

# SELECTED ABSTRACTS FROM THE 3<sup>RD</sup> INTERNATIONAL CONFERENCE OF ORAL MICROBIOLOGY & ORAL IMMUNOLOGY (ICOMOI 2020) AND 13<sup>TH</sup> POSTGRADUATE CONFERENCE OF FACULTY OF DENTISTRY UNIVERSITY OF MALAYA

## EP02: Subgingival Oral Microbial Profile of Patients with Rheumatoid Arthritis and Chronic Periodontitis

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**Keywords:** Dysbiosis, Periodontitis, Subgingival plaque, Rheumatoid arthritis

**Introduction:** A number of studies have supported a causal link between rheumatoid arthritis (RA) and chronic periodontitis (CP). Changes in bacterial composition (dysbiosis) and systemic inflammation such as in RA are thought to disrupt the balance between host and oral microbiota leading to destruction of periodontal tissues and CP. Given the role of oral bacterial flora in both RA and PD, this study investigated the subgingival oral microbial profile of RA subjects with CP. **Methods:** Subjects were divided into RA (n=49) or non-RA (NRA) (n=55) groups. Subgingival plaque DNA was extracted and sequencing was performed using MiSeq platform targeting the 16s rRNA V3-V4 region. Data analysis was processed in CLC Microbial Genomic Workbench (Qiagen). **Results:** Alpha diversity estimation (Shannon and Simpson) showed a highly diverse communities across groups. The species richness (Chao) in NRA-CP was significantly higher and statistically different when compared to NRA-H (p=0.014). Beta-diversity analysis comparing bacterial communities based on their compositional structures showed that bacterial communities clustered together according to CP conditions. Phyla Firmicutes, Fusobacteria, Bacteroidetes, Actinobacteria, Proteobacteria, Patescibacteria and Epsilonbacteraeota were 99% of the total abundance in non-CP groups. In CP groups, there were higher abundance in phyla associated with CP (Spirochaetes and Synergistetes) and reduction in phyla associated with periodontal health (Actinobacteria and Proteobacteria). Genera Neisseria and Prevotella 2 were more abundant in RA groups compared to non-RA groups. Increase in RA disease duration showed positive correlation with periodontal health-associated genera, however, severe rheumatological data correlated positively with periodontitis disease-associated genera. **Conclusion:** Subgingival oral microbiota of RA is similar to non-RA, however, CP with or without RA are presented with additional taxa. Generally, chronic RA are associated with more anti-inflammatory medications which may explain the correlation with periodontal health-associated genera but with lifelong adverse effects. However, concurrent presence of periodontitis was associated with worsened RA condition.

## EP05: Oral Health-Related Quality of Life (OHRQoL) Following Clinical Interventions of Odontogenic Infection In 3-8-Year-Old Children: A Randomised Controlled Trial

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**Keywords:** Quality of life, Oral health-related quality of life, Odontogenic infection, Dental abscess

**Introduction:** Dental caries remains one of the chronic diseases with high prevalence rates among children and adolescents worldwide. Untreated dental caries leads to a negative impact on oral health, which eventually will affect their quality of life. **Objectives:** This study investigated the changes in oral health-related quality of life (OHRQoL) in children aged between three to eight years presented with localised odontogenic infection before and five days after receiving treatment with Odontopaste, calcium hydroxide or oral Amoxicillin. **Methods:** A single centre randomised control trial of three-arms was conducted on 71 children who fulfilled all inclusion criteria at the Faculty of Dentistry, University of Malaya. The dentition status and severity of dental caries were recorded using ICDAS II and PUFA/pufa index. A self-administered questionnaire comprising the Malay-ECOHIS was given to parents at the baseline and follow-up visit on day 5. Children with parents who completed both sets of questionnaires were included in the final analysis. **Results:** The recruitment rate of this study was 65.7% with a high completion rate of 98.6%. Majority of the parents reported a negative impact on their child's QoL before receiving treatment. Only 21.4% of parents reported good QoL for Malay-ECOHIS, with the majority of parents reporting low negative impact after their children received the treatment. The decrease in the mean score of the Malay-ECOHIS in the Odontopaste group had an effect size of 0.6, with the study's power being 0.8. **Conclusions:** The result showed there was no significant difference in the decrement between treatment groups over time ( $p > 0.05$ ). There was no significant difference in OHRQoL with different treatment modes. Future multi-centred studies including rural areas are recommended for better representation of the paediatric population.

## EP08: Psychosocial Factors and Ohrqol: Structural Equation Modelling

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**Keywords:** OHRQoL, Acculturative stress, Perceived stress, Social support, International students, Structural Equation Modelling

**Introductions:** Oral health related quality of life (OHRQoL) reflects the impact of the oral condition on physical, social, and psychological functioning and well-being from an individual's perspective. It is an important health outcome that is influenced by several factors which together are known as the determinants of health. Psychosocial factors are among many other factors that have a crucial role in shaping oral health. **Objective:** This study investigated the relationship of acculturative stress, perceived stress, and social support with the OHRQoL among international graduate students in Malaysian public universities. **Methods:** Data were collected from a sample of 312 international graduate students via a web-based survey. The survey included measures of acculturative stress (ASSIS-36), perceived stress (PSS-4), social support (MSPSS-12), oral health perceptions (global rating item), and OHRQoL (OIDP-8). The hypotheses of the conceptual model were tested by structural equation modelling with the support of SmartPLS software. **Results:** Twenty-seven percent (27.1 %) of the variance in OHRQoL was explained by acculturative stress, perceived stress, social support, and oral

health perceptions. The path coefficients between oral health perception and OHRQoL was the strongest ( $\beta = -0.385$ ,  $P < 0.001$ ). Acculturative stress directly influenced OHRQoL ( $\beta=0.20$ ,  $P=0.009$ ), and indirectly through perceived stress ( $\beta=0.05$ ,  $P=0.019$ ). Social support mediated the relationship between perceived stress and OHRQoL ( $\beta=0.046$ ,  $P= 0.02$ ). **Conclusions:** Results indicated that acculturative stress, perceived stress, and social support are among the predictors of OHRQoL. The findings emphasize the potential role of the tested psychosocial factors in relation to OHRQoL. The empirical evidence of this study could facilitate the planning of targeted strategies by incorporating stress reduction and social support enhancement. Such strategies might be a new promising way to improve OHRQoL since these elements can be modified and response to interventions.

## **EP09: Metagenomic Analysis of Bacteria Associated with Root Canal Infections of Primary Teeth Treated with Antimicrobials**

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**Keywords:** Odontogenic Infection, Metagenomic Analysis, Amoxicillin, Calcium Hydroxide, Odontopaste®

**Introduction:** Microorganisms associated with odontogenic infections in primary teeth are composed of both aerobic and anaerobic microorganisms. Acute management of root canal infections aims at reducing pain and swellings. This can be achieved by either extraction, drainage through a tooth followed by placement of intracanal medicaments or in some situations warrants prescription of systemic antibiotics. **Objectives:** The present study was conducted to identify bacterial species present in the root canals of primary teeth with odontogenic infection before and after local and systemic antimicrobials. **Methods:** Thirty primary teeth of children with localised odontogenic infection were divided into three; Odontopaste®, Calcium Hydroxide and Amoxicillin groups. Samples were collected aseptically from root canals using sterilized paper points at the first visit and ten days after the treatment with antimicrobials. Bacterial flora were identified using next-generation sequencing and were analysed for their association with clinical parameters. A total of 1,241 OTUs were assigned to 18 phyla, 111 families and 197 genera. **Results:** The phyla namely, Firmicutes, Proteobacteria, Bacteroidetes, Actinobacteria and Fusobacteria were predominant in all samples. At the genus level, Dialister spp., Fusobacterium spp., and Prevotella spp., predominates. Spearman's correlation analysis showed a significant difference in pain score after treatment in Amoxicillin group and swelling score in Odontopaste® and Amoxicillin group. There was a strong correlation between the pain score and OTU counts in Amoxicillin group and swelling score and OTU counts in Odontopaste® and Amoxicillin group. **Conclusions:** Locally applied antimicrobials, Odontopaste®, calcium hydroxide and systemic amoxicillin are equally effective in improving clinical outcomes such as pain, swelling and tenderness to percussion ten days after treatment. Therefore, local antimicrobials can be considered as alternatives to systemic antimicrobials in the treatment of odontogenic infections of primary teeth in children.

## EP10: Fluoride and pH Level of Commercially Available Children's Beverages in Malaysia

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**Keywords:** Fluoride content, pH, Beverages

**Introduction:** Little is known about fluoride and pH (hydrogen ion concentrations) in commercially available children's beverages in Malaysia. **Objectives:** Three objectives of this study were to: (i) measure the fluoride concentration in selected commercially available children's beverages in the Malaysian market; (ii) measure the pH level in selected commercially available children's beverages in the Malaysian market; and (iii) compare the mean fluoride concentration and mean pH level among the different types of beverages. **Methods:** One hundred and twenty beverages were purchased from three selected major supermarkets in Nilai, Malaysia. Fluoride concentration was measured using fluoride ion selective electrode while pH was measured using pH meter. The beverages were grouped into 11 categories of beverages such as tea, carbonate beverages, fruit juices, and probiotic drinks. **Results:** There was a wide variation of fluoride concentration and pH across different brands. The fluoride concentration ranged from 0.02 to  $2.77 \pm 0.06$  ppm; while tea was found to have the highest fluoride concentration. The pH ranged from  $2.20 \pm 0.01$  to  $7.76 \pm 0.00$ ; while carbonated beverages were found to be extremely acidic. **Conclusions:** Given a wide variation of fluoride concentration and pH in commercially available children's beverages - some of the tested beverages could contribute to the total fluoride intake and increase risk of developing dental fluorosis. In addition, some were found to be highly acidic and were potentially erosive to the dentition.

## EP13: Chemopreventive activity of *Ficus deltoidea* extract against oral squamous cell carcinoma: An *in vivo* study

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**Keywords:** 4-nitroquinoline 1-oxide; Chemoprevention; *Ficus deltoidea*

**Introductions:** Natural products have become increasingly popular in cancer therapy. **Objectives:** The aim of this study is to evaluate the chemo-preventive activity of *Ficus deltoidea* (FD), a Malaysian herbal plant, in an animal model induced for oral squamous cell carcinoma (OSCC) using 4-Nitroquinoline-1-oxide (4NQO). **Methods:** Male Sprague-Dawley (SD) rats were randomly grouped into four groups (n=7 per group); Group 1, (untreated group), Group 2, (control cancer group) received 4NQO in drinking water for 8 weeks. Groups 3 and 4 (chemo-preventive groups) received 4NQO for 8 weeks and along with FD extract at 250 and 500 mg/kg respectively by oral gavage. All rats were sacrificed after 22 weeks, and the histopathological changes and incidence of oral cancer were microscopically evaluated by a qualified oral pathologist. Immunohistochemical analysis for cyclin D1, a key tumor marker associated with cell cycle progression and other proteins involved in cell adhesion such as  $\beta$ -catenin and e-cadherin were also investigated. **Results:** The FD extract administration significantly reduced the incidence of OSCC from 100% to 14.3% at a higher dose of 500 mg/kg ( $P < 0.05$ ). The immunohistochemical analysis showed that the FD extract had significantly decreased the expression of cyclin D1 ( $p < 0.05$ ) suggesting the prevention of the tumor growth. The expression of  $\beta$ -catenin and e-cadherin, involved in the E-Cadherin/ $\beta$ -catenin signalling pathway, was observed to be significantly increased ( $p < 0.05$ )

and this would further strengthen the chemo-preventive effect of FD in oral cancer. **Conclusion:** Our data suggest that FD extract exert chemo-preventive activity in 4NQO induced for OSCC (animal model).

## **EP20: Content Validation and Response Process Validation of Questionnaire On Accessibility Of Children With Cerebral Palsy to Oral Health Care Services**

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**Keywords:** Cerebral palsy, Access, Face validity, Content validity, Questionnaire

**Background:** In development of new questionnaire; Accessibility of children with cerebral palsy to oral health care services, a systematic production as well as objective evaluation of the developed contents is required through expert review and response process validation. **Objectives:** The current study evaluated the content validity and response process validation of a new questionnaire on accessibility of children with cerebral palsy to oral health care services. **Method:** A form for content validation was disseminated via email to seven expert panels of different dental specialties. They were critically reviewed the relevance of each items to the underlying construct. Then, the individual items were rated using a rating scale of four points. They were also encouraged to give written feedback. The calculation of content validity index was then performed. Thirty caregivers of children with cerebral palsy in Kelantan engaged by telephone survey in response process validation phase. They assessed the clarity and comprehensibility of the items and gave a score using a four points scale. Comments which emerge from the survey were documented. Then, the face validity index was performed and used to improve the items and the questionnaire overall. **Result:** Of the initial 42 items, 36 items have reached the satisfactory level content validation index of at least 0.83. More refinement following response process validation and resulting to 33 items matched the satisfactory level of the face validity index of at least 0.80. **Conclusion:** In order to support the validity of the newly develop questionnaires it is important to determine content validity and response process validity.

## **OP07: Comparison of Efficacy between Modified Vacuum-Formed Retainer and Hawley Retainer in Expansion Cases– A Multicentre Randomised Controlled Trial**

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**Keywords:** Orthodontic Retainers, Palatal Expansion Technique, Clinical Trial

**Introduction:** Hawley retainer (HR) is well known to be more effective in maintaining transverse expansion due to its rigidity. Different versions of vacuum-formed retainer (VFR) were described in the literature for expansion cases. The use of this modified VFR (mVFR) was shown to be as effective as other methods of retention. However, the comparative analysis of the efficacy of the mVFR and HR remains unknown. **Objective:** To compare the efficacy of HRs and modified VFRs with palatal coverage in transverse expansion

cases. **Method:** Thirty-five (n=35) subjects who had undergone expansion ( $\geq 3\text{mm}$ ) during treatment either with quadhelix, RME, removable appliances with midline screw or by archwires were selected from the Orthodontic Unit of Universiti Kebangsaan Malaysia, Klinik Kesihatan Bandar Botanik Klang and Klinik Kesihatan Sungai Chua Kajang. Written informed consent was obtained from patients who agreed to participate in the study. A centralised randomisation technique that incorporated external involvement was used in order to prevent selection bias and protect the assignment sequence until allocation. The participants were randomly allocated to mVFR and HR groups. The interarch widths of each subject were measured at debond (T0), 3 months post-debond (T1) and 6 months post-debond (T2). Intraclass correlation coefficient which used to assess intra-observer reliability demonstrated excellent reliability with all arch width measurements scoring over 1.0. Mixed ANOVA was used to assess the arch width changes between retainer groups over the study period. Intention-to-treat analysis was performed for lost to follow-up subjects. **Result:** The trial is on-going. Data collection was completed for 24 subjects up to T2 review. No significant statistical difference was found between two retainer groups in terms of arch width changes. **Conclusion:** Interim results suggested that there was similar efficacy between HRs and modified VFRs in maintaining transverse width of expansion cases. [Clinicaltrials.gov ID: NCT04237298]

## **OP09: Developing Clinical Practice Guidelines for Dental Caries Management for Malaysian Population through the ADAPTE Trans-Contextual Adaptation Process**

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**Keywords:** Dental caries; Evidence-based; Clinical Practice Guidelines; CPG; Adaptation; ADAPTE

**Introductions:** Clinical practice guidelines (CPG) are formulated to assist healthcare providers in making important clinical decisions. Employing recommendations from existing CPGs for local use may not be appropriate as there may be cultural and organisational differences. To avoid duplication of effort, these recommendations may be adapted to suit local context via trans-contextualisation method. objective: The current study was aimed to develop an evidence-based CPG on caries management for the Malaysian population using the ADAPTE trans-contextual adaptation framework. **Method:** A systematic search was conducted to identify all CPGs related to caries management on guideline repository websites and other platforms. The search findings were screened, and the quality of the identified guidelines was evaluated using the AGREE II tool. The currency and the content of the recommendations were assessed by multidisciplinary experts for local adaptation. **Results:** Following an extensive assessment, six high quality CPGs were selected for adaptation. Subsequent to the content assessment, the multidisciplinary experts agreed to adopt 24, adapt 55, and exclude two recommendations. The adaptation process generated 21 recommendations for caries management in Malaysia. The subsections under these recommendations were: (a) caries risk assessment; (b) oral health education; (c) prevention; (d) treatment; (e) referral; and (f) caries recall interval. Overall, a positive feedback was obtained from all external reviewers in all aspects of the CPG. The formulation of the final evidence-based recommendations for caries management in Malaysia were based on the feedback given by the external reviewers. **Conclusion:** The use of the trans-contextual adaptation process is feasible for the development of local guidelines when there are scarce resources and insufficient local evidence. The involvement of the multidisciplinary experts ensures the comprehensiveness of the CPG in terms of its quality and validity and subsequently promotes adherence and ownership of the CPG at the local settings.

## **OP10: Clinical Outcomes Following the Use of Systemic and Local Antimicrobials in the Management of Odontogenic Infections in Paediatric Patients**

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**Keywords:** Odontogenic Infections; intracanal medicaments; systemic antimicrobials; glass ionomer cement

**Introduction:** Odontogenic infections in children often manifest as an emergency presentation necessitating urgent dental care. Appropriate treatment intervention will effectively remove the source and resolve the infection preventing further spread into fascial spaces. **Method:** A randomized controlled trial with fifty-five patients aged 3 to 11-years-old presenting with odontogenic infections were randomized into three groups, choices of Odontopaste®, TempCanal™ or Moxilen®. Coronal access and biomechanical preparation were performed following which the respective teeth were dressed with intracanal medicaments of choice in two groups and prescription of a systemic antimicrobial for the third group. All cavities were sealed with glass ionomer cement. Patients were reviewed at Day 3-5 and Day 8-10 where clinical parameters were recorded. Data were analysed with descriptive statistics and generalized estimating equations in SPSS. **Results:** Participants consisted of 53% males and 47% females. Eighty-eight percent originated from Malay ethnicity while the remaining 12% were equally of Chinese and Indian races. The mean age of the study population was 5.94 years. Cavitated dentine lesions (ICDAS 05 and 06) were charted in 16 teeth (44.4%) and 14 teeth (38.9%) respectively. The primary second molars were predominant source of infections in 22 out of 26 subjects (61%). Group 1 patients experimented with Odontopaste® displayed significant recovery rates of more than 80% in majority of the parameters with 100% resolution in swelling and temperature. Marked improvement in most parameters recorded in the TempCanal™ group while the group treated with Moxilen®, partial healing of the existing symptoms was observed in which 50% of the subjects had persistent fistula at the end of treatment. No statistically significant difference was noted between the three groups. **Conclusion:** Local antimicrobials are effective with and without their antibiotic component. They are potential alternatives to systemic antimicrobials indirectly overcoming antimicrobial resistance by limiting prescriptions in cases of spreading infections or immunocompromised patients.

## **OP11: Comparison of Speech Intelligibility and Quranic Recitation Proficiency in Malay Cleft Palate Patients**

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**Keywords:** Cleft Audit Protocol; Quran recitation; Primary palatoplasty

**Introduction:** Speech intelligibility is the most important parameter in determining the success of cleft palate repair. Previous studies have shown that adequate speech intelligibility can be achieved after primary palatoplasty. In Muslim Malay population, there is additional requirement to read the Holy Quran proficiently.

**Objective:** The aim of this study was to assess perceptual intelligibility of speech and proficiency of Quranic recitations and to compare if there are differences between the two. **Method:** Data collection was done on 30 patients clinically and by recording speech samples while these patients were reading on a Malay passage and

first verse of the Holy Quran. Both samples were assessed by authors using assessment form adapted from Cleft Audit Protocol for Speech –Augmented and Quranic Assessment Form adapted from the Malaysian Ministry of Education’s learning module. **Result:** Result showed that 100% of the patients have understandable speech, however, only 60% of these patients were able to at least recite the Holy Quran fluently with adherence to the Rules of Tajwid. Statistical analysis revealed a significant correlation between these two parameters with P-value <0.001. **Conclusion:** The reported speech intelligibility and Quranic recitation provide important prognostic reference information not just to the professionals in cleft team but parents and Quranic teachers as well.

## **OP14: Identification of Serum Proteomic Signatures Associated with Oral Squamous Cell Carcinoma**

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**Keywords:** Oral squamous cell carcinoma, Proteins signatures, Proteomics

**Introduction:** Oral squamous cell carcinoma (OSCC) is an aggressive disease with poor prognosis. It is often diagnosed at an advanced stage. Despite the advancement in diagnosis and treatment, there is a need for early detection and better prognosis of OSCC. This study aims to identify the serum proteomics signatures for OSCC patients. **Methods:** Serum samples (n=60) from OSCC patients, oral potentially malignant disorder (OPMD) patients, and healthy individuals were analysed using two-dimensional gel electrophoresis (2-DE), mass spectrometry (MS) and bioinformatics analyses. Further validation was performed using enzyme-linked immunosorbent assay (ELISA) (n=120) and immunohistochemistry (IHC) (n=70). **Results:** In total, 20 differentially expressed proteins were identified, of which 9 were significantly upregulated and 11 were significantly downregulated in OPMD and OSCC compared to control. Bioinformatics analysis revealed platelet degranulation, activation of classical complement pathway, liver X receptor/retinoid X receptor activation, and acute phase response signalling pathways are associated with the development and progression of OSCC.  $\alpha$ 1-antitrypsin, apolipoprotein A-I, clusterin, and haptoglobin were shown to be significantly different in OSCC when compared with control using ELISA analysis. However, levels of clusterin and haptoglobin were significantly lower in the OSCC tissues. **Conclusion:** The identified protein signatures could reflect the development and progression of OSCC. These protein signatures may play important roles to improve the detection of OSCC. Nevertheless, further investigation is warranted to determine their roles in OSCC.

## **OP15: Salivary and Serum Levels of Zinc and Metallothionein in Periodontitis Patients With or Without Rheumatoid Arthritis**

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**Keywords:** Inflammatory mediator; Metallothionein; Zinc

**Introduction:** Periodontitis (PD) and rheumatoid arthritis (RA) share similar molecular mechanisms in their pathogenesis. Zinc homeostasis is affected in both diseases, with PD patients exhibiting decreased serum zinc



while RA patients have been reported to express low plasma zinc. Meanwhile, metallothionein (MT) is an important component of zinc regulation in various physiological pathways. MT is also able to suppress RA pathogenesis by reducing pro-inflammatory mediator expression and its concentration is dramatically elevated in response to infection, making it a target of interest in both RA and PD studies. **Objective:** As such, this study was aimed to evaluate the saliva and serum levels of zinc and MT in PD patients with or without RA. Saliva and serum samples were collected from 82 participants who were grouped according to their periodontal health and RA status (healthy, n=21; PD, n=21; RA, n=21; RAPD, n=19). **Results:** Salivary zinc of the control group ( $132.4 \pm 29.89$  ng/mg) was significantly higher ( $p < 0.05$ ) than the PD, RA, and RAPD groups ( $88.91 \pm 44.79$  ng/mg,  $56.52 \pm 18.29$  ng/mg, and  $36.59 \pm 9.26$  ng/mg, respectively). As for MT concentration, no significant differences were detected in serum or saliva when the concentration of MT was normalised with total protein concentration. However, when MT concentration was normalised with the concentration of zinc, the concentration of MT in the saliva of control samples ( $1.08 \pm 0.19$  pg/ng) was significantly lower ( $p < 0.05$ ) compared to the PD and RAPD groups ( $8.5 \pm 2.51$  pg/ng, and  $5.48 \pm 1.4$  pg/ng, respectively). **Conclusions:** These results suggest that salivary zinc and MT are significantly affected by PD and RA and warrant further investigation to better understand the mechanistic links between these two chronic inflammatory diseases or for possible diagnostic testing.

## **OP18: Accuracy of Contrast-Enhanced Computed Tomography Scan in Assessing Depth of Invasion in Oral Tongue Squamous Cell Carcinoma**

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**Keywords:** Oral squamous cell carcinoma; Pre-operative CECT; axial and coronal CECT

**Introduction:** Depth of invasion (DOI) in oral squamous cell carcinoma is an important predictor of locoregional spread, distant metastasis, disease recurrence and survival. Objectives: We compared the DOI between pre-operative contrast-enhanced computed tomography (CECT) scan and histopathological examination (HPE) in oral tongue squamous cell carcinoma (OTSCC), evaluated the correlation between CECT and HPE measurements, and determined the measurement accuracy of DOI from CECT. **Methods:** A retrospective study of 18 OTSCC patients in Faculty of Dentistry, University of Malaya was carried out. Pre-operative CECT scans were reviewed by a single observer to measure the DOI on axial and coronal sections, then compared to HPE. Data were analysed for intra-observer reliability and strength of correlation determined using intraclass correlation coefficient (ICC). Mean DOI was compared using repeated measures ANOVA and accuracy was assessed using Bland-Altman plot. **Results:** Intra-observer reliability was excellent, with ICC=0.996 for axial and ICC=0.999 for coronal. Overall, CECT measurement of DOI was 1-2mm smaller than HPE, with mean differences of -0.743 mm for axial and -1.106 mm for coronal. There was excellent correlation between CECT and histopathological tumour depths in both axial (ICC=0.956) and coronal (ICC=0.965). Bland-Altman analysis showed 95% confidence interval for measurement differences between CECT and histopathological depth were within the limits of agreement, indicating that these two methods can be used interchangeably. **Conclusion:** Measurement of DOI from CECT in OTSCC was comparable to HPE with an average of 1-2mm decrement. There was excellent correlation in both axial and coronal views compared to HPE, with accurate DOI measurement from CECT.

## OP20: Fluoride Concentration in Malaysian Infant Formulas: A Laboratory Study

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**Keywords:** Dental fluorosis, Fluoride, Baby milk, Water fluoridation

**Introduction:** The window of maximum susceptibility for the development of dental fluorosis for anterior teeth is during the first 2-3 years of life. The primary source of fluoride intake for infants at this age are mainly from the diet including infant formula. **Objective:** This study aimed to investigate the fluoride concentration in commercially available Malaysian infant formulas that required reconstitution before consumption. **Methods:** A total of 29 infant formulas available in the Malaysian market were reconstituted with deionised water, fluoridated tap water and filtered tap water. The fluoride concentration of the infant formulas was analysed directly using a fluoride ion selective electrode. The daily fluoride intake estimation from the infant formulas was calculated using the median infant body weight and recommended volumes for formula consumption from newborn to >12 months of age. **Results:** Results showed that the fluoride concentration of the infant formulas when reconstituted with deionised water ranged between 0.009 to 0.197 mg/L that contributed to the estimated daily fluoride intake ranging from 0.005 to 0.100 mg (total intake per day) or 0.001 to 0.025 mg/kg (total intake per body weight/day). **Conclusions:** The fluoride concentration in the selected infant formulas was low, but after reconstitution with fluoridated tap water, the overall fluoride concentration in infant formulas sample significantly increased ( $p < 0.001$ ). Nevertheless, the estimated daily fluoride intake from infant formulas alone did not exceed the lowest-observed-adverse-effect level (LOAEL) of fluoride at 0.10 mg/kg/day.

## OP21: Survival Rate and Mortality Rate of Oral Cancer Patients in Oral & Maxillofacial Clinical Sciences Department, Faculty of Dentistry, University of Malaya: A Retrospective Study

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**Keywords:** Anatomic site; Oral cancer; Survival rate

**Introduction:** Limited studies have been performed in identifying significant predictors of survival rate for oral cancer in Malaysia. **Results:** The overall 5-year survival rate of oral cancer patients presented at Oral & Maxillofacial Clinical Sciences Department, University of Malaya (OMCS, UM) was 36.1% with a mean survival time of 159 months which was comparable to the survival rate reported for developing countries. Significant factors that influenced survival of oral cancer patients in this study were anatomic site, stage, histologic type, receiving treatment and surgery. **Conclusions:** Stage, receiving treatment and surgery were independent prognostic factors of survival rate.

## **OP28: Addition of Methylprednisolone Enhances Analgesic Effect of Painkillers Following Third Molar Surgery.**

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**Keywords:** methylprednisolone, submucosal injection, third molar surgery, pain, swelling, trismus

**Objective:** The aim of this study was to evaluate synergistic analgesic effect of pre-operative submucosal injection of 40 mg methylprednisolone following mandibular third molar surgery. **Method:** This double-blinded randomized control trial recruited 60 patients who required surgical extraction of lower third molar under local anaesthesia. All patients were randomly assigned to 3 groups: Group 1 = pre-operative methylprednisolone + post-operative ibuprofen, Group 2 = pre-operative methylprednisolone + post-operative paracetamol, and Group 3 = post-operative ibuprofen (control). Pain intensity was measured with Visual Analog Scale (VAS) on the first post-operative 1 hour to 8 hours, 12 hours, Day 1, Day 2, and Day 7. Pain relief score and amount of rescue analgesic (Tramadol) consumed was also recorded. Total pain relief (TOTPAR) was then generated from pain relief score. Besides pain, facial swelling and trismus were also assessed. Descriptive and multivariate analysis were computed, and level of significance was set at  $P < 0.05$ . **Result:** Group 1 and 2 had significantly lower VAS score and higher total pain relief (TOTPAR) on post-operative 6 hours to 8 hours and 24 hours ( $p < 0.05$ ). Both groups also recorded less consumption of rescue analgesic. **Conclusion:** This study showed that single pre-operative submucosal injection of methylprednisolone enhanced analgesic effect of painkillers (ibuprofen and paracetamol), besides reducing post-operative swelling and trismus.

## **OP29: Malaysian School-Based Smoking Cessation Programme (The Kotak Programme): Qualitative Investigation of Dentists' Perception**

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**Keywords:** Smoking cessation; Perception of Government Dentists; the KOTAK Programme

**Introduction:** The KOTAK programme was established by the Ministry of Health to reduce smoking prevalence and prevent early smoking uptake among students. Government dentists are the frontliners who delivered the KOTAK programme. The nature of KOTAK programme's execution is through the collaboration between dentists, teachers as host and students as the recipients. Therefore, the feedback and insights from the dentists regarding the KOTAK programme are of paramount importance to be considered as part of the process evaluation of this programme. **Objective:** This study documented the perceptions of the government dentists towards school-based smoking cessation programme in Malaysian schools (the KOTAK Programme) in terms of its strengths, weaknesses and recommendations for improvement. **Methods:** A qualitative approach using Focus Group Discussion was conducted with three groups of dentists exploring the strengths, weaknesses and recommendations for improvement of the KOTAK programme. A general inductive approach was used to identify recurrent themes. Data management and thematic coding were performed using NVIVO

software. **Results:** Several themes emerged based on input from dentists, teachers, and students. “School as an ideal setting”, “dentist as subject-matter expert” and “positive perceived effectiveness” were found to be the emerging themes for the strengths of the KOTAK programme. Similar emerging themes concerning the weaknesses and recommendations for improvement were related to “operational”, “attitudinal”, and “collaboration”. Addressing difficulties faced by the dentists may improve the delivery of the programme. As for the executor of the programme, the dentists’ suggested that adequate training is needed for them in providing the smoking cessation advice to the students. **Conclusion:** Despite the weaknesses, the KOTAK programme was perceived to be effective by the government dentists. There is a need for content and delivery improvement of the KOTAK programme through multisectoral collaborations to promote its effectiveness and sustainability in the long term.

## **OP30: MAGEB2 Antibody as Potential Diagnostic and Predictive Tool in The Progression of Oral Cancer**

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**Keywords:** Cancer testes antigens, MAGEB2, Immunohistochemistry, Oral squamous cell carcinoma.

**Introduction:** Cancer testes antigens (CTA) are expressed in various malignant tumours. However, its expression is normal in testes and placenta. Hence, CTA are considered as promising biomarker for cancer vaccines. **Objectives:** The objectives of this study were to compare the expressions of MAGEB2 antibody in the tissues of normal oral mucosa (NOM), oral potentially malignant disorder (OPMD), and oral squamous cell carcinoma (OSCC) patient as well as to evaluate the association of MAGEB2 antibody with socio-demographics and clinico-pathological characteristics in OSCC patients, and to determine the association of MAGEB2 expressions with overall survival in OSCC patients. **Methods:** Immunohistochemical staining with MAGEB2 antibody was performed on 10 NOM, 20 OPMD, and 57 OSCC tissues. Kruskal-Wallis test was used to compare MAGEB2 expression between NOM, OPMD, and OSCC tissue. Diagnostic accuracy of MAGEB2 in distinguishing NOM, OPMD, and OSCC tissues and prognostic accuracy of MAGEB2 with socio-demographic and clinico-pathologic characteristics were determined using receiver operating characteristic (ROC) curve. Kaplan-Meier survival analysis was used to determine the association between MAGEB2 expressions with overall survival (OS). **Results:** MAGEB2 expression was seen in 81% of OSCC tissue. MAGEB2 expression was significantly higher in OSCC compared to OPMD tissue ( $p = 0.014$ ). However, there is no significant difference between MAGEB2 expression in NOM versus OSCC and NOM versus OPMD tissue. MAGEB2 was able to distinguish OSCC from OPMD tissue with diagnostic accuracy of 61% sensitivity and 80% specificity. There is no significant correlation between MAGEB2 protein expression with socio-demographic, clinico-pathologic characteristics, and OS in OSCC patients. However, a trend of better overall survival in tissues with high MAGEB2 expression was observed. **Conclusions:** MAGEB2 is a potential diagnostic biomarker in distinguishing OPMD from OSCC tissues. However, there is no significant association between MAGEB2 expression with socio-demographic, clinico-pathological, and OS in OSCC patients.

## OP31: Evaluating the Anti-Plaque Efficacy of Silver Diamine Fluoride (SDF) Using an In-Situ Grown Biofilm Model

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**Keywords:** Dental caries; oral biofilm; potassium iodide

**Introduction:** Dental caries, a complex biofilm-mediated disease, is still a major health problem in most industrialized countries affecting both children and adults. Silver diamine fluoride (SDF) is commonly used to arrest caries lesions, especially in early childhood caries. The precise role and mechanisms underlying the antibacterial activity of SDF is still unclear. **Objectives:** We compared for the first time, the anti-plaque biofilm efficacy of two different commercially available SDF solutions, using an in-situ grown biofilm. **Methods:** Appliance-borne in-situ biofilm samples (n=90) were grown for a period of 6-hours in five healthy subjects who repeated the experiment on three separate occasions, using a validated, novel, intraoral device. The relative anti-biofilm efficacy of three SDF formulations; 38.0 % Topamine (SDFT), 31.3% Riva Star (SDFR) and Riva Star supplemented with potassium iodide [KI] (SDFR+KI) on in situ biofilms were compared. The experiments were performed by applying an optimized volume of the agents onto the biofilm for 1 minute, mimicking the standard clinical procedure. Afterwards the viability of the residual biofilm bacteria was quantified using viability real-time PCR with propidium monoazide (PMA), then the percentage of viable/total bacteria was calculated. **Results:** Both SDF formulations (SDFT and SDFR) exhibited potent antibacterial activities against the in-situ biofilm; however, there was no-significant difference in their efficacy. Potassium iodide (KI) supplement in SDF Riva Star formulation did not demonstrate any antibacterial effect. Thus, we conclude that the antibacterial efficacy of SDF against plaque biofilms is not modulated by KI supplements. **Conclusions:** Viability real-time PCR with PMA was successfully used to analyze the viability of naturally grown oral biofilm; the latter methodology can be used to test the antimicrobial effect of other agents on oral biofilms in future research.

## OP32: Dental Caries among 12-Year-Old Schoolchildren after Discontinuation of Water Fluoridation in Pahang, Malaysia

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**Keywords:** Paediatric dental caries; Water fluoridation; toothbrushing frequency

**Introduction:** This study is aimed to compare caries prevalence and mean caries experience among Malaysian children in water fluoridation (WF) and WF-ceased areas, and its associated risk factors. **Methods:** This was a cross-sectional study with comparison communities conducted among 12-year-old school children (n=620) in two Malaysian states, namely Pahang (WF-ceased in 2012) and Perak (WF-continued). Dental caries was

examined using ICDAS criteria by a trained and calibrated examiner. Questionnaire was used to collect data on oral hygiene practices, dietary habits, and demographic background. Data analysis was conducted using complex sample analysis in SPSS version. Association between independent variables and dental caries were analysed using simple logistic regression and general linear model analyses. **Results:** Dental caries (D4-6MFT) data were significantly higher among children in WF-ceased (prevalence: 39.0%, mean: 0.80) areas than children in communities where WF continued (prevalence: 20.9%, mean: 0.33). After adjusted for other confounders, exposure to WF ( $\beta$ : 0.28, 95%CI: 0.14-0.41) remains a strong predictor of low caries experience among the study population. In addition, children with irregular toothbrushing frequency before sleep and whose parents have lower education attainment are associated with higher caries experience in the multivariate analysis. **Conclusions:** Caries prevalence and mean caries experience were significantly higher among children in WF-ceased areas than children in communities where WF continued. Exposure to WF, toothbrushing frequency before sleep and parents' education level were associated with caries experience in the multivariate analysis. The findings are valuable to build a case for local authorities to reinstate WF in the state of Pahang.

### **OP33: Opinions of Secondary School Students on the Use of Smartphone Application as Oral Health Education Tool: A Qualitative Study**

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**Keywords:** Oral health; Focus group discussion; Smart-phone users

**Introduction:** The emergence of smartphone applications in oral health education (OHE) has encouraged the development of innovative applications to assist users in improving their oral health. However, creating such applications without considering the end-user's perspectives in the development process could result in applications being underutilised and ineffective. **Objective:** This study was aimed to explore the opinions of secondary school students in Selangor, Malaysia regarding the use of a smartphone application for OHE. The specific objective was to identify the features for a smartphone application as OHE tool among adolescents in Malaysia from the perspectives of secondary school students. **Methodology:** This was a qualitative study. Focus group discussions (FGDs) were conducted among Form Two (14-year-old) and Form Four (16-year-old) students from selected government secondary schools in Selangor state utilizing a semi-structured topic guide. FGDs was stopped upon reaching data saturation. Data were transcribed verbatim and analysed using NVivo software. **Results:** The respondents mainly used smartphone applications to follow the social media accounts of other people, to stay connected, and learn new information. Mixed responses were recorded relating to the use of smartphone applications for OHE. Among the preferred features were the application must be easy to use, fun and informative, allows users to ask questions, able to locate a dentist, able to detect disease, give reminders, and provide rewards for users. **Conclusion:** Identifying end-users' opinions and their preferences will help to create an application tailored to the target audience's needs, which is the first step in a user-centred approach for developing a smartphone application. As adolescents are among high user of smartphone, having an application directly installed in their phone could be a timely strategy to help improve their oral health knowledge and behaviours.

## **DECLARATION OF INTEREST**

The authors of all abstracts published in this section reported no conflicts of interest. The authors of the respective abstract are responsible with the content.

### **Editorial Revision:**

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