kesihatan Awan Pergigian Seremban

Email: choongyow@moh.gov.my

Introduction: Dental trauma often requires timely endodontic intervention to prevent complications, such as external root resorption (ERR). This case series highlights the outcomes of delayed pulp extirpation in avulsed and intruded teeth managed with Mineral Trioxide Aggregate (MTA). **Case Presentations**: *Case 1*: A 22-year-old female with a root fracture (tooth 12) and avulsion (tooth 11), reimplanted within one-hour, experienced delayed pulp extirpation after two months. Resulting ERR in tooth 11 was managed with calcium hydroxide and MTA obturation, maintaining functionality after 6 months. *Case 2:* A 21-year-old female with tooth 21 intrusion underwent delayed pulp extirpation after six months, leading to ERR. Treatment with calcium hydroxide and MTA obturation halted resorption, showing favorable outcomes after 12 months. *Case 3*: A 12-year-old male with tooth 21 avulsion faced a 3-month delay in pulp extirpation, resulting in apical ERR resorption. Regenerative endodontics involving apical bleeding induction and MTA application supported continued root development and healing at 12 months. **Discussion**: Delayed pulp extirpation significantly increases the risk of inflammatory resorption. MTA's biocompatibility and sealing properties proved effective in managing ERR and supporting long-term outcomes. Regenerative techniques in younger patients preserved root structure and promoted continued development despite resorption. **Conclusion**: Early intervention following dental trauma is essential to minimize complications. MTA, utilized in conventional and regenerative endodontics, is a reliable material for managing delayed cases, ensuring favorable long-term outcomes.

Keywords: Dental trauma, delayed pulp extirpation, external resorption, regenerative endodontics, Mineral Trioxide Aggregate.

CP03: NAVIGATING THE DIAGNOSTIC CROSSROADS: STEVEN JOHNSON SYNDROME (SJS) VERSUS ERYTHEMA MULTIFORME (EM)

Rasyidah Fatihah Awatif Roshdi[1], Chan Yen Pei[2], Fariha Fathul Karim[1], Siti Nur Afifah Ramli[1], Nur Dini Ahmad Zawawi[1], Afifah Syairah Abu Yazid[1], Amira Sabrina Za'aba[1], Norsyamimi Mohammad[1], Ahmad Tarmizi Rosnin[1]

[1]Klinik Pergigian Kuala Lipis
[2]Department of Paediatric Dental, Hospital Kuala Lipis, Pahang

Email: rasyidahawatif@gmail.com

Introduction: Steven Johnson Syndrome (SJS) is a cutaneous adverse reaction spectrum which includes EM, toxic epidermal necrolysis (TEN) and SJS/TEN overlap, sharing characteristics of skin and mucosa blistering. Although SJS and EM may present with similar mucosal erosions, they are two distinct disorders with different patterned skin lesions. A clinician may find themselves at a diagnostic crossroad when oral lesions precede cutaneous involvement. **Case presentation:** An 11-year-old boy presented with severe oral erosions and conjunctivitis for three days. He had taken paracetamol for fever a week earlier and developed oral lesions the following day after exposure to river water. Six days later, targetoid skin lesions appeared on his back, limbs, and genital area. Multidisciplinary management was carried out by paediatrics, ophthalmology, dental team and consultations from dermatology and oral medicine. He was admitted for intravenous fluids, nasogastric feeding, and received antibiotics and immunoglobulin therapy. Daily debridement of blood-crusts on his lips and slough tissue intraorally was performed using antiseptic and analgesic mouthwash. **Discussion:** Infections are important triggers of SJS and EM in children whereas drugs are more common cause of SJS in adult but rare in children. It is essential to identify the cause so that removal of the causative agent or appropriate anti-infective therapy can be provided. In our case, both infection and drugs may be the trigger factors which may lead to diagnostic uncertainty. Investigations showed he had pneumonia and received antibiotic therapy; IV Penicillin. Although there are rare reports of paracetamol causing SJS in children, it can be confounding since it is used in treating prodromal symptoms. Compared to EM, SJS has more widespread skin lesions with an atypical, flat target pattern. **Conclusion:** SJS should be a diagnostic consideration in children with extensive oral ulceration of prolonged duration.

Keywords: Steven Johnson Syndrome, Erythema Multiforme, Targetoid skin lesion

CP04: STRATEGIC PLANNING IN OPTIMISING SUPRACRESTAL TISSUE ATTACHMENT THROUGH EFFECTIVE SURGICAL CROWN LENGTHENING – A CASE REPORT

Muhamad Azfar Fathi bin Sa'adon, Muhammad Annurdin bin Sabarudin[1]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: azfarfathi.s@gmail.com

Introduction: Surgical crown lengthening is a well-established procedure aimed at preserving supracrestal tissue attachment and ensuring periodontal health prior to restorative interventions. This case report emphasizes a strategic planning checklist to achieve precise tissue reduction, facilitating optimal margin placement for restoration. **Case Presentation**: A 41-year-old healthy Chinese female presented with a fractured crown of tooth 35, retaining only the lingual wall. Despite good oral hygiene, restorative evaluation revealed inadequate ferrule height (<2 mm) on the buccal aspect. The tooth, previously root canal treated, necessitated surgical crown lengthening. Pre-surgical planning employed a checklist evaluating anatomical crown height, probing depths, bone sounding, keratinized tissue width, gingival thickness, and surgical protocols. Postoperative recovery was uneventful, with optimal ferrule height (>2 mm) achieved by the 4th-week follow-up, meeting both functional and aesthetic expectations. **Discussion**: Surgical crown lengthening techniques, ranging from gingivectomy to osseous reduction and apical repositioned flaps are tailored to individual cases. Meticulous planning using key clinical parameters ensures precise gingivectomy and osseous reduction, resulting in predictable supracrestal tissue attachment. Evaluating crown height, pocket depth, and soft/hard tissue dimensions allows effective customization, ensuring a predictable new dimension of supracrestal tissue attachment. **Conclusion**: This case highlights the critical role of strategic planning in achieving adequate ferrule height and stable supracrestal tissue attachment through surgical crown lengthening. Comprehensive preoperative evaluation enhances the predictability and longevity of the surgical outcomes.

Keywords: supracrestal tissue attachment, crown lengthening, surgical planning, ferrule

CP05: THE MASQUERADE OF MASON'S TUMOR: A RARE CASE IN A 7-YEAR-OLD

Ashwini M Madawana[1], Aimi Kamaruddin[1], Nurhayu Ab. Rahman[1]

[1]School of Dental Sciences, Hospital Pakar Universiti Sains Malaysia

Email: draimi@usm.my

Introduction: Mucoceles are common benign swellings in children, typically caused by trauma or obstruction of minor salivary glands. However, not all swellings with a mucocele-like appearance are benign. Rare tumours, such as Mason's Tumour, can present similarly, posing diagnostic challenges. This case highlights the importance of thorough diagnostic evaluation to avoid misdiagnosis and ensure timely treatment of such rare conditions. **Case Presentation:** A 7-year-old child presented with a painless, bluish swelling on the lower lip, clinically resembling a mucocele. The lesion had persisted for several weeks without resolution. Initial examination suggested a benign salivary gland origin, but imaging revealed features atypical for a mucocele. A biopsy was performed, and histopathological analysis confirmed the diagnosis of Mason's Tumour, an exceptionally rare neoplasm. The tumour was surgically excised with clear margins, and the child recovered without complications. No recurrence was observed during six months of follow-up. **Discussion:** Mason's Tumour is a rare entity that can mimic the clinical presentation of more common benign lesions, such as mucoceles. This case underscores the importance of considering rare diagnoses when evaluating persistent or atypical swellings in paediatric patients. Imaging and histopathological examination play a critical role in differentiating Mason's Tumour from benign conditions, ensuring accurate diagnosis and appropriate treatment. Early intervention is crucial to prevent complications and achieve favourable outcomes. **Conclusion:** Mason's Tumour is a rare but significant differential diagnosis for mucocele-like swellings in children. This case emphasizes the importance of thorough evaluation for seemingly benign lesions to identify rare pathologies and provide timely management.

Keywords: Mason's Tumour, mucocele, rare paediatric tumour, histopathology, differential diagnosis

CP06: SOLITARY FIBROUS TUMOUR OF THE TONGUE: CASE REPORT

Reevanash Poravi[1], Nur Diyanah Abdul Wahid[1], Pappathy @ Sri Devi Vairavan[2]

[1]Oral and Maxillofacial Surgery Department, Hospital Segamat, Ministry of Health Malaysia, Segamat, Johor, Malaysia
[2]Oral Pathology and Oral Medicine Department, Hospital Sultan Ismail, Ministry of Health Malaysia, Johor Bahru, Johor, Malaysia

Email: reevanash@moh.gov.my

Introduction: Solitary fibrous tumour (SFT) is a rare mesenchymal tumour originating from fibroblast/myofibroblast cells. While SFTs are primarily found in the pleura, they occasionally appear in the head and neck region, including the oral cavity. **Case presentation**: We describe a 48-year-old female patient with a slow-growing mass on the tongue for 9 years, causing difficulty with eating and speaking. Blood tests suggested inflammation and iron-deficiency anaemia. An initial histopathology following an incisional biopsy indicated pyogenic granuloma; however, subsequent surgical excision and immunohistochemical analysis using CD34 and STAT6 confirmed the diagnosis of SFT. The patient's post-operative recovery was uneventful after two months. **Discussion**: Though rare, solitary fibrous tumour can mimic other benign lesions, leading to potential misdiagnosis. Histopathological evaluation and immunohistochemical markers like CD34 and STAT6 are essential for accurate diagnosis, and complete surgical excision is crucial to reduce recurrence risk. **Conclusion**: Solitary fibrous tumour presents diagnostic challenges, with immunohistochemistry vital for confirming the diagnosis. Iron-deficiency anaemia may be a potential risk factor in developing SFTs, warranting further research.

Keywords: Solitary fibrous tumour, Tongue, CD34, STAT6, Biopsy

CP07: REVERSING DISCOLORATION IN NON-VITAL TEETH WITH INTERNAL BLEACHING – A CASE REPORT

Tengku Nur Hazirah binti Tengku Azmi[1], Khairul Bari'ah binti Mohd Khamis[1]

[1]Klinik Pergigian Dr Sidi, Terengganu

Email: tghazirahazmi@gmail.com

Introduction: Trauma-induced intrinsic discoloration of permanent teeth affects both the appearance and social well-being of children and adolescents. Treatment options for discoloured non-vital teeth due to trauma include bleaching, crowns, or veneers, with the latter two being more invasive. This case report highlights the successful internal bleaching of discolored teeth following root canal treatment. **Case presentation**: A 25-year-old Chinese female complained of upper front teeth appeared darker. She had a history of accidentally knocking on her friend's head while playing sport eight years ago whereby her upper front teeth were intruded. The dentist had done reposition and splinting. Since then, she has not received any dental treatments. On examination, teeth 11 and 21 discolored, non-tender to percussion, no mobility and no probing depth. Cold test showed a negative response. Periapical radiograph revealed radiolucency on distal tooth 11 and mesial tooth 12 indicating caries reaching dentin and periapical lesions on both roots about 5x5 mm. The teeth were diagnosed as dental caries and pulp necrosis with asymptomatic periapical periodontitis. Treatment plans were decided - for restorations, root canal treatment, followed by non-vital bleaching using walking bleach technique with 35% hydrogen peroxide (BEYOND MAX5 Treatment Kit). Teeth shades were evaluated after 10 days, which matched with adjacent teeth and satisfactory results were achieved. **Discussion:** Non-vital bleaching is a conservative method in preserving future restorative options, in managing discoloration. **Conclusion:** The walking bleach technique of non-vital bleaching offers a safe, effective, and non-invasive solution for addressing discoloured teeth following root canal therapy.

Keywords: dental trauma, non-vital teeth, internal bleaching, discoloration

CP08: MANAGEMENT OF INFRAOCCLUSION, HYPODONTIA AND TRANSPOSITION OF TEETH: A CASE REPORT

Mansor NA[1], Salim SA[1]

[1]Unit Ortodontik, Klinik Pakar Pergigian Kota Setar, Kedah

Email: ainimansoor@moh.gov.my

Introduction: Infraocclusion is a condition where a tooth is below the occlusal plane compared to the adjacent teeth (Ng et al, 2022). In a study, 65.7% of patients with missing permanent premolars reported to have infraoccluded primary molars (Kurol & Magnusson, 1984; Peck, 2009). Tooth transposition is an interchange in the position of two permanent teeth in the same quadrant of the arch. **Case presentation:** This multidisciplinary case involved a healthy 15-year-old Chinese female who was presented with Class I malocclusion on Class I skeletal pattern. Her malocclusion was complicated by infraoccluded upper left deciduous second molar (ULE), hypodontia of upper left lateral incisor (UL2), transposition of upper left canine (UL3) with upper left first premolar (UL4), crossbites involving upper and lower left canines and crowding of both arches with centerline discrepancies. She had surgical removal of the infraoccluded ULE and extractions of upper right first premolar and lower first premolars followed by fixed appliances treatment with preadjusted edgewise using MBT prescription (0.022x0.28'' slot). UL4 was camouflaged as UL2 with no tooth modification. Essix retainers were prescribed post-orthodontic treatment. **Discussion:** Infraoccluded ULE was surgically removed to eliminate crowding and to improve the position of the adjacent teeth. UL4 camouflaged as UL2 because UL3 were not suitable. The occlusion was stable at the end of treatment and the patient's aesthetic expectations were met. **Conclusion**: This case emphasizes the value of a tailored multidisciplinary approach that prioritizes conservative treatment options to enhance long-term oral health.

Keywords: infraocclusion, hypodontia, transposition

CP09: THE DIGITAL DENTURE WORKFLOW FOR EDENTULOUS PATIENTS IN COMMUNITY SERVICE

Norlela Yacob[1], Nusima Mohamed[1], Laila Azwa Hassan[1], Muhammad Amin Azahari[1]

[1]Department of Prosthodontics and Conservative Dentistry, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: drnolela@usim.edu.my

Introduction: The advancement in digital denture technology has shifted the traditional denture fabrication process to digital methods. Most existing workflows are designed for standard clinical settings. This paper aims to present a digital denture workflow for community service, incorporating digital fabrication with a mobile dental lab. **Case Presentation:** The digital workflow adapted conventional and digital methods to create dentures in at least three visits for edentulous patients. During the first visit, primary impressions were made using impression compound and alginate wash, and a bite registration was also taken with a prepared wax bite from the study model. These clinical data were then transferred to CAD software for complete denture CAD design. The denture was then 3D printed for try-in. If needed, a reline impression was taken. The third visit was planned for denture insertion. **Discussion:** Traditional complete denture workflows often rely on STL files from intraoral scans, which may result in poor retention because of mucocompression impressions were not achieved. Some workflows use centric trays to record maxillomandibular relationships which is not feasible for this project. All available workflows are also not suitable for off-site fabrication, especially in community service settings. The proposed innovative workflow emphasizes mucocompression impression taking and adjustments during the try-in process when required. **Conclusions**: This innovative workflow has efficiently helped in management of edentulous geriatrics patients in community service setting for the Komuniti@uniMADANI project. Good denture fitting was seen using this workflow that produced express complete dentures within 3 clinical visits.

Keywords: 3D printing, complete denture, digital denture, workflow.

CLINICAL RESEARCH (CR)

CR01: VALIDATION OF A QUESTIONNAIRE ASSESSING DENTAL FRONTLINERS' PERCEPTION OF THE INDEX FOR INTERCEPTIVE ORTHODONTICS REFERRAL

Nisreen Nordin[1,2], Annapurny Venkiteswaran[2], Nagham Mohammed Abdullah[2], Saraswathy Devi Sinniah[2]

[1]Ministry of Health Malaysia
[2]Faculty of Dentistry, Universiti Teknologi MARA, UiTM

Email: nisreennordin@gmail.com

Introduction: The aim was to validate the questionnaire used to assess the dental frontliners' perception on the novel Index for Interceptive Orthodontics Referral (IIOR). **Methodology:** A previously published questionnaire which tested the perception of orthodontic indices usage, was modified and used in this study. Content validation was done using the responses from six experts who assessed the relevance of each item. Subsequently, the Item Content Validity Index (I-CVI) was calculated to determine the agreement between the experts on each item. Face Validation was carried out with twelve respondents from the Faculty of Dentistry, UiTM. They rated the clarity and comprehension of each item using the face validation assessment form. The Item Face Validity Index (I-FVI) was calculated. The I-CVI and I-FVI values of more than 0.83 were deemed to have excellent agreement. **Results:** The mean I-CVI and I-FVI resulted in excellent agreement with the value of 0.96 and 0.97 respectively. Nine items had I-CVI score of 1.00, while three items had 0.83. All the items I-FVI values were 1.00 except for one item which had 0.83. **Conclusion:** The questionnaire to assess the dental frontliners' perception towards IIOR was shown to be of high content and face validity.

Keywords: Content validity, Face Validity, Perception

CR02: ASSESSING DENTAL STUDENTS' KNOWLEDGE, PRACTICES AND CHALLENGES IN DELIVERING DIETARY ADVICE TO PEDIATRIC PATIENTS

Nur Fatin Najwa Abu Bakar[1], Aqilah Abdul Rahman[1], Norzalina Ghazali[2]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Pediatrics Dentistry and Orthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: zalina@usim.edu.my

Introduction: In Malaysia, dental students are required to learn how to provide dietary advice as part of their curriculum. However, little research has been done on their understanding and application of pediatric nutrition and dietary recommendations. This study aimed to assess Malaysian dental students' knowledge of dietary advice for children, their ability to implement it, and the challenges they face when discussing it with patients and guardians. **Methodology:** A validated internet-based questionnaire was distributed to all clinical dental students, Year 4 and Year 5 of Universiti Sains Islam Malaysia (USIM). The questions evaluate the components of understanding, practice and challenges encountered by the students when delivering dietary advice to pediatric patients and their guardians. **Results:** The response rate was 82%. Of the respondents, 27% reported difficulties in delivering dietary advice, and 35% expressed a lack of confidence in providing such guidance. A significant majority (83.6%) did not have access to dietary guidelines, while 50% of those with guidelines relied on the Malaysian Dietary Guidelines. Additionally, only 49.3% of students knew where to find up-to-date pediatric nutrition and diet guidelines. In the knowledge section, 73.5% of students answered correctly, indicating moderate knowledge in dietary practices. **Conclusion:** This study shows the need for standardized dietary guidelines to emphasize the importance of nutrition in oral health care. Educational strategies should focus on improving students' confidence and skills in providing dietary advice for children.

Keywords: dietary advice, dental students, pediatric patients, nutrition, dietary guideline

CR03: SEXUAL DIMORPHISM OF THE MANDIBLE FROM DENTAL PANORAMIC TOMOGRAPHY (DPT) AMONG CHILDREN IN THE MALAY POPULATION

Ammar Bin Rezadin[1], Siti Aisyah Aminah Binti Rosli[2], Nurjehan Mohamed Ibrahim[2], Aspalilah Alias[1,3,4*]

[1]Department of Basic Science, Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Paediatric Dentistry and Orthodontics, Universiti Sains Islam Malaysia
[3]Department of Forensic Odontology, Faculty of Dental Medicine Universitas Airlangga, Indonesia.
[4]Centre of Research for Fiqh Forensics and Judiciary (CFORSJ), Institut Sains Islam (ISI), Universiti Sains Islam Malaysia, Malaysia, Negeri Sembilan

Email: draspa76@usim.edu.my

Introduction: Forensic odontology is a field that studies the dental structure for identification of human remains. The mandible is one of the bones holding teeth and has a unique shape that can differentiate among humans. This study aims to evaluate sexual dimorphism in the mandibles of Malay children using geometric morphometric (GM) analysis. **Methodology:** A total of 305 Dental Panoramic Tomography (DPT) radiographs were analysed, comprising paediatric males (159) and females (146) within the group age of 3 to 12 years old. Twenty landmarks were digitized using tpsDig2 software. The MorphoJ for GM was used to do discriminant function analysis, Canonical Variate Analysis (CVA), Principal Component Analysis (PCA), Generalized Procrustes Analysis (GPA), and Procrustes ANOVA. **Results:** The first five principal components (PC1-PC5) capture 75% of mandible shape variation, with significant differences between sexes ($P<0.01$). However, the 62% DFA accuracy suggests overlapping male and female features. It indicated that the mandible shapes of males and females are not distinctly different, likely due to overlapping features and, in children, the lack of fully developed hormonal influences and secondary sexual characteristics. This study only includes children until 12 years old due to the limitation of data. **Conclusion:** These findings highlight sex-related developmental impacts on paediatric mandibular morphology. Geometric morphometric analysis, as a non-invasive tool, proves valuable for assessing sexual dimorphism and holds promise for sex estimation in forensic odontology.

Keywords: Forensic odontology, Sexual dimorphism, Mandibular morphology, Paediatric population, Geometric morphometric analysis

CR04: CAREGIVERS ATTITUDES AND INTENTIONS TOWARD OLDER ADULTS' ORAL HEALTH CARE: AN APPLICATION OF THE THEORY OF PLANNED BEHAVIOUR

Noor Adriana Hadirah Mohamad Hatta[1], Siti Zulaikha Hasbullah[1], Nor Ba'yah Abdul Kadir[2], Azlan Jaafar[3], Normaliza Ab Malik[4]

[1] Faculty of Dentistry, Universiti Sains Islam Malaysia
[2] Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia
[3]Department of Periodontology and Community Oral Health, Universiti Sains Islam Malaysia
[4]Department of Conservative Dentistry and Prosthodontic, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: liza_amalik@usim.edu.my

Introduction: The global aging population presents significant public health challenges, including older adults' oral health. Formal or informal caregivers play a critical role in managing older adults' oral care. The study explored caregivers' attitudes and intentions toward the oral health care of older adults, utilizing the Theory of Planned Behaviour (TPB) as a framework. **Methodology:** A questionnaire was used to assess caregivers' attitudes, subjective norms (SN), perceived behaviour control (PBC), and intentions related to oral care of older adults. This study used a non-probability snowball sampling design. A flip chart contains information on the importance of oral health care for older adults was used as an intervention to the test group. Data were collected at baseline and one and three months using a Google Form questionnaire. **Results:** A total of 18 caregivers were recruited and followed up. There was no significant difference between the control and test groups at baseline, 1 month and 3 months follow-up ($p>0.05$). Besides, there were no statistically significant differences observed among the test and control groups at baseline, 1 month and 3 months ($P > 0.05$). However, there was a significant difference in the intention towards older adults' oral health care of the test group ($P=0.027$). **Conclusion:** There was a potential increase in attitudes, SN, PBC and intention in the long-term behavioural outcomes based on the TPB framework of the caregivers with the intervention. (words 229)

Keywords: Theory of Planned Behaviour, older adults, oral health

CR05: THE EFFECT OF NOISE SENSITIVITY AND MENTAL HEALTH AMONG STAFFS AND STUDENTS IN USIM DENTAL FACILITIES

Syiral Mastura Abdullah[1], Nurul Izza Idaham[2], Abdul Hakim Said, Nusaibah Othman

[1]Department of Paediatric Dentistry and Orthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM)
[2]Department of Periodontology and Community Oral Health, Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM)

Email: drsyiralmastura@usim.edu.my

Introduction: Dentists and dental auxiliaries are exposed to noise of different sound levels while working in dental clinics and laboratories. Noise sensitivity is defined as a personality trait that encompasses an overall attitude towards noise in general and serves as a predictor of annoyance. Noise sensitivity has been linked with anxiety and noise-sensitive individuals have had more prominent symptoms of inadequacy, depression, sensitivity, anger, tension, inferiority and nervousness. The aim of this study is to assess the effect of noise sensitivity and mental health among staff and students in USIM dental facilities. **Methodology:** In this study, GHQ-28 questionnaire and Weinstein Noise Sensitivity Scale (WNSS) questionnaire were distributed to staff and students of USIM dental facilities to assess noise sensitivity and mental health. Noise in dental settings were measured using decibulometer IEC:61672-1:2013 to identify the types of instruments that contribute to occupational noise exposure among dental staff and students. **Results:** There are 4 instruments from prosthodontic laboratory that exceed the maximum safe noise level which are stone trimmer, vibrating instrument, windblower and working table windblower. Mean scores of GHQ-28 and WNSS-21 respectively showed higher levels of distress and sensitivity to noise among dental students and staff. There is a significant difference between Year 2 students and staff in perceiving environmental noise in USIM facilities ($p=0.047$). There is also a weak positive correlation between noise and mental health.

Keywords: Noise sensitivity, Mental Health, Dental setting, Decibulometer.

CR06: GAME ON! A BATTLE BETWEEN TRADITIONAL VERSUS ONLINE GAMES IN A COMMUNITY ENGAGEMENT PROGRAM

Asma AAA[1], Siti Nadia R[2], Azlan J[3]

[1]Department of Paediatric Dentistry and Orthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3]Department of Periodontology and Community Oral Health, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: asmaabdullah@usim.edu.my

Introduction: Generation Z has a unique learning style where the kinesthetics approach is more prevailing. With the evolution of digital education, integrating interactive methods i.e. gamification can attract this tech-savvy generation. This study investigated the knowledge gained and the gamification experience of youngsters attending a gamification-integrated Dental Trauma awareness program. **Methodology:** A quasi-experimental study involving 34 participants where baseline and post-gamification knowledge assessments were done via online validated surveys. Educational gamification using traditional board game (TG) and online game (OG) were designed with similar contents and participants' experiences were evaluated. **Results:** At baseline, most of the participants had low knowledge of the dental trauma (97%). After gamification, remarkable improvement in knowledge was noted in most participants (n=26, 84%). A positive response towards gamification with an overall mean of 8.5±2.29 was noted. TG was insignificantly preferred in most items asked compared to OG except for 'duration of game completion' ($p>0.05$). TG was perceived to have more useful information as compared to OG with a difference in mean of 1.37. **Conclusion:** The overwhelming positive effect towards interactive educational content via gamification indicates the potential of reforming traditional oral health promotion approaches resulting in a better impactful outcome.

Keywords: boardgame; online gaming; gamification; oral health promotion; dental trauma

CR07: A COMPARATIVE ANALYSIS OF DENTAL ARCH FORM FEATURES IN DIFFERENT GENDER AND MALOCCLUSION IN MALAY POPULATION

Muhammad Syahir Iman Bin Rosley[1], Ain Alisa Binti Mohd Asri[1], Syiral Mastura Abdullah[1], Azlan Jaafar[1]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: ainalisa@raudah.usim.edu.my

Introduction: The dental arch form features influenced by genetic and environmental factors varies across populations. This study investigates the dental arch form features in different types of gender and malocclusion of the Malay population. **Methodology:** Dental casts (n = 202; 110 males, 92 females) archived in the Orthodontics and Paediatric Dentistry Department were analysed. Measurements of intercanine and intermolar widths were obtained using a 3D scanner and processed using OpenEpi software (v3.01) and ANOVA with Post Hoc Tests. **Results:** This study revealed significant differences in intercanine and intermolar widths across genders and malocclusion classes except for maxillary intermolar width ($p > 0.05$). In males, maxillary intermolar width (mean = 53.895, SD = 2.745) exceeded that of females (mean = 51.001, SD = 2.970). Similarly, mandibular intermolar width was larger in males (mean = 46.784, SD = 2.889) compared to females (mean = 44.138, SD = 2.729). However, no significant differences between gender were observed in maxillary intercanine width (males: mean = 35.129, SD = 3.499; females: mean = 35.140, SD = 2.415) and mandibular intercanine width (males: mean = 27.032, SD = 2.800; females: mean = 27.075, SD = 2.998). Post Hoc Tests highlighted distinct variations among malocclusion classes. **Conclusion:** The study revealed significant gender differences in intermolar widths. Intercanine widths showed no significant variation between genders. Variations in dental arch dimensions were also observed among malocclusion classes, emphasizing the need to account for these differences in orthodontic diagnosis and treatment planning.

Keywords: Arch form, Malocclusion, Intermolar width, Intercanine width

CR08: EVALUATION OF A NOVEL ATTRACTIVE NEEDLE COVER (ANC) IN REDUCING DENTAL ANXIETY DURING LOCAL ANESTHESIA ADMINISTRATION: PERSPECTIVES OF PEDIATRIC PATIENTS AND DENTAL OPERATORS

Muhammad Solihin bin Azman, Alia Suaidah binti Mohktar, Nusima binti Mohamed[1], Nor Azlina binti Ismail [2]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Paediatrics and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: solihinazman55@gmail.com

Introduction: In paediatric dentistry, dental anxiety is a common challenge particularly during local anaesthesia (LA) administration. This study aims to investigate the effectiveness of an *Attractive Needle Cover* (ANC) to reduce anxiety during LA administration. Additionally, it also assesses dental operators' satisfaction with the use of the ANC. **Methodology:** 28 patients that came for dental treatment at Polyclinic USIM underwent LA administration using a conventional syringe and the ANC at different dental visits. Afterwards, both operator and patient were given a questionnaire to assess the level of dental anxiety, effectiveness of ANC and for operator, additionally perception regarding the ease of use of ANC. **Results:** 86.7% of patients feel anxious about receiving LA during dental treatment. 75% patients agreed that ANC help to reduce their anxiety compared to conventional LA, and 66.7% preferred to use the ANC over the conventional LA. Among the operators, 57.1% reported that the ANC effectively reduced patient anxiety, although only 23.8% found it easy to use. **Conclusion:** Both the patients and operators agreed that the ANC significantly help in reducing anxiety during LA administration. This proved that the ANC is a valuable adjunct in non-pharmacological behaviour management strategies. However, improvements need to be done to enhance the ease of use of ANC.

Keywords: Non-pharmacological intervention, paediatrics, patient preference, operator perception, attractive needle cover.

CR09: CHARACTERISTICS OF FIRST DENTAL VISIT (FDV): A STUDY ON THE YOUNG PAEDIATRIC PATIENTS

Siti Najmul Huda Mohamad Tayib[1], Arifah Safiah Mukhtar[1], Farinawati Yazid[2], Asma Alhusna Abang Abdullah[1] Nurjehan Mohamed Ibrahim[1]

[1]Department of Paediatric Dentistry and Orthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Paediatric Dentistry, Faculty of Dentistry, Universiti Kebangsaan Malaysia

Email: nurjehan@usim.edu.my

Introduction: The delay in the child's dental check-up during their first dental visit (FDV) is a contributing factor to their dental health issues. The timing and purpose of a child's FDV depend on various factors, such as parental awareness. This study examines the characteristics of FDV in paediatric patient. **Methodology:** This was a cross-sectional study conducted among parents who brought their children to the Paediatric Dental Clinic at USIM and UKM. A total of 164 parents (n=164) completed an online questionnaire comprising 14 items focused on the child's FDV and parental knowledge regarding their child's dental health care. The data were analyzed using Descriptive, Frequency, and Chi-square analysis. **Results:** Only 6.1% of children had their first dental visit (FDV) at the age of 1 year or younger, primarily for a check-up. In contrast, 50% of children had their FDV at the age of 5 years or older. Nearly half of these visits were reportedly for check-ups, though other reasons such as caries, pain, and trauma were also noted. Overall, 74.4% of parents were found to lack awareness regarding their children's dental health. However, no significant relationship was observed between parental awareness and their children's FDV ($P > 0.05$). **Conclusion:** Majority of parents in this study have low awareness towards oral hygiene care knowledge and practices of their children. Therefore, parents may not perceive early dental check-up as important.

Keywords: First Dental Visit, Age, Children, Parental Awareness

CR10: CORRELATION OF KNOWLEDGE AND PERIODONTAL HEALTH TO DENTURE HYGIENE IN PARTIALLY EDENTULOUS PATIENTS

Nur Athirah Noor Asa'ari, Qurratul Aaliyah Zulkifli, Siti Nadia Rahimi[1], Annurdin Sabarudin[2], Wan Nor Syariza Wan Ali[1]

[1]Department of Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Periodontology, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: qurratulaaliyahz@gmail.com

Introduction: Removable partial dentures are plaque retentive in nature, therefore patients' knowledge on proper denture hygiene is crucial in maintaining the periodontal health and avoid denture-related periodontal diseases. This study aimed to evaluate the patients' knowledge, denture hygiene practice and denture cleanliness of patients wearing removable partial dentures and its relation on periodontal health. **Methodology:** A cross-sectional study was conducted among partially edentulous removable denture wearers who attended USIM Dental Polyclinic from September until December 2023. Validated questionnaires on denture hygiene practice were distributed followed by assessment of denture hygiene using Denture Cleanliness Index (DCI), assessment of plaque score and bleeding index. **Results:** A total of 95 respondents were involved, with 45.3% (n=43) were male and 54.7% (n=52) were female, with mean age of 62 (± 8.56) years old. Most respondents claimed that they cleaned their dentures more than twice daily (69.5%) and 61.1% perceived their denture hygiene as good. More than half of respondents (66.4%) have acceptable denture hygiene with DCI score of 2 and below. The mean bleeding score were 43.37% with mean plaque score 49.56% indicating most respondents have generalised gingivitis. Denture hygiene (DCI score) was found to be significantly related with patients' knowledge, bleeding index and types of dentures. **Conclusion:** Knowledge on denture hygiene and denture hygiene practice significantly influence the periodontal health, thus manifesting the needs for strategies to further improve the denture hygiene and periodontal health of the denture wearers.

Keywords: Partial Denture, Denture Cleanliness Index, Denture Hygiene, Periodontal Health, Periodontal Disease

CR11: KNOWLEDGE ASSESMENT OF EROSIVE TOOTH WEAR AMONG USIM'S UNDERGRADUATE DENTAL STUDENTS

Uzair Roslan[1], Fatimah Syahirah Mujahid[1], Abdul Azim Asy Abdul Aziz[2], Aimi Amalina Ahmad[2], Normaliza Ab Malik[2], Petros Mylonas[3]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3] Restorative and Primary Care Dentistry, School of Dentistry, Cardiff University.

Email: uzair.roslan8922@gmail.com

Introduction: Tooth wear (TW), a non-carious tooth surface loss, is a prevalent dental concern, yet its diagnosis and management insufficiently addressed in dental curricula. This study aimed to assess knowledge on erosive tooth wear (ETW) among undergraduate dental students at Universiti Sains Islam Malaysia (USIM). **Methodology:** By using Census research design, a validated questionnaire, adapted from Cardiff University, was distributed online to USIM's preclinical and clinical-year students. The questionnaire included students' demographics as well as knowledge on definition and aetiologies of erosive TW. **Results:** The response rate was 80.3%. A high percentage of respondents reported receiving education on the definition of TW (98% clinical, 100% pre-clinical), different types of TW (94.1% clinical, 87.8% pre-clinical), definition of ETW (97.1% clinical, 93.9% pre-clinical) and its aetiology (96.1% clinical, 95.9% pre-clinical). Notably, students were taught about various aetiological factors, such as gastroesophageal reflux disease (GERD), vomiting, fizzy drinks, sports drinks, fruit juices, citrus fruits and acidic supplements. Chi-square analysis revealed significant differences ($p<0.05$) between pre-clinical and clinical-year students' knowledge on several aetiologies including vomiting, brushing too hard, fizzy drinks, sports drink, bruxism, fruit juice, sugar, chewing on hard objects and citrus fruits while GERD and acidic medication showed no significant differences between the two groups. **Conclusion:** There are notable gaps in the education of ETW among USIM dental students. This research highlights the necessity for more comprehensive curriculum to improve students' understanding of ETW aetiology, which is crucial for enhancing tooth wear management and oral health outcomes.

Keywords: erosive tooth wear, erosion, dental student knowledge, dental education

CR12: SURVIVAL AND SUCCESS OF FULL CROWNS VS. ENDOCROWNS IN ENDODONTICALLY TREATED POSTERIOR TEETH: A KAPLAN-MEIER EVALUATION

Wan Haifa Athirah Bt Nik Mansor[1], Ratna Radhiah Bt Mohd Fauzi[1], Samsanizah Bt Azman[1], Nor Aaina Bt Zainon[2], Dewi Mayang Sari Bt Kamarozaman[4], Hana Syakirah Bt Mohammed Nadzirin[3], Muhammad Iqbal Bin Muhammad Rawi[1]

[1]Restorative Unit,Seremban Dental Specialist Center, Negeri Sembilan, MOH
[2]Restorative Unit,Klinik Pergigian Besar Kuala Pilah,Negeri Sembilan, MOH
[3]Klinik Pergigian Bera 32, Pahang, MOH
[4]Dental Public Health Specialist Unit,Seremban Dental Specialist Center,Negeri Sembilan, MOH

Email: dr_radhiah@yahoo.com

Introduction: While the full crown (FC) has long been the clinician's preferred choice for restoring endodontically treated posterior teeth, it possesses several disadvantages that necessitate exploring alternatives. Endocrown (EC) is a viable alternative to FC as it is conservative to the tooth structure and requires fewer visits for completion. The objective of this study is to compare the survival and success analysis between ECs and FCs in endodontically treated posterior teeth. **Methodology**: A total of 140 endodontically treated posterior teeth with FCs and ECs delivered between 2016-2022 were examined by 2 calibrated examiners in this cross-sectional study. The modified World Dental Federation (FDI) index was used to evaluate the clinical performance of both crown types. Kaplan-Meier and Log-rank tests were used to estimate the survival and success for both kinds of crowns. Time to event in the survival analysis was recorded in months. **Results**: In this study, 87%(n=122) of endodontically treated posterior teeth were restored with ECs and 13%(n=18) were restored with FCs. The median survival time for FC (81 months, 95%CI 72.7-89.3) was higher compared to EC (59 months, 95% CI 52.2-65.8). Log-rank analysis showed a significantly higher survival time of FC($p=0.000$). Similarly, the median success time for FC was higher (91 months, 95%CI 87.3-94.7) compared to EC (80 months, 95%CI 74.5-85.5), with a statistically significant difference($p<0.05$). **Conclusion**: These findings concluded that FCs have better survival and success compared to ECs. However, this study is limited by the uneven sample size due to data availability. Hence, a prospective cohort study is warranted in the near future.

Keywords: Full crown, endocrown, survival, success

CR13: EXPLORING STRESS-INDUCED CONDITIONS AMONG USIM DENTAL STUDENTS: INCIDENCE AND PREVALENCE

Alya Qistina Kamarudden[1], Nor Husna Athirah Zamani[1], Asfizahrasby Mohd Rasoul[2], Adi Rahmadsyah[2]

[1]Fifth-year student of Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Oral Maxillofacial Surgery, Pathology and Medicine, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: adidarwin@usim.edu.my

Introduction: It is indisputable that dental students face a variety of stressors during their dental training with stress prevalence increasing by year of study. Prolonged stress triggers hormones like norepinephrine, adrenaline, and cortisol, leading to immune suppression and weakening the body's defense against foreign organisms. Consequently, students may become more prone to oral ulcers, gingival disease, temporomandibular disorders (TMDs), or sleep disorders. This study aims to determine the occurrence of stress-related ulcers, gingival disease, TMDs and sleep disorders among the First to Fifth-year dental students of Universiti Sains Islam Malaysia. **Methodology**: Data on stress-induced conditions: oral ulcers, gingival disease, TMDs, sleep apnea, insomnia and sleep bruxism were collected through online self-reported questionnaires. They were distributed to USIM dental students in different phases: examination period and non-examination period. **Results**: 143 and 140 students have answered the questionnaires during the exam and non-exam period respectively. All the conditions were presented among USIM dental students regardless of the phases. TMDs (50.4%), sleep apnea (76.9%), insomnia (90.9%) and sleep bruxism (23.8%) were found to be higher during the examination period than the non-exam period; 43.6%, 75.7%, 75.7%, 15.0% respectively. The stress level among the students shown a similar trend. The weighted average was 2.49 during the exam period compared to 2.36 during the non-exam period. **Conclusion**: The rigorous academic and clinical demands of dental school heighten stress levels, particularly during exams, making students prone to stress-induced conditions.

Keywords: Stress conditions, Ulcer, Gingival, Temporomandibular disorders, Sleep disorders

CR14: TEACHING OF MANAGEMENT OF DEFECTIVE DIRECT RESTORATIONS AMONG UNDERGRADUATE DENTAL SCHOOLS IN MALAYSIA

Anis Farhah Mohd Faizal[1], Nur Haifa Izzaty Eliana Mohd Noor[1], Aimi Amalina Ahmad[2], Abdul Azim Asy Abdul Aziz[2], Faizah Abdul Fatah[2], Siti Nur Farhanah Mohd Desa[2]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3]Department of Periodontology & Community Oral Health, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: anisfarhah@raudah.usim.edu.my

Introduction: The management of defective direct restorations is a crucial aspect of minimally invasive dentistry, driven by advancements in adhesive materials and techniques. However, inconsistencies in teaching this topic across dental schools could affect students' competency. This study aimed to assess the current teaching strategies, assessment methods, and rationales for teaching the management of defective amalgam and composite resin restorations in undergraduate dental schools in Malaysia. **Methodology:** A validated internet-based questionnaire was mailed to the lecturer responsible for the teaching of the topic in all 13 undergraduate dental schools in Malaysia. The questions comprised the current teaching of defective direct restorations, the justifications behind the teaching, the teaching strategies and assessment methods. **Results:** The response rate was 92.3%. Nine out of twelve participating schools (75%) included the management of defective direct restorations in their curricula, with five covering amalgam restorations and eight addressing composite resin restorations. Teaching was conducted at theoretical, preclinical, and clinical levels in 25%-40% of schools, while 40%-50% combined theoretical and clinical levels. Formal lectures (75%-80%) and case-based discussions (37.5%-60%) were the most common teaching approaches. Written examinations (50%-80%) were the preferred assessment method. Three schools excluded this topic and reported insufficient evidence or clinical experience, though two planned to include it within five years. **Conclusion:** The study revealed variability in teaching approaches and assessment methods across dental schools. Standardisation of curricula is essential to align with advancements in restorative materials and minimally invasive dentistry, ensuring students gain adequate competency in managing defective direct restorations.

Keywords: dental education, repair vs replacement, composite restoration, amalgam restoration, operative dentistry

CR15: DENTAL HEALTH LITERACY AND APPLICATION AMONG HEALTHCARE PROFESSIONALS IN MALAYSIAN PUBLIC UNIVERSITIES

Nursabrina Uzir[1], Nursyadiyah Rosdi[1], Norashikin Amran[2], Nalisha Mohamed Ramli[2], Azlan Jaafar[3]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Oral & Maxillofacial Surgery, Pathology & Medicine, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3]Department of Periodontology and Public Health, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: syadiyah1702@gmail.com

Introduction: Dental health literacy is the ability to access, understand, and use information about oral health to make informed decisions. Since medical practitioners address various health issues, including oral health, it's important for them to be knowledgeable about dental care to educate patients. This study aims to evaluate the dental health literacy of medical practitioners, focusing on their knowledge and basic oral health practices. **Methodology**: Google Forms questionnaires were distributed to medical practitioners employed at public universities in Malaysia, except for those who had previously taken part in the pilot study. The questionnaire gathered demographic details and evaluated the participants' oral health literacy and practices using the Oral Health Literacy Instrument (OHLI). The data collected were analysed using the Statistical Package for the Social Sciences (SPSS) software. **Results**: A total of 29 questionnaires were completed. The descriptive analysis revealed that 93.1% of medical practitioners demonstrated adequate oral health literacy, while 3.4% had marginal and inadequate oral health literacy. Additionally, around 75.8% of medical practitioners reported practicing good oral hygiene by brushing their teeth two or more times daily. **Conclusion**: Most medical practitioners in our study showed good dental health literacy and practiced proper oral hygiene, suggesting they have basic knowledge of oral health. Therefore, they should be able to provide basic oral health information to patients. However, due to the small sample size, more research with a larger and more diverse group is recommended.

Keywords: Dental health, Knowledge, Application, Medical practitioner, Oral Health Literacy Instrument (OHLI)

CR16: CONE-BEAM COMPUTED TOMOGRAPHY EVALUATION OF CANAL MORPHOLOGY OF FIRST MANDIBULAR PREMOLARS IN MALAYSIAN SUBPOPULATION USING TWO CANAL CLASSIFICATIONS

Siti Noraishah Binti Md Yusuf[1], Ahmad Mu'min bin Mohd Hafiizh[1], Norazlina Mohammad[1], Siti Hajar Omar[1]

[1]Department of Conservative Dentistry, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: aishahyusuf00@gmail.com

Introduction: The clinician should have good knowledge of anatomy of the root as they may have variations in their canal configurations. Missed or improper handling of the canal system can lead to the failure of an entire endodontic procedure. This study used cone-beam computed tomography (CBCT) to describe the mandibular first premolar anatomy in Malaysian subpopulation using two classification systems. **Methodology**: A total of 200 CBCT images involving 206 first mandibular premolar teeth were obtained from the Oral Radiology Unit, Faculty of Dentistry, USIM. The number of roots and canal configuration were described using the classification system established by Vertucci (1984) and Ahmed et al. (2017). Correlation among sex, ethnicity, and tooth positioning was determined using Chi-squared test (P = 0.05). **Results**: One root 99% (n = 204) was common and predominant in both sex and across all the ethnicities. The number of roots and canals did not differ significantly between the right and left positioning. Vertucci's Type I configuration was predominant among Chinese 49.2% (n = 30) and Malay 41.3% (n = 71) while Indian is Type IV 50% (n = 4). Classification by Ahmet et al showed code 1FP1 was the most prevalence in first mandibular premolars 72.8% (n = 50). Prevalence of C-shaped canal configurations was observed at 24.4% (n = 44). **Conclusion**: The use of CBCT imaging and Ahmed et al. classification system can help clinicians gain a more comprehensive understanding of the intricate root canal anatomy of mandibular premolars, enabling them to provide thorough endodontic treatment.

Keywords: CBCT, mandibular first premolar, new classification by Ahmed, Vertucci's classification

CR17: PATIENT SATISFACTION WITH COMPLETE DENTURES FABRICATED BY UNDERGRADUATE STUDENTS AT USIM DENTAL POLYCLINIC: A PATIENT-CENTERED STUDY

Siti Nadia Rahimi[1], Zulfahmi Suhaipin[2], Muhammad Ayub Mohamed Zaki[2], Norlela Yacob[1], Wan Nor Syariza[1]

[1]Department of Conservative Dentistry & Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: drsitinadia@usim.edu.my

Introduction: Removable acrylic complete dentures are commonly used for edentulous patients in Malaysia due to their affordability. However, many denture wearers experiences dissatisfaction. This study aimed to assess the satisfaction levels of patients who received complete dentures fabricated by undergraduate students at the USIM Dental Polyclinic and identify the factors influencing their satisfaction. **Methodology:** A total of 95 edentulous patients who had worn their dentures for at least three months were interviewed by phone in Malay or English. Satisfaction was assessed using Visual Analogue Scale (VAS) with Likert scale of 0-4 (0 = not satisfied at all; 1 = not satisfied; 2 = acceptable; 3 = satisfied; 4 = very satisfied). **Results:** 85.3% of participants were satisfied with their dentures. Dissatisfaction was due to denture smoothness and fit, with the fit of the lower denture being the primary cause of dissatisfaction, affecting the speech and mastication. The overall dissatisfaction rate was only 2.1%, with 12.6% rate their experience as acceptable. Female patients were more concerned about the colour of dentures than male patients ($p<0.05$). **Conclusion:** In conclusion, while most patients were satisfied with the dentures provided by undergraduate students, dissatisfaction was mainly due to poor fit of lower dentures and speech difficulties.

Keywords: complete denture, patient satisfaction, prosthodontics

CR18: THE EFFECTIVENESS OF 2D AND 3D SMILE PHOTO SUPERIMPOSITION METHOD WITH ANTERIOR TEETH CODING FOR FORENSIC IDENTIFICATION

Basma Rosandi Prakosa, Mieke Sylvia Margaretha Amiatun Ruth, Hariono Utomo, Dzanuar Rahmawan, Rudi Irawan

Department of Odontology Forensic, Faculty of Dentistry, Institute of Health Sciences Bhakti Wiyata, Kediri, East Java, Indonesia.
[1]Department of Forensic Odontology, Faculty of Dental Medicine, Universitas Airlangga, Surabaya – Indonesia
[2]Department of Forensic Odontology, Faculty of Dental Medicine, Universitas Airlangga, Surabaya – Indonesia
[3]Faculty of Dentistry, Institute of Health Sciences Bhakti Wiyata, Kediri, East Java, Indonesia.
[4]Department of anatomy and oral surgery, Faculty of Dentistry, Institute of Health Sciences Bhakti Wiyata, Kediri, East Java, Indonesia.

Email: basma.rosandi@iik.ac.id

Introduction: In Indonesia, there are frequent occurrence of mass disasters that require forensic identification, including forensic identifications from dental data. The main problem is the mismatch of antemortem and postmortem photo angles, which requires retaking of postmortem images, thus causing damage to the samples and delay in identification. The 3D photo identification method helps to adjust the angle discrepancy and speed up the identification process without damaging the identified sample. This study describes the effectiveness of 2D and 3D smile photo superimposition methods with anterior tooth coding for forensic identification. **Methodology:** This observational analytic study included 88 students selected by simple randomization from the Faculty of Dentistry. The inclusion criteria were gender, good health condition and signed informed consent. All variables were measured using points at the point of the smile triangle, namely the distance from nasal to distal C, both right and left teeth were connected to form a triangle. The existing data were compared by superimposition between 2D photos and 3D photos. The 2D photos were obtained from Instagram and Facebook pictures of the study sample. **Results:** The results showed significant differences in the points of the smile triangle. Out of 88 samples, 96.59% of 3D photos could be identified, compared to only 20.45% for 2D photos. **Conclusion:** This study demonstrates that the 3D photo superimposition method is significantly more effective for forensic identification than 2D photos.

Keywords: Forensic identification, 3D photo superimposition, Anterior dentition coding, Mass disaster identification, Forensic photography

CR19: THE ASSESSMENT OF SUTURING SKILLS OF USIM DENTAL UNDERGRADUATES IN ORAL SURGERY

Muhammad Taufiq Zahiruddin[1], Nur Irdina Khairudin[1], Siti Nur Farhanah Mohd Desa[2], John Chong Keat Hon[3]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Periodontology and Community Oral Health, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3]Department of Oral Maxillofacial Surgery, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: muhdtaufiq507@gmail.com

Introduction: Proper suturing techniques are essential for wound healing after minor oral surgery. Dentists and dental undergraduates must demonstrate suturing proficiency, particularly for impacted third molar removal. This study aimed to evaluate the quality of sutures performed by Year 4 and Year 5 USIM dental undergraduate. **Methodology:** This cross-sectional study involved a total of 36 Year 4 and Year 5 dental students performing suturing after minor oral surgery from February to December 2024. The suturing skills were assessed by a supervising oral surgeon using the Detailed Suture Placement Checklist (DSPC) and the Objective Structured Assessment of Technical Skills (OSATS) students immediately postoperative and one week after surgery. Data were analysed with SPSS version 26 using descriptive statistics. **Results:** 16.7% of participants scored 21 for OSATS scores (range 5–35), while 41.75% achieved full marks (16) on the DSPC. Half (50%) of the students demonstrated good suturing skills, indicated by intact sutures one week postoperatively, while the remaining 50% showed poor skills, with no sutures intact during follow-up. **Conclusion:** This study highlights variability in suturing skills among Year 4 and Year 5 USIM dental students after minor oral surgery. DSPC and OSATS assessments revealed a significant proportion of students scoring below optimal levels, with only a few demonstrating proficiencies. These findings emphasise the need for enhanced training in suturing techniques to ensure consistent wound healing outcomes.

Keywords: USIM, minor oral surgery, suturing skills, suture intact, OSATS

CR20: AGE ESTIMATION FROM MALAY CHILDREN'S MANDIBLE USING DENTAL PANORAMIC TOMOGRAPHY (DPT): A GEOMETRIC MORPHOMETRIC ANALYSIS

Siti Aisyah Aminah Binti Rosli[1], Ammar Bin Rezadin[1], Nurjehan Mohamed Ibrahim[2], Aspalilah Alias[1,3,4]

[1]Department of Basic Science, Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Paediatric Dentistry and Orthodontics, Universiti Sains Islam Malaysia
[3]Department of Forensic Odontology, Faculty of Dental Medicine Universitas Airlangga, Indonesia
[4]Centre of Research for Fiqh Forensics and Judiciary (CFORSJ), Institut Sains Islam (ISI), Universiti Sains Islam Malaysia, Negeri Sembilan

Email: draspa76@usim.edu.com

Introduction: Age estimation is one of the biological identifications in forensic odontology. The mandible is the strongest bone in the face and endures intact in human remains. Geometric morphometrics is an advanced shape analysis that can visualise variation using landmark coordinates. This study aimed to analyse the variations in mandibular size and shape among Malay children from various age groups. **Methodology:** Geometric morphometric analysis was conducted in this research. 305 DPT images from the Malay children population were selected and classified into two age groups: Group 1 (ages 3-7) and Group 2 (ages 8-12). Tpsdig2 software was used to apply 20 two-dimensional (2D) landmarks to the mandible. MorphoJ facilitated the analysis of these coordinates through generalized Procrustes analysis (GPA), principal components analysis (PCA), Procrustes ANOVA, canonical variate analysis (CVA), and discriminant function analysis. **Results:** Significant differences in size and shape variation of the mandible were observed between the two age groups. These results are promising, with PC5 explaining 75% of shape variation by capturing key growth-related changes. PC1 accounts for 35% of the variation by highlighting specific features that differ between ages. Procrustes ANOVA showed substantial differences in centroid size and shape ($P < .0001$). The discriminant function's accuracy of about 82% after cross-validation shows its effectiveness in classifying children into their age groups based on mandibular features. **Conclusion:** Geometric morphometrics can capture morphologically unique shape variables. Thus, it can estimate age using the mandibles and aid in forensic odontology.

Keywords: Age estimation; Mandible; Geometric morphometric; Dental panoramic tomography; Forensic odontology.

NON-CLINICAL RESEARCH (NCR)

NCR01: CAN YOUNG LECTURERS AND TWO ARTIFICIAL INTELLIGENCE DETECTORS DIFFERENTIATE THE SOURCE OF DENTAL ACADEMIC ABSTRACTS?

Matheel AL-Rawas[1], Omar Abdul Jabbar Abdul Qader[2], Muhammad Annurdin Sabarudin[3], Johari Yap Abdullah[4,5], Tahir Yusuf Noorani[5,6]

[1]Prosthodontic Unit, School of Dental Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kota Bharu, Kelantan, Malaysia
[2]Deanship, College of Dentistry, Al Mashreq University, Airport Street, Baghdad, Iraq
[3]Department of Periodontology and Community Oral Health, Faculty of Dentistry, Universiti Sains Islam Malaysia, Kuala Lumpur 55100, Malaysia
[4]Craniofacial Imaging Laboratory, School of Dental Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kota Bharu 16150, Malaysia
[5]Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India
[6]Conservative Dentistry Unit, School of Dental Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kota Bharu, Kelantan, Malaysia

Email: matheel@usm.my

Introduction: The global popularity of ChatGPT has surged significantly in the past year. Concerns have been promptly expressed over the potential impact on education. Therefore, this study aimed to investigate the ability of four young academicians from either governmental or private dental schools to differentiate the source and evaluate the quality of the abstracts in conjunction with the assessment by two different artificial intelligence (AI) detectors. **Methodology**: A total of 150 abstracts (75 human-generated and 75 ChatGPT-generated) were randomly assigned and reviewed by four young academicians on the quality of the abstracts using a newly created rubric. The abstracts were also assessed using two AI detectors (Writefull GPT and GPTZero). The data were statistically analysed with the use of crosstabulation analysis and Chi-square. Percentages of accuracy of all assessment methods were calculated. **Results:** A varying range of wrong assumptions were made by blinded human reviewers and AI detectors. All variables had positive correlations with the abstracts (p<0.05). This study has shown that humans and one detector still have difficulties discovering the origin of the AI-abstracts. Only GPTZero was very good at differentiating the abstracts sources with very high accuracy (90.0%). **Conclusion:** GPTZero can be used by humans for better detection of AI generated texts. At present, it is evident that ChatGPT and detector tools and technologies will persistently advance and exert a lasting influence on education. Human may need to use these AI tools to help them decide the written contents' origin.

Keywords: ChatGPT, artificial intelligence, AI detectors, scientific abstracts, academicians

NCR02: UNRAVELING THE POTENTIAL OF *TUALANG* HONEY TO ENHANCE EPITHELIAL REGENERATION IN ORAL MUCOSA MODELS (OMM) CULTIVATED FROM PRIMARY HUMAN ORAL CELLS

Noor Izzati Mokhzani[1], Zulfahmi Said[2], Normaliza Ab Malik[3], Mohd Razif Mohd Idris[4]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia,
[2]Department of Basic Sciences and Oral Biology, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3]Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia
[4]Pusat Terapi Sel, Tingkat 12, Blok Klinikal, Hospital Canselor Tuanku Muhriz UKM (HCTM)

Email: n.izzati9802@gmail.com

Introduction: *In-vitro* three-dimensional (3D) tissue models are innovative systems for replicating the biological native tissue functions, offering invaluable applications in clinical and pre-clinical research. The development of the oral mucosa model (OMM) by cultivating primary oral keratinocytes (POK) and fibroblasts (POF) cells within collagen is a notable advancement. Primary cell lines closely mimic the native tissue; however, their limited lifespan and propagation capacity drive the need for alternative approaches. *Tualang* honey (TH) is known for its regenerative properties, and this study aimed to explore its potential to enhance OMMs epithelial regeneration. **Methodology:** Preliminary tests were conducted using 2D monolayer culture to evaluate TH's cytotoxicity (MTT assay) and wound healing capacity (Scratch assay). Following these tests, TH was introduced into OMM to analyze its effects on morphology (H&E staining), cell viability (Alamar Blue assay), and protein biomarker expression (ELISA). **Results:** The TH exposure demonstrated concentration- and time-dependent effects, particularly at lower concentrations (0.09% to 1.56%), by enhancing cell viability and significantly promoting regeneration and wound healing. Additionally, TH-treated OMMs exhibited sustained viability for up to 35 days with the formation of thicker epithelial layers. Hence, regenerative properties were further validated by ELISA analysis, which revealed increased expressions of protein biomarkers associated with epithelial growth and regeneration. **Conclusions:** Our findings demonstrate the potential of *Tualang* honey at concentrations below 1.56% in creating an optimal microenvironment that promotes epithelial regeneration and accelerates wound healing, emphasizing its effectiveness as a key component in growth media for tissue engineering and regenerative medicine applications.

Keywords: Tissue engineering; Oral mucosa models; *Tualang* Honey; Primary oral cells; Regenerative and proliferative effects

NCR03: TOXICOLOGICAL EVALUATION OF *Strobilanthes crispus* MEDIATED SILVER NANOPARTICLES (SC-AgNPs) ON MALE AND FEMALE BALB/C MICE

Nur Fatimah Zaharah Salehuddin[1], Siti Aisyah Abd Ghafar[1], Rohazila Mohamad Hanafiah[1], Yong Yoke Keong[2], Nurul Iman Badlishah Sham[1]

[1]Department of Basic Science, Faculty of Dentistry, Universiti Sains Islam Malaysia, Selangor, Malaysia
[2]Department of Anatomy, Faculty of Medicine and Health Science, Universiti Putra Malaysia, Selangor, Malaysia

Email: aisyahghafar@usim.edu.my

Introduction: *Strobilanthes crispus* mediated silver nanoparticles (SC-AgNPs) have been known to possess anticancer and antibacterial activity. However, concerns about their safety, particularly biological systems, led to the current study. In this study, the toxicological effects of SC-AgNPs in male and female BALB/c mice were assessed. **Methodology:** Male and female BALB/c mice were utilized to evaluate the toxicity effects of SC-AgNPs over a 28-day period. The mice were given intraperitoneal injections of 5, 10 and 20 µg/g body weight/day of SC-AgNPs through intraperitoneal injection. Measurements of body and organ weights, and haematological, biochemical, as well as histopathological analyses of the kidney and liver were assessed. **Results:** Toxicological evaluation in BALB/c mice treated with SC-AgNPs on organ weight, haematological and biological analyses showed no significance difference (p>0.05) when compared to non-treated group. There were no morphological changes observed on histopathological analyses of kidney and liver in the treated group. Furthermore, no fatalities, abnormal behaviour and normal range of haematological and biological throughout the treatment period were observed. **Conclusion:** Both male and female BALB/c mice have shown no harmful effects from SC-AgNPs, as no abnormalities or side effects were identified. Further investigation is recommended to evaluate its biological potential as it has shown no side effects towards BALB/c mice.

Keywords: Toxicity evaluation, *Strobilanthes crispus*, silver nanoparticles, BALB/c mice.

NCR04: SCANNING ELECTRON MICROSCOPE ANALYSIS OF 2-HYDROXYISOCAPROIC ACID (HICA) ON *ENTEROCOCCUS FAECALIS*

Nuratiqah Jasmiad[1], Noorharliana Mohamed Zohdi[2], Nurhayati Mohamad Zain[3], Norashikin Abu Bakar[1]

[1]Centre of Paediatric Dentistry and Orthodontics Studies, Faculty of Dentistry, Universiti Teknologi MARA, Sungai Buloh Campus, Sungai Buloh, Selangor, Malaysia.
[2]Centre of Comprehensive Care Studies, Faculty of Dentistry, Universiti Teknologi MARA, Sungai Buloh Campus, Sungai Buloh, Selangor, Malaysia.
[3]Centre of Preclinical Science Studies, Faculty of Dentistry, Universiti Teknologi MARA, Sungai Buloh Campus, Sungai Buloh, Selangor, Malaysia.

Email: iqajasmin87@gmail.com

Introduction: In regenerative endodontics, common medicaments are calcium hydroxide and antibiotic pastes; however, increasing antimicrobial resistance and limitations of current medicaments have led to research on alternative medicaments. 2-hydroxyisocaproic acid (HICA), derived from leucine found in human plasma, has been reported to have antimicrobial properties showing potential as an intracanal medicament. The objective of the study was to observe the morphological changes of *E. faecalis* following treatment with HICA using a scanning electron microscope (SEM). **Methodology:** A scanning electron microscope (SEM) was used to observe changes in the morphology *of E. faecalis* in the negative control group, samples treated with 8mg/ml HICA and 1mg/ml triple antibiotic paste (TAP) that were incubated for 24 hours at 37°C. Samples were centrifuged, producing pellets which were fixated using Glutaraldehyde 2.5% before being sent for analysis. Magnification of 1000X, 4000X, 10000X, 16000X and 30000X were used to view the samples. **Results:** At lower magnification, a lower number of colonies were seen in treated groups compared to the negative control group. At 10000X, the diplococci shape of *E. faecalis* was observed. At 16000X and 30000X magnification, SEM images showed biofilm inhibition, bacterial surface changes, malformations and lysed cells in samples treated with HICA and TAP. **Conclusion:** HICA has an effect towards the morphology of *E. faecalis* which shows its potential as an alternative intracanal medicament in endodontic treatment.

Keywords: 2-hydroxyisocaproic acid, *E. faecalis,* Triple antibiotic paste, Scanning electron microscope

NCR05: A 3D-PRINTED OCCLUSAL MATRIX FOR MANDIBULAR MOLAR TEETH AS AN ALTERNATIVE FOR DIRECT COMPOSITE RESTORATION: A PILOT STUDY

Luqman Al Hadi Abdullah[1], Laila Azwa Hassan[2], Norlela Yacob[2], Faizah Abdul Fatah[2]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: luqmanalhadi88@gmail.com

Introduction: Composite resin is the most widely used material in dentistry. Nonetheless, it is also said that the clinical use of composite resin for direct restoration is extremely technique-sensitive and demands knowledge and proficiency of occlusal anatomy mimicry. A 3D-printed occlusal matrix was produced in this pilot study and the aim was to assess the level of satisfaction with using the occlusal matrix for direct composite restoration. **Methodology:** An occlusal matrix was created using the chosen dimensions of 3D printed 3Shape software. A workshop was conducted to assess the occlusal matrix's level of satisfaction among participants (n=17), who were fifth-year dental students. During the workshop, each participant was provided with an occlusal matrix, a teeth model of 46 with a prepared Class II mesio-occlusal cavity, and a manual guideline on using the occlusal matrix. A demo on using the occlusal matrix was given. Then, participants were instructed to perform a composite resin restoration using the matrix. A questionnaire was distributed after the completion of the procedure. Data were analysed using SPSS. **Results:** Seven satisfactory questions yielded a percentage of a satisfactory level of 82.2%, indicating that the participants were satisfied with the occlusal matrix. From subjective responses, 29.4% of participants indicated that the matrix requires additional practice to use effectively,17.6% of participants suggested that the matrix becomes sticky after the cure, and provides less prominent anatomical fissures, and 11.8% stated it eases the restoration. **Conclusion:** The participants were satisfied with the practicality and efficiency of the occlusal matrix production in the direct composite restoration.

Keywords: Occlusal Matrix, 3D Print, Composite Restoration

NCR06: THE DEVELOPMENT OF ECO-CALDENT PROTOTYPE (AN ARTIFICIAL DENTAL CALCULUS)

Muhammad Annurdin Bin Sabarudin[1], Nor Haliza Binti Mat Baharin[1], Nur Ayman Binti Abdul Hayei[1], Syaza Binti Azhari[2], Ain Syazween Sharifuddin[2], Muhamad Azfar Fathi Sa'adon[1]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Faculty of Science and Technology, Universiti Sains Islam Malaysia

Email: annurdin@usim.edu.my

Introduction: The Eco-caldent project addresses challenges faced by dental students by using kenaf to simulate dental calculus on plastic teeth models. Students struggle with issues such as dislodging teeth, difficulty sourcing extracted teeth, hygiene concerns, and insufficient natural dental calculus on actual teeth. Moreover, existing artificial dental calculus is often ineffective, as it easily detaches during practical sessions. This innovation project aims to develop an artificial dental calculus that replicates 99.9% of the characteristics of natural dental calculus, providing dental students with a highly realistic tool for practical training sessions. **Methodology:** Eco-caldent prototype, as an ecological artificial dental calculus made up of 80% from 40 mesh of Kenaf particles, nail polish and acrylic glue that can be painted on plastic teeth model to resemble dental calculus. **Results:** Based on the experimental test using field emission scanning electron microscopy (FESEM) showed that the microscopic structure of Eco-caldent is 90% mimics natural dental calculus. The advantages of Eco-caldent include easy to use, cheaper than commercial products and time-saving as the practical session will not be disrupted by re-mounting the dislodged teeth. **Conclusion:** This innovative Eco-caldent product was invented because it stimulates 90% similar dental calculus, which helps the dental fraternity to practice root surface debridement and scaling procedures for better treatment outcomes for their patients.

Keywords: Artificial dental calculus, Eco-caldent, root surface debridement

NCR07: SALIVARY PROTEIN PROFILES IN PAEDIATRICS DENTAL CARIES PATIENTS AT UNIVERSITI SAINS ISLAM MALAYSIA (USIM)

Nur Amirah Syafiqah Shaharuddin[1], Siti Nurfatihah Kamarol Ridzuan[1], Nurjehan Mohamed Ibrahim[2], Zulaiha A Rahman[3], Nurul Iman Badlishah Sham[3]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia, USIM
[2]Department of Paediatric Dentistry, Faculty of Dentistry, Universiti Sains Islam Malaysia, USIM
[3]Department of Basic Sciences, Faculty of Dentistry, Universiti Sains Islam Malaysia, USIM

Email: amrhsyafiqah@raudah.usim.edu.my

Introduction: Dental caries remains the most prevalent oral health issue particularly among children and is influenced by complex interactions between microbial, dietary, and host factors. According to the National Oral Health Survey of Preschool Children 2015, 71.3% of Malaysian five-year-old children were reported to be affected by dental caries. Salivary proteins play a crucial role in maintaining oral health and hold potential as biomarkers for the early detection of dental caries. This study aimed to identify the salivary protein profiles of paediatric patients aged 6 to 8 years old comparing those with dental caries and those in a caries free state at USIM dental polyclinic. **Methodology:** Stimulated saliva was collected from children between 6 to 8 years old presented with dental caries (n=4) and caries free children (n=4) based on clinical examination. Salivary protein profile was analysed using advanced proteomic techniques which is high throughput liquid chromatography-mass spectrometry. **Results:** The results revealed significant differences in protein profiles in chromatograms according to mass-to-charge (m/z) values in the saliva of children with dental caries. **Conclusion:** The findings highlighted the saliva of children with dental caries exhibited higher protein expression compared to that of caries-free children. Future research should focus on precise data measurement and validating these salivary protein profiles in larger populations.

Keywords: Saliva, Caries, Children, Protein

NCR08: ANTI-PROLIFERATIVE ACTIVITY OF *STROBILANTHES CRISPUS* GREEN SYNTHESIZED WITH SILVER NANOPARTICLES AGAINST CT26 COLON CARCINOMA CELLS

Rohazila binti Mohamad Hanafiah[1], Siti Aisyah binti Abd Ghafar[1], Muhammad Arif Hakimi bin Salihuddin[2]

[1]Department of Basic Sciences, Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: rohazila@usim.edu.my

Introduction: Colon cancer is a major global health concern. Researchers are exploring new treatments to combat this disease without compromising patient quality of life. This study investigated the potential of silver nanoparticle-treated *Strobilanthes crispus* (AgNP-SC) against CT26 colon carcinoma cells. **Methodology:** This study was conducted in five distinct experimental phases. First was preparation of *S. crispus* water extract, synthesis of AgNP-SC and culture of CT26 colon carcinoma cells. Second was the cytotoxicity assay. Third was observation of morphological changes. Fourth was the cell cycle distribution analysis and lastly, the gene expression analysis. **Results:** Results showed that AgNP-SC exhibited comparable cytotoxicity to the standard drug 5-fluorouracil, surpassing the effects of individual treatments with *S. crispus* extract or AgNPs alone. Further analysis revealed that AgNP-SC induced cell death through apoptosis, arrested cell cycle progression at the G1 phase, and modulated gene expression, upregulating pro-apoptotic genes while downregulating an anti-apoptotic gene. **Conclusion:** These findings suggest that AgNP-SC could be a promising alternative for colon cancer treatment, warranting further investigation.

Keywords: Silver nanoparticles, *Strobilanthes crispus*, Colon cancer, Apoptosis

NCR09: THE BIOCHEMICAL COMPOSITION IN STINGLESS BEE BEEHIVE AND ITS ANTIBACTERIAL PROPERTIES AGAINST *Staphylococcus aureus* AND *Streptococcus mutans*

Uzair Yusoff Ahmad Raflis[1], Siti Noor Adnalizawati Adnan[2]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Basic Sciences, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: adnaliza@usim.edu.my

Introduction: Stingless bee beehives have been acknowledged for its benefits of their antimicrobial, anti-inflammatory, anticancer, antiseptic, moisturizing and wound healing. However, the knowledge of the biochemical composition and anti-bacterial towards oral pathogens are still scarce and poorly documented. This knowledge gap provides an avenue for exploration of its composition and antibacterial effectiveness against *Staphylococcus aureus* and *Streptococcus mutans*. **Methodology:** Laboratory trial is carried out to identify anti-bacterial properties and the biochemical composition of stingless bee beehives against *Staphylococcus aureus* and *Streptococcus mutans*. Crude extraction was carried out in four different-polarity solvents of hexane, methanol, dichloromethane (DCM) and water. Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) tests are then carried out for all extracts against *Staphylococcus aureus* (ATCC 25923) and *Streptococcus mutans* (ATCC 25175). Phytochemistry tests are then carried out utilizing gas chromatography-mass spectrometry (GCMS). Morphological changes of treated cells were observed through scanning electron microscopy. **Results:** The highest yield percentage was found in aqueous (9.56%) followed by hexane (7.16%), DCM (3.82%) and methanol (3.15%). Hexane extract exhibited the lowest MIC and MBC towards *Staphylococcus aureus* at 6.25 mg/mL and 12.5 mg/mL, respectively. For GCMS, the highest compound found within hexane extract is 9,19-Cyclolanost-24-en-3-ol, acetate, (3á)-. (16.971%). *Staphylococcus aureus* exposed to hexane extract at MIC value exhibits irregular and rough surfaces, while at MBC value, the cells lysed. **Conclusion:** Hexane extract from the stingless bee beehive is capable to inhibit and kill *Staphylococcus aureus,* hence, highlighting their potential as a new promising anti-bacterial agent.

Keywords: Stingless bee beehive, Biochemical composition, Antibacterial properties, *Staphylococcus aureus, Streptococcus mutans*.

NCR10: EXPLORING ANTIBACTERIAL PROPERTIES OF GREEN-SYNTHESIZED SILVER NANOPARTICLES FUNCTIONALIZED WITH KAEMPFEROL AGAINST METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS*

Ariff Haikal Hairil Anuar[1], Rohazila Mohamad Hanafiah[2], Siti Aisyah Abd Ghafar[2], Lim Vuanghao[1], Farah Atiqah Mohd Pazli[1]

[1]Integrative Medicine Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia
[2]Department of Basic Sciences, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: hyekal87@gmail.com

Introduction: Methicillin-resistant *Staphylococcus aureus* (MRSA) causes diverse infections, including those of the skin, subcutaneous tissues, and invasive diseases. Kaempferol (K), a flavonoid found in plants, exhibits inherent antibacterial properties against MRSA. Combining kaempferol with silver nanoparticles (AgNPs) has the potential to improve its solubility and enhance its antibacterial activity. **Methods**: Silver nanoparticles combined with kaempferol (AgNP-K) were created using an eco-friendly method at different temperatures (room temperature, 40°C, 60°C, and 80°C). These nanoparticles were analysed using various techniques: UV-Vis, Zetasizer, TEM, SEM-EDX, XRD, and FTIR. Their antibacterial properties were tested through disc diffusion assay (DDA), minimum inhibitory concentration (MIC), minimum bactericidal concentration (MBC), and time-kill assay (TKA). **Results:** The sample with 60°C parameter was chosen for further analysis. The dark brown colour of the solution showed that AgNP-K was formed. The UV-Vis spectrum had a peak at 447 nm. TEM, Zetasizer, and SEM-EDX results showed that AgNP-K particles were almost spherical and about 16.96± 6.05 nm in size. XRD confirmed they had a crystalline structure, and FTIR showed kaempferol successfully combined with silver by the absence of the (-OH) group. In the disc diffusion test, AgNP-K had the largest inhibition zone (16.67±1.19 mm) against MRSA compared to kaempferol or commercial AgNPs. The MIC and MBC values were 1.25 mg/mL and 2.50 mg/mL, respectively. The time-kill test showed AgNP-K stopped MRSA growth. Overall, AgNP-K had stronger antibacterial effects against MRSA than kaempferol or commercial AgNPs. **Conclusions**: Silver nanoparticles-kaempferol (AgNP-K) with 60°C exhibited better antibacterial activity against MRSA.

Keywords: Nanoparticles, Silver nanoparticles, Green synthesis, Kaempferol, Methicillin-resistant Staphylococcus aureus.

NCR11: FASHIONABLE WHITENING TOOTHPASTE: EVALUATION ON THE EFFECTIVENESS AND THE EFFECT ON ENAMEL SURFACE ROUGHNESS ON TOOTHPASTE

Hazira M Yusof[1]

[1]Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: hazirayusof@usim.edu.my

Introduction: In dentistry, the combination of rapid digital information and social media marketing causes a shift in toothpaste marketing and demand due to dissatisfaction of consumer's perceived tooth colour. Owing to this, toothpaste manufacturers responded by developing whitening toothpaste to meet consumer's need. Abrasive agent is one of the key functional ingredients in whitening toothpaste where it was designed to remove the extrinsic stains while preventing it from reforming. It is vital that these abrasive agents do not cause unnecessary abrasivity towards the dental hard and soft tissues. The aim of this study was to assess the efficacy of the whitening toothpaste and its effect on enamel surface roughness. **Methodology:** A total of 25 specimens were prepared for the experiment. All specimens were brushed using four different whitening toothpaste with one regular toothpaste as a control. The toothbrushing was done for two minutes and 58 minutes to represent one time and two weeks duration of toothbrushing respectively. After each toothbrushing, colour and surface roughness evaluation was done. **Results:** The comparison of colour changes between types of materials based on time showed no significant difference at baseline, immediately and after 2 weeks of toothbrushing for ΔL, Δa, Δb and ΔE with $p>0.05$. The surface roughness evaluation showed no significant difference among all toothpastes based on time ($F= 1.64$, $p=0.147$). **Conclusion:** This study concludes that social media-promoted whitening toothpastes show no significant whitening efficacy compared to regular toothpaste. While enamel roughness effects were insignificant, potential long-term impacts require further consideration.

Keywords: Whitening toothpaste, Toothbrushing, Charcoal toothpaste, Teeth stain

NCR12: THE EFFECT OF BONE GRAFT FROM EGG SHELLS MIXED WITH HYALURONATE ACID ON THE NUMBER OF OSTEOCLAST IN BONE RESORPTION OF WISTAR RATS (Rattus norvegicus)

Niswatun Chasanah[1], Herrina Firmantini[2], Afrida Nurmalasari[3], Multia Ranum Sari[4], Aladhim Wahyu Pangestu[5]

[1]Department of Pharmacology, Dentistry Faculty, IIK Bhakta, Kediri, East Java, Indonesia
[2]Department of Periodontics, Dentistry Faculty, IIK Bhakta, Kediri, East Java, Indonesia
[3]Department of Biomaterials, Dentistry Faculty, IIK Bhakta, Kediri, East Java, Indonesia
[4]Department of Community Dentistry, Dentistry Faculty, IIK Bhakta, Kediri, Indonesia
[5]Undergraduate Student of Dental Education, Dentistry Faculty, IIK Bhakta, Kediri, Indonesia

Email: niswatun.chasanah@iik.ac.id

Introduction: The need for bone grafts is increasing along with bone resorption cases. The potential natural material as bone graft is eggshells. Egg shells contain hydroxyapatite, resemble bone mineral composition, biocompatible, osteoinductive and osteoconductive, ideal requirements for bone graft materials. Hyaluronic acid is important in alveolar bone resorption and the remodelling process, characterized by bone balance. Bone resorption depends on osteoclasts, multinucleated cells playing a main role, being the focus of research due to crucial role in bone balance and being the important biomarkers. The aim of this study to prove is there an effect of bone graft made from eggshells mixed with hyaluronic acid on the number of osteoclasts in bone resorption of male Wistar rats. **Methodology**: This study was a true experimental laboratory with post only control group design. The study was conducted on 32 samples divided into 2 groups, treatment group and control group. Decapitation was performed on the 7th day and followed by making histology preparations and microscopic examination to count the number of osteoclast cells. **Results**: Shapiro Wilk test showed the results were normally distributed ($p > 0.005$) and continued the Independent T-test to show a significant effect and obtained a p-value of 0.004 ($p < 0.005$) between the groups. **Conclusion**: There is an effect of bone graft made from eggshells mixed with hyaluronic acid on the number of osteoclasts.

Keywords: Bone Graft,Egg Shells,Hyaluronic Acid,Osteoclast, Bone Healing

NCR13: IMPACT OF SILVER NANOPARTICLE KAEMPFEROL (AGNP-K) ON THE EXPRESSION OF SARA, GYRB, AND MFD GENES IN METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)

Nur Syafiqah Syahirah Suhaimi, Muhammad Syameel Atqiya' Alazmi, Rohazila Mohamad Hanafiah[1], Siti Aisyah Abd Ghafar[1]

[1]Department of Basic Sciences, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: rohazila@usim.edu.my

Introduction: Methicillin-resistant Staphylococcus aureus (MRSA) is a multidrug-resistant bacteria that poses a substantial public health risk due to its antibiotic resistance. Kaempferol (K), a natural flavonoid, is antimicrobial against MRSA but has low water solubility. Silver nanoparticles (AgNP) were added to kaempferol to increase its solubility and antibacterial efficacy. The resultant AgNP-K formulation was shown to be efficient against MRSA. In disc diffusion tests (DDA), AgNP-K outperformed kaempferol and commercial AgNP in terms of antibacterial efficacy against MRSA. Next Generation Sequencing (NGS) transcriptome profile study found 581 genes were downregulated and 641 were upregulated in biofilm, pathogenic activity, and glycolysis pathways. This study aimed to determine the antibacterial activity of MRSA after treated with AgNP-K using RT-PCR. **Methodology:** In this study, green method was used to synthesized AgNP-K. MRSA was cultured in BHIA and BHIB medium before being collected as bacterial pellets. RNA extraction, cDNA replication was carried out using Go Taq RT-qPCR kit. Subsequently, RT-PCR analysis was performed, and the results were analyzed. **Results:** The RT-PCR results revealed changes in the expression of the SarA, GyrB, and Mfd genes, with both upregulation and downregulation observed. **Conclusion:** AgNP-K has antibacterial activity towards MRSA and specifically affecting the SarA, GyrB and Mfd genes.

Keywords: Silver nanoparticles, Kaempferol, Methicillin-resistant Staphylococcus aureus, Gene regulation

NCR14: PRECLINICAL USIM STUDENTS' PERSPECTIVES ON EFFECTIVENESS OF TWO TYPES OF TOOTH CARVING LEARNING MODALITIES

Aida Mohd Arifin[1], Farah Najwa Mohd Salihin[1], Asfizahrasby Mohd Rasoul[2], Faizah Abdul Fatah[3]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Oral Maxillofacial Surgery, Pathology and Medicine, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3]Department of Conservative Dentistry and Prosthodontics Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: aidaarifin@raudah.usim.edu.my

Introduction: Tooth carving practical is commonly used as a teaching mode to prepare Year 1 dental undergraduates for their clinical years. Two types of tooth carving models, plaster of Paris (POP) and 3D printed resin with 120% and 20% enlargement than natural size have been used in USIM in two consecutive cohorts. This study was conducted to compare the students' perceptions of tooth carving learning methods. **Methodology:** 50 Year 1 and Year 2 preclinical students of the academic session 2023/2024 were asked to answer a pre-workshop questionnaire regarding their perspectives on the learning method they were exposed to during each cohort's tooth carving practicals. **Results:** Pre-workshop questionnaire analysis revealed that 84% of Year 1 2023/2024 who had used the 20% enlarged 3D printed models agreed that the practical teeth were helpful in clarified teeth morphology due to their realistic anatomical structures, highly similar to the natural teeth. Whilst, although 79.1% of Year 2 2023/2024 students agreed the 120% enlarged POP models were easier to manipulate, 62.5% of them were against the usefulness of the models in understanding tooth morphology due to their unrealistic size and anatomical structures. **Conclusion:** Both cohorts agreed the learning methods exposed specifically to their batch, regardless of POP or 3D models, were helpful. The students then will be exposed to the opposing cohort's learning method in a workshop, followed by answering a post-workshop questionnaire to find out their new perspective after the first-hand experience.

Keywords: dental undergraduates' perspective, tooth carving, plaster of paris (POP) model, 3D resin printed model, anatomical structures.

NCR15: AN EVALUATION OF CYTOTOXIC ACTIVITIES AND ANTIMICROBIAL PROPERTIES OF POLYETHERIMIDE REINFORCED ON 3D PRINTED DENTURE BASE

Nur Aidil Syukri Ridwan[1], Ku Muhammad Haikal Idham Ku Zubir[1], Muhammad Syafiq Alauddin[2], Mohd Ifwat Mohd Ghazali[4], Zulfahmi Said[3], Lee Hao-Ern[1], Noor Izzati Mokhzani[1]

[1]Faculty of Dentistry Universiti Sains Islam Malaysia
[2]Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry Universiti Sains Islam Malaysia
[3]Department of Basic Sciences and Oral Biology, Faculty of Dentistry Universiti Sains Islam Malaysia
[4]Faculty of Science and Technology University Sains Islam Malaysia

Email: aidilsyukri219@gmail.com

Introduction: Conventional denture manufacturing is time-consuming and prone to errors. Additive and subtractive manufacturing offer alternatives but have drawbacks such as waste production and durability issues. High-performance polymers (HPP), such as Polyetherimide (PEI), present a promising solution, however their biological properties must be evaluated to ensure safety and effectiveness. This study's objective is to analyze the cytotoxic effect and the adherence of *Candida albicans sp*. in PEI-reinforced 3D-printed denture base. **Methodology:** Samples are prepared including conventional 3D-printed dentures as control and dentures reinforced with Polyetherimide at 0.5%, 1%, 2%, and 3% concentrations. The impact on Primary Oral Fibroblast (POF) and Primary Oral Keratinocyte (POK) cells was evaluated using an MTT assay. Antimicrobial activity of the PEI-reinforced dentures was tested against Candida albicans using Colony-Forming Unit (CFU) counts and fluorescent microscopy to assess fungal adherence. Statistical analysis was conducted using One-Way ANOVA. **Results:** Incorporating PEI at lower concentrations (2.0% to 3.0%) is safe for Primary Oral Fibroblast and Primary Oral Keratinocyte cells, maintaining high cell viability (94.29% ± 0.023 to 96.88% ± 0.057 for POF and 52.43% ± 0.014 to 72.30% ± 0.019 for POK) without altering cell morphology. Increasing PEI concentrations reduced the Colony-Forming Unit (CFU) count of Candida albicans from $6.85 \times 10^5 \pm 8.97 \times 10^5$ to $6.0 \times 10^4 \pm 3.30 \times 10^4$ as PEI concentration increased. **Conclusion:** Incorporating PEI is considered safe, as cell viability scores exceeded the minimum standard limit. Additionally, PEI demonstrated potential antifungal activity against *Candida albican*s.

Keywords: High Performance Polymer, Polyetherimide, 3D-printed denture base, Adherence of *Candida albicans sp*., Primary Oral Keratinocyte.

NCR16: CONSENT FOR KEEPING EXTRACTED TEETH; INSIGHT FROM PRIVATE DENTAL PRACTITIONERS IN KUALA LUMPUR

Nur Izzatul Insyirah Muhamad Sham[1], Nur Shahirah Abu Bakar[1], Safar Sumit Bunyarit[2], Nazirah Ab Mumin[3]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Basic Sciences, Faculty of Dentistry, Universiti Sains Islam Malaysia
[3]Department of Periodontology & Community Oral Health, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: safar@usim.edu.my

Introduction: Extracted teeth play a vital role in dental education, being a cost-effective and anatomically accurate resource for training. However, in Kuala Lumpur, the absence of specific regulations on the collection and usage of human teeth raises ethical concerns, particularly around patient consent and practitioner practices. This research analyzes the beliefs and practices of private dental practitioners on the extraction, retention, and use of human teeth, with the role of informed consent being emphasized. **Methodology:** A validated questionnaire, distributed both online and in print, targeted private dental practitioners in Kuala Lumpur. The survey inquires challenges in acquiring extracted teeth, perceptions of ownership, and practices related to informed consent. Data were analyzed using MS Excel and IBM SPSS (version 27.0). **Results:** A total of 79 practitioners responded. The findings revealed significant challenges in providing sound teeth for student training, with canines being the most difficult to obtain (33 responses) and premolars the least (8 responses). Most practitioners agreed that patient consent should be obtained prior to extraction (51 responses) and extracted teeth remain the patient's right (54 responses). Majority also believed that ownership transfers fully to the researcher once consent is granted (76 responses). **Conclusion:** The study highlights variability in the handling of extracted teeth but a general consensus on the importance of informed consent. While practitioners uphold patient rights post-extraction, their practices reflect a transition of ownership aligned with ethical guidelines.

Keywords: extracted teeth, consent, private dental practitioners, Kuala Lumpur

NCR17: METAL ION RELEASE OF FIXED ORTHODONTIC APPLIANCE CAUSED BY PREPROCEDURAL OXIDIZING MOUTHWASH DURING THE COVID-19 PANDEMIC

Emira Syafina Abdul Aziz[1], Syed Bazli Alwi Syed Bakhtiar Ariffin[2], Saraswathy Devi Sinniah[2], Hasnah Begum Said Gulam Khan[2]

[1]Ministry of Health, Malaysia
[2]Centre of Pediatrics and Orthodontics Study, Faculty of Dentistry, Universiti Teknologi MARA

Email: emirasyafina@gmail.com

Introduction: The primary aim of preprocedural mouthwash during COVID-19 was to reduce viral load in saliva using 1.0% - 1.5% hydrogen peroxide or 0.2% - 1.0% povidone iodine, minimizing virus transmission to patients and dental staff. This study aims to compare the effects of 1.5% hydrogen peroxide (HP), 0.5% povidone-iodine ion (PI) and artificial saliva (AS) on metal ions released from fixed orthodontic appliances. **Methodology:** 20 brackets, 4 buccal tubes, upper and lower 0.018" x 0.025" nickel titanium (NiTi) archwires, and 0.019" x 0.025" stainless steel (SS) archwires were immersed in AS (Group A), 1.5% HP (Group B) and 0.5% PI (Group C) in individual beakers. Brackets and buccal tubes were immersed for 12 hours and 6 hours for both archwires. Ferrum (Fe), chromium (Cr), nickel (Ni), and manganese (Mn) ions were quantified using Inductively Coupled Plasma Optic Emersion Spectrometry (ICPOES). Data were analysed using One-way ANOVA followed by Tukey's post hoc test at a = 0.05. **Results:** The highest mean ion released was Fe, followed by Mn, Ni and Cr. The greatest ion released occurred in 0.5% PI. No significant differences were observed between AS and 1.5% HP however, 1.5% HP showed significantly lower ion released than 0.5% PI for all ions. **Conclusion:** Metal fixed orthodontic appliances subjected to 0.5% PI mouthwash showed significant ion released from brackets, buccal tubes, 0.018" x0.025" NiTi archwires and 0.019" x 0.025" SS archwires. In contrast, patients with fixed orthodontic appliances gargling with 1.5% HP may experience no significant adverse effects on chemical properties.

Keywords: Fixed appliances, metal ion released, hydrogen peroxide, povidone iodine, COVID-19

NCR18: THE EFFECT OF TUNGSTEN CARBIDE BUR ON ENAMEL SURFACE AFTER DEBONDING ORTHODONTIC BRACKETS

Syiral Mastura Abdullah[1], Zurairah Ibrahim[1], Azrul Hafiz Abdul Aziz[1], Nurul Aiman Jamal[2]

[1]Department of Paediatric Dentistry and Orthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM)
[2]Klinik Pergigian Mentakab, Mentakab, Pahang.

Email: drsyiralmastura@usim.edu.my

Introduction: A good bonding to enamel is desirable to prevent premature loss of brackets, but it will increase the likelihood of damaging tooth surfaces during the debonding process. Tungsten carbide bur was the most efficient method to remove adhesive resin remnants on the enamel surface. This study aims to compare the effect of different types of rotary speeds of tungsten carbide bur on the enamel surface after debonding orthodontic bracket procedures. **Methodology:** Thirty-eight sound-extracted premolars were randomly divided into two groups and were subjected to atomic force microscopy (AFM) to measure initial surface roughness. Brackets were bonded to the buccal surfaces and debonded after a few days. Resin remnants were removed using two different types of tungsten carbide bur. The teeth were then subjected to AFM again. The volume of enamel loss and time required for composite removal were calculated and analysed. **Results:** There was a statistically significant difference between the volume of enamel after polishing of adhesive on the debonding ortho bracket procedure ($p<0.001$). Slow-speed tungsten carbide bur used for removal of adhesive remnants from enamel surface led to increase in surface roughness ($p<0.001$). Meanwhile, high-speed bur showed no significant difference compared to the initial value ($p=0.769$). Results showed that there was no significant difference in time taken for adhesive removal between both groups ($p=0.06$). **Conclusion:** Application of highspeed tungsten carbide bur showed less enamel surface roughness but both have similar result on enamel volume and time taken to remove the adhesive remnants.

Keywords: tungsten carbide bur; enamel surface; debonding; brackets

NCR19: A QUALITATIVE STUDY ON BRF2 PROTEIN EXPRESSION PATTERN AND LEVEL IN ORAL CANCER TISSUES

Nurul Hidayah Mohd Zaidi[1], Nusaibah Rushdan[1], Asfizahrasby Mohd Rasoul[2], Noor Akmar Nam[3]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia.
[2]Department of Oral Maxillofacial Surgery Pathology and Medicine, Faculty of Dentistry, Universiti Sains Islam Malaysia.
[3]Department of Basic Sciences, Faculty of Dentistry, Universiti Sains Islam Malaysia

email: noorakmar@usim.edu.my

Introduction: In Malaysia, oral cancer is ranked as the 19th most common cancer with higher percentage of the cases detected at late stage (Stage 3 & Stage 4) contributing to poor patient prognosis. Brf2 is a transcription factor for RNA Polymerase III that has been shown to play a role in carcinogenesis. It is associated with many cancers such as liver, breast, and lung cancers. There are many studies on oral cancer biomarkers however, an ideal cancer biomarker able to reflect cancer progression specifically is still lacking and may need to be used in combinations. The pilot study aimed to determine the histological protein expression pattern and level of Brf2 in different types of formalin-fixed-paraffin embedded (FFPE) oral cancer tissues. **Methodology:** The research is conducted using immunohistochemical staining of Brf2 antibody on tissue microarray (TMA) containing 26 FFPE cancer tissues. A series of staining optimizations was performed to determine the optimum antibody concentration and incubation duration. **Results:** Brf2 expression levels vary in different tissue types ranging from weak (+1) to strong (+3). In most cancer tissues observed, the staining localized in the nucleus of the cells. There are some cancer tissues in which Brf2 is undetected. Based on the results obtained, Brf2 expression may vary according to the cancer stage and tissue site specificity. **Conclusion:** Brf2 is expressed in almost all cancer tissues studied with variable expression levels. Further studies can be conducted by comparing Brf2 expression with other known oral cancer biomarkers to validate the result.

Keyword: Brf2, protein expression, oral cancer, immunohistochemistry

NCR20: COMPARATIVE ANALYSIS OF THE FITTING ACCURACY BETWEEN 3D PRINTED AND VACUUM-FORMED RETAINERS

Aida Balqis Mujahid Fauzi[1], Nur Alya Dalyla binti Azahamsah[1], Azrul Hafiz Abdul Aziz[1], Zurairah Ibrahim[1], Diana Md Zahid[1], Norlela Yacob[1]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: aidabalqis75@gmail.com

Introduction: Technological advancements such as CAD/CAM and 3D printing offer significant potential in orthodontics. The construction of vacuum-formed retainer requires significant laboratory work, time-consuming, and material-intensive. In contrast, 3D printing provides a more efficient method for creating orthodontic appliances, enhancing treatment progress and outcome. This study aims to compare the fitting accuracy between conventional vacuum-formed retainer (VFR) and 3D printed (3DP) retainers using a reference 3D study model. **Methodology:** A maxillary study model was randomly selected and replicated to fabricate VFR. A 3D scanner was utilized to scan the study model, generating a reference model data stored as an .stl file. Using this data, 3DP retainers with three different designs were fabricated using the NextDent® 5100 3D printer. All retainers were subsequently scanned and the data were imported into 3D metrology software (GOM Inspect) for surface comparison analysis based on eight selected reference points. The best-fitted 3DP design was selected for comparison with the VFR with regard to fitting accuracy. Mean surface discrepancies were analysed using one-way ANOVA test using SPSS software version 27. **Results:** There was a statistically significant difference in the fitting accuracy between VFR and 3DP retainer with a mean difference of 0.008 and a p-value of 0.024. **Conclusion:** VFR demonstrates better fitting accuracy compared to the 3DP retainer. However, 3DP retainer remain a viable alternative to VFR.

Keywords: Fitting Accuracy; Vacuum-Formed Retainer; 3D Printed Retainer; Orthodontics

NCR21: PRELIMINARY EVALUATION OF MECHANICAL AND BIOLOGICAL PROPERTIES OF HEAT CURE DENTURE BASE MODIFIED WITH RECYCLED PMMA-DENTURE BASE RESIN

Muhamad Azfar Fathi Sa'adon, Nur Aina Aqilah Mohd Sabri[1], Zulfahmi Said[2], Nadia Halib[2]

[1]Faculty of Dentistry, Universiti Sains Islam Malaysia
[2]Department of Basic Sciences and Oral Biology, Faculty of Dentistry, Universiti Sains Islam Malaysia

Email: azfarfathi.s@gmail.com

Introduction: Heat cure polymethylmethacrylate (PMMA) is widely used in denture base construction, but the waste management of used denture base from dental training institution remains an issue. This study aims to incorporate recycled PMMA powder into the commercial PMMA for denture base construction and compare its mechanical and biological properties. **Methodology:** The recycled PMMA powder was produced by grinding and refining the used denture base into desired particle. Recycled PMMA powder was used to substitute the commercial denture base resin powder at the concentrations 20% and 50%. Unmodified commercially available denture served as control group. Mechanical and biological properties of samples were characterized by flexural test, hardness test and candida adherence test. **Results:** Denture bases incorporated with 20% and 50% recycled PMMA showed flexural strengths of 120.60 ± 21.15 MPa and 125.80 ± 17.53 MPa, comparable to unmodified bases (121.55 ± 10.66 MPa). Vickers's hardness test revealed that the hardness value (HV) of denture base incorporated with 20% and 50% recycled PMMA are (20.40 ± 0.82) and (20.43 ± 0.42) respectively and the unmodified denture base is (19.00 ± 0.95). Meanwhile, the Colony-forming unit (CFU) count of candida shows average value of (391), (186.33) and (355.33) for unmodified denture base, 20% and 50% recycled PMMA respectively. **Conclusion:** The incorporation of recycled PMMA powder into denture bases demonstrates acceptable mechanical properties comparable to unmodified bases. However, the variability in Candida adherence warrants further investigation to determine if it is influenced by surface roughness inconsistencies.

Keywords: Recycled Polymethyl Methacrylate, Denture Base, Flexural strength, Hardness, *Candida Albicans*