11th POSTGRADUATE CONFERENCE 2018
BALAI UNGKU AZIZ FACULTY OF DENTISRY, UM / 25-26 JULY 2018

Officiated by: Profesor Dr. Noorsaadah Abd Rahman, Deputy Vice Chancellor University of Malaya

Organized by: Faculty of Dentisry

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**TRANSLATING RESEARCH EVIDENCE TOWARDS ORAL HEALTH EXCELLENCE**
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11th Postgraduate Conference 2018

Following the success of the past Postgraduate Scientific Conferences, the 11th Postgraduate Conference 2018 will be held on the 25th and 26th July at Balai Ungku Aziz, Faculty of Dentistry, University of Malaya.

The theme for this year event is “Translating Research Evidence Towards Oral Health Excellence”.

The aim of this conference is to encourage innovation in the field of oral and dental health sciences.

We hope that this conference serve as a platform for participants showcase their exciting and innovative research.

This mini conference offers series of lectures from eminent speakers in their respective fields.

We hope to keep the participants up to date with the current research and scientific development in oral health field and encourage sharing of knowledge towards oral health excellence.

See you there!
Foreword by the Organizing Chairperson

Assalamualaikum w.b.t and welcome to all participants.
As a chairman for this event, I am delighted to welcome our guest speaker, distinguished judges, and fellow participants to the 11th Postgraduate Conference. With the theme “Translating Research Evidence Towards Oral Health Excellence”, we aim to provide a platform for researchers from Malaysia and all over the world to present their modern and evolutionary scientific studies in the field of oral and dental health sciences. We really hope that this conference can serve as a platform for the participants to share their knowledge and experience in their respective field.

In relation to the theme, the dental practice is becoming complex and challenging as a result of the current trend of lifestyle and advancement of technology. Dental surgeons need to provide an efficient and best possible care treatment for their patients. Through the practice of evidence-based dentistry, dental surgeons could use their scientific evidence and personal experience in oral health to deliver diagnosis, prevention and treatment. This approach can be considered as a complementary paradigm to the traditional-based dental care in a sense that dental surgeons makes clinical judgment by emphasizing the best available evidence, personal experience and the patient’s oral health situation. We hope that the theme would evoke discussion among dental practitioners on providing an excellent oral health treatment to our patient. Personally, I am looking forward to hearing input from everyone at the conference.

I would like to take this opportunity to personally congratulate my committee members for their dedication and commitment in ensuring the success of this conference. I am honored to be able to work alongside everyone in the committee. My humble gratitude for the esteemed support from the University and Faculty. Truly, without their support, this would not be a reality. Not only that, I am thankful for having an endless support from our partners and sponsors. The contribution will go a long way and potentially benefit everyone in this field. In brief, I wish all participants good luck and I hope you will have a great time at the conference.

Best Wishes

DR. MUHAMMAD FARID BIN NURDIN
ORGANISING CHAIRPERSON,
11TH POSTGRADUATE CONFERENCE
Message from the Dean of Faculty of Dentistry

Assalamualaikum w.b.t and welcome to all participants.
In the name of Almighty Allah and His Messenger who taught us the meaning of life, it is my great pleasure to be a part of the opening ceremony of the 11th Postgraduate Conference.

To begin with, I would like to welcome our distinguished speaker, Professor Dr. Wanninayake M Tilakaratne from University of Peradeniya, Sri Lanka. We are honored to have the expert in the field to share his expertise with us today. Your experience in working as a consultant Oral Pathologist and teaching in Oral and General Pathology for the past two decades is inspiring and we hope to learn interesting ideas that you have discovered in this area.

With the success of the previous conferences, I personally believe that this event could serve as a venue for the specialists, researchers as well as the postgraduate students to exchange ideas in the oral health field and at the same time, build global networks. This opportunity could also be a beginning of another groundbreaking scientific development. I thank all the judges from various public and private institutions for their considerate deliberation and for being part of this conference. As for the participants, I wish you all the best and hopefully, you would gain new insights and ideas that can inspire you for more revolutionary scientific studies.

To our Vice Chancellor, Datuk Ir. (Dr.) Abdul Rahim Hashim, I am very thankful for the continuous support that you have for the academic and research fraternity. Not to mention, the people who have been working hard for making this conference a reality. To the organizing committee led by Dr. Muhammad Farid b. Nurdin, congratulations and thank you for your efforts. Besides that, I thank the industrial partners and sponsors for their endless supports. Your contribution means a lot to us and it is definitely a symbol of great partnership.

To all participants, good luck and wishing everyone a rewarding and fruitful conference.

Thank you.
Effects Of Parenchyma-Stromal Cell-Cell Interactions On Interactions on Tumoral Microenvironment In Ameloblastoma: An Immunohistochemical Study
Yet Ching Goh, Siew Wui Chan, Chong Huat Siar

Background: Ameloblastoma is a benign but locally invasive odontogenic epithelial neoplasm with a high recurrence rate after treatment. The two main subsets encountered clinically are unicystic ameloblastoma (UA) and solid/multicystic ameloblastoma (SMA). Current evidence suggests that neoplastic progression of many tumour types are related to parenchyma-stromal cell-cell interactions mediated by cytokines notably interleukins (IL). However their roles in ameloblastoma remain ill-understood.

Objectives: The objectives of this study were to: 1) conduct an immunohistochemical investigation for IL-1α, IL-1β, IL-6 and IL-8 markers in ameloblastoma; 2) compare their immunoprofile in UA and SMA; 3) determine their impact on the biological behaviour of the different ameloblastoma subsets; and 4) investigate the association between tumoral epithelium versus stroma (EVS) IL expression levels with clinical parameters in ameloblastoma.

Methods: Thirty-nine formalin-fixed paraffin-embedded ameloblastoma cases comprising UA (n=19) and SMA (n=20) were subjected to immunohistochemical staining for IL-1α, IL-1β, IL-6 and IL-8. A semi-quantitative method was used to evaluate the expression levels of these cytokines according to cell types in the tumoral parenchyma [pre-ameloblast-like cells (PA-like cells), stellate reticulum-like cells (SR-like cells)] and stroma [stromal cells (ST cells)]. Findings were correlated with clinical parameters of cohort.

Results: Major findings were upregulations of IL-1α and IL-6 in SMA compared to UA. Both cytokines were heterogeneously detected in the tumoral parenchyma and stroma. Within the neoplastic epithelial compartment, IL-1α expression was more frequently detected in PA-like cells in UA whereas it was more frequently encountered in SR-like cells in SMA. IL-6 demonstrated higher expression levels in the stromal compartment of SMA. IL-1β and IL-8 were markedly underexpressed in both tumour subsets. EVS expression level for IL-6 in SMA was significantly associated with ethnicity. EVS of IL-1α was significantly associated with the site of occurrence in both subtypes.

Conclusion: Overexpression of IL-1α (a potent inducer of osteoclastogenesis) in SMA suggests that this growth factor might play a role in promoting bone resorption and local invasiveness in this subtype. Higher expression of IL-6 in stromal components suggests that this cytokine elicits inflammation which in turn promotes tumour progression. The expression levels of IL-1α and IL-6 in three cellular localisations indicate that parenchymal-stromal components of ameloblastoma interact reciprocally via IL-1α and IL-6 to create a microenvironment conducive for tumour progression.
Oral Hygiene And Feeding Practices In Kindergarten Children And Its Association With Caries Pattern And Severity In Klang District, Selangor Said HM, Mani SA, Yusof ZYM.

Introduction: Dental caries is a biofilm (plaque) induced acid demineralization of enamel or dentine, mediated by saliva. It is the most common chronic behavioural disease of childhood, caused by the interaction of bacteria, mainly Streptococcus mutans(MS) and Streptococcus sobrinus, and sugary foods on tooth enamel. Early Childhood Caries (ECC) is the presence of one or more decayed non-cavitated or cavitated, missing due to caries, or filled tooth surfaces in any primary tooth in children under 6 years of age.

Objective: The objective of this study was to analyze the association between oral hygiene and feeding practices with Early Childhood Caries (ECC) in kindergarten children aged 3-5 years old in Klang District, Selangor.

Methods: A total of 409 children aged 3-5 years with completed questionnaires and consented were examined intraorally using ICDAS II scoring criteria for dmft index. Bivariate and multiple regressions analysis used to determine significant risk determinants for ECC.

Results: ECC prevalence was 82.6% with mean dmft (SD) of 7.09 ±6.0. A-ECC and SECC were found to be more common. Caries lesion affected maxillary teeth and mandibular molars with the least were mandibular anteriors, mostly cavitated dentine lesions (ICDAS 4, 5 and 6). Locations, age of children, genders, parental educations, frequency of toothbrushing, shared toothbrushes, practices after sweet foods/beverages consumption, frequency and duration of bottle-feeding, sleeping with the bottle in mouth, nocturnal bottle feeding habits and sweet drink consumptions were significantly associated with dmft, caries pattern A-ECC vs P-ECC) and caries severity (SECC vs non-SECC)(p<0.05). Multiple regression analysis concluded significant risk determinants were locations, age of children, bottle-feeding practices, toothbrushing habits and sweet drink consumptions.

Conclusions: The prevalence of early childhood caries is still relatively high in comparison to National surveys with high treatment needs. Significant risk determinants need to be addressed in preventive program.
Effect Of Platelet-Rich Fibrin With Calcium Sulfate In Socket Augmentation

T. Sultan, C. W. Cheah, R. D. Vaithilingam, N. B. Ibrahim

Objectives: The aim of this pilot study was to assess and compare vertical, horizontal and volumetric dimensional changes of alveolar ridge using combination of platelet-rich fibrin (PRF) with calcium sulfate (CS) and platelet-rich fibrin with xenograft in socket preservation procedure.

Methods: Ten subjects requiring single maxillary premolar tooth extraction were included. Five sockets received PRF-CS grafts and five sockets received PRF-xenograft (MinerOss®) grafts. Stone cast models were used to assess the changes of soft tissue level. Cone beam computerized tomography (CBCT) images were produced to measure horizontal and vertical dimensions. Mimics software was used to analyze the preoperative and at 5 months post-extraction bone volume. All measurements were recorded at baseline (before extraction) and at 5 months post-extraction.

Results: PRF-CS group demonstrated 12.2% horizontal resorption as compared with 14.84% in PRF-xenograft group. For PRF-CS group, resorption for mesial bone height (MBH=19.58%), buccal bone height (BBH=18.87%) and palatal bone height (PBH=15.66%) was nearly 3 times more than resorption for PRF-xenograft (MBH=8.48%, BBH=7.26% and PBH=4.33%). Bone volume was increased 4.25% in PRF-CS group as compared with 7.25% in PRF-xenograft group. Significant reduction in horizontal and vertical dimensions was observed in both the groups at 5 months’ post-extraction except for DBH (p=0.094) and PBH (p=0.065) in PRF-xenograft. However, no significant difference was found between both the groups (p > 0.05).

Conclusion: PRF-CS can be used in socket preservation procedure to minimize bone resorption but was not as effective as PRF-xenograft.
OBJECTIVES: To compare the expression of transient receptor potential vanilloid (TRPV) 1 in normal oral mucosal tissue, oral potentially malignant disorders (OPMDs) and oral squamous cell carcinoma (OSCC). To identify socio-demographic and clinico-pathologic factors associated with TRPV1 expression.

METHODS: Samples of normal mucosa, OPMD and OSCC were selected from the Malaysian Oral Cancer Database and Tissue Bank System (MOCDTBS). The immunohistochemistry (IHC) process was performed on 4μm thick formalinfixed paraffin embedded (FFPE) tissue. The immunostained tissues were digitised using a digital scanner and the expression of TRPV 1 was analysed and scored based on a semi-quantitative scoring system using the tissue microarray (TMA) software. Receiver operating characteristics (ROC) curve analysis was used to determine the best cut-off value for TRPV 1 expression. Chi-square analysis was performed to assess difference in expression of TRPV 1 between normal tissue and OPMD, OPMD and OSCC, and normal tissue and OSCC. Chi-square analysis was also used to assess association between socio-demographic and clinico-pathological parameters with TRPV 1 expression.

RESULTS: 92% of OPMDs has increased TRPV1 expression compared to only 40% in normal tissue. OSCC has also shown to have increased expression of TRPV1 (72%) as compared to normal tissue (40%). For sociodemographic characteristics, female, age more than 45 years old, alcohol drinkers and betel quid chewers were shown to have increased expression of TRPV 1. However, this finding is not statistically significant (p>0.05). For clinico-pathologic parameters, significant differences were seen in tumour size. Majority of smaller tumour size with less than 4cm (82.6%) showed high TRPV 1 expression as compared to tumours ≥4cm. Similar results were observed for tumour stage. Majority of early stage cancers showed high TRPV 1 expression (94.1%) compared to late stage cancers (56.3%).

CONCLUSIONS: High expression of TRPV 1 was shown to increase the risk for OSCC. Factors associated with TRPV 1 expression are tumour size and stage.
Introduction: Optimal marginal sealing ability is highly dependent on pre-treatment protocols, use of adhesives, and sealant materials. Studies have been conducted all over the world for enamel surface preparation and placement methods prior to fissure sealant application, but the results were mixed.

Objectives: To evaluate and compare in vitro, the effects of applying different enamel pre-treatments with conventional acid-etch, etch-and-rinse adhesives, and self-etch adhesives on microleakage around fissure sealant margins in primary and permanent molar teeth.

Methods: 30 extracted human permanent third molars and 30 extracted primary second molars were randomly assigned into three groups of ten teeth each. Clinpro, resin-based fissure sealant was applied after undergoing either one of these pre-treatment protocols; 1) Phosphoric acid etching; 2) Acid etching + Prime & Bond NT (etch-and-rinse adhesives) and 3) Single Bond Universal (self-etch adhesives). The teeth were stored inside a distilled water for 30 days, followed by thermocycling and then, immersed for 24 hours in 0.5% basic fuchsin solution. A total of 180 surfaces were identified and examined under stereomicroscope for microleakage scoring by two calibrated observers. Statistical analysis was done using SPSS version 23.0. Kruskal-Wallis test was used for comparison between three pre-treatment protocols.

Results: There was a significant difference (p < 0.05) among three groups in both permanent and primary groups. In permanent teeth, acid etching technique showed the highest group of (score 0) no leakage (96.7%), followed by self-etch adhesive and etch-and-rinse adhesive at (76.7%) and (46.7%) respectively. Primary teeth also showed that acid etching technique had the highest group of (score 0) no leakage (93.3%), followed by self-etch adhesive (73.3%), and etch-and-rinse adhesive (63.3%).

Conclusions: Fissure sealant applied with conventional acid etching technique showed the least microleakage, followed by self-etch adhesive technique, and etch-and-rinse adhesive technique in both permanent and primary teeth.
Validation of a Four Protein Signature for Determining Lymph Node Metastasis and Survival in Oral Squamous Cell Carcinoma in 3 Main Diagnostic Centers In Malaysia

Fairuz Abd Rahman, Ramanathan Anand, Noor Akmar Nam, Shin Hin Lau, George Boey Teik Foo, Cheong Sok Ching, Rosnah binti Zain.

Introduction: Despite advances in screening and detection tools, the overall accuracy for current pre-operative assessment of regional lymph node (LN) metastasis is still limited with low sensitivity (70%) having a false negative rate of 30%.

Objectives: To validate the previous study (Zanaruddin et al. 2013) that has identified 4-protein signature (EGFR, HER2/neu, LAMC2 and RHOC) in primary oral squamous cell carcinoma (OSCC) that could reliably distinguishes patients with and without LN metastasis.

Method: A total of 83 cases of OSCC samples, their socio-demographic and clinic-pathologic data were collected from three centers (Oral Pathology Diagnostic Laboratory and Oral Cancer Research and Coordinating Centre, Faculty of Dentistry, University of Malaya; Department of Stomatology, Institute for Medical Research, Ministry of Health, Kuala Lumpur; and Department of Oral Pathology and Oral Medicine, Queen Elizabeth Hospital, Kota Kinabalu, Sabah). Four proteins (EGFR, HER2/neu, LAMC2 and RHOC) expression were evaluated using immunohistochemistry based on the intensity and percentage of staining. One Oral Pathologist in each center and a trainee Oral Pathologist independently performed the IHC scoring of the 4 proteins in each center.

Results: All four proteins evaluated, were found to be significantly associated with the presence of LN metastasis. EGFR, HER2/neu, LAMC2 showed high expression whereas RHOC showed low expression with LN metastasis. The cutoff point of at least four proteins with cumulative score of 3 would reflect the best sensitivity and specificity. The 4-protein signature showed sensitivity of 90.1% and specificity of 64.1% and prognostic accuracy of 77.5% in correlation with LN metastasis in general for an overall 83 OSCC samples and in particular for each set of OSCC samples from each center demonstrates the robustness and accurateness of this 4-protein signature in predicting LN metastasis. Kaplan-Meier survival curves showed significant survival probability difference between two groups in 4-protein signature for overall 83 samples. However, this signature was not able to predict accurately the patient survival in smaller sized samples.

Conclusions: Four protein signature (EGFR, LAMC2, HER2/neu, and RHOC) have been shown to have potential to be used as prognostic indicators of LN metastasis in OSCC. This 4-protein signature can be a useful prognostic tool in the clinical setting to facilitate the prediction of LN metastasis of OSCC patients. This study also concluded that the survival probability is inconclusive. However, it is found that the 4-protein signature has shown a trend for prediction of overall survival.
The Effect of Photofunctionalization on The Dental Implant Materials and Tissue Contour at the Peri-Implant Tissue Interface

Dr. Masfueh Razali, Prof. Dr. David Ngeow, Dr Ros Anita Omar, Assoc. Prof. Dr. Wen Lin, Chai

Introduction: Despite excellent mechanical and biological properties of titanium a dental implant, inevitably, it will undergo time-dependent biological degradation. However, this ageing phenomenon of implant dental material can be reversed by photofunctionalization of the surface.

Objective: Thus, the objective of this study was to examine the effect of UV-light treatment on the properties of different dental implant materials and contour formed by soft tissue as evaluated using 3-dimensional oral mucosal model.

Methods: Three dental implant materials tested in this study were yttria-stabilized zirconia (YTZP), grade 1 commercially available titanium (cpTi) and alumina-toughened zirconia (ATZ). The surface topography of all test materials was standardized. The test materials were divided into non-treated group and UV-treated group prior the experiment. The degree of wettability of specimens and the surface element of material in each group were measured. The 3-dimensional mucosal model was constructed for the evaluation of the contour analysis.

Results: All surfaces of the materials were smooth (Sa value < 0.5 µm). The difference in degree of wettability of materials in each group was significant. The photofunctionalization of the surface has reduced the hydro-carbon compound on the titanium and zirconia. The contour formed by the tissue was divided into two types, pocket (Score 1, < 450) and non-pocket types (Score 2, 450<d<900 and score 3 > 900). There was significant different between pocket and non-pocket tissue form amongst non-treated and UV-treated groups (p value < 0.05).

Conclusions: The results showed that UV light pre-treatment of all test materials enhanced the hydrophilicity of the surface via removal of the surface hydrocarbon, thus promote cell-tissue attachment onto the surface of all materials.
Effectiveness of clinical pathway in managing periodontal patients at primary care dental clinics: a randomized controlled trial  
N Mustafa, IA Razak, ZYM Yusof, A Mohamed

Objectives: To develop a clinical pathway for managing patients with periodontal disease at primary care dental clinics in Malaysia. To assess and compare between patients treated according to the clinical pathway and current practice in terms of improvement in oral hygiene practice, bleeding on probing, plaque scores, probing pocket depth (PPD), and oral health-related quality of life (OHRQoL) after 10 weeks, and to determine the distribution of cost for managing patients with periodontal disease between the two methods.

Methods: The steps for evidence-based practice was used in the development of the clinical pathway. The effectiveness of the clinical pathway in treating periodontal disease in adults was evaluated using a randomised controlled trial (RCT) with 124 participants randomly allocated to the clinical pathway and current practice groups. The effect of the clinical pathway on oral hygiene practice, clinical, and OHRQoL outcomes (using OHIP-14) were compared with the current practice at baseline and after 10 weeks. A cost analysis was carried out using the top down and bottom up methods for both groups.

Results: The proposed consensus-based clinical pathway was developed and used in this clinical trial. Sixty two participants were analysed in each group. Both groups were not statistically significance at baseline. There was a significant difference in the number of participants who reported interdental cleaning (p<0.001) and confidence in performing effective tooth brushing (p<0.05) after 10 weeks compared to baseline in the intervention group. Both groups had significant reductions in bleeding scores and plaque scores (p<0.001) after 10 weeks with greater reductions in the intervention group. The between-group difference in mean decrement for bleeding score was 8.7% (95%CI:14.54-2.92; p=0.004), for plaque score it was 5.2% (95%CI:10.60-0.18; p=0.058). A significant improvement in quality of life was observed in the intervention group after 10 weeks associated with the self-conscious domain (p=0.039). The total provider cost for the clinical pathway was RM86.30 while in the current practice it was RM30.00.

Conclusion: The findings provide some evidence that the use of the proposed clinical pathway for treating periodontal patients in primary care dental clinics had significantly improved the interdental cleaning practice and confidence of participants in performing effective tooth brushing. It also resulted in a significantly higher reduction in bleeding scores and plaque scores compared to the current practice, respectively. The higher provider cost in the clinical pathway was attributed to the longer...
In Vivo Evaluation Of Initial Enamel Erosion Using Optical Coherence Tomography (OCT)
Azwaatee Abdul Aziz, Chew Hooi Pin

Aim: To assess the potential of Optical Coherence Tomography (OCT) in the monitoring of initial enamel erosion in vivo for a clinical trial.

Objectives: 1) To evaluate the effect of three-times daily exposures of a commercially available orange juice on backscattered intensity of OCT. 2) To evaluate the effect of overnight saliva after daily exposure of orange juice.

Methods: Twenty-two healthy adults, age 23-33 participated in the study, involving a 2-Phase (A and B) cross-over study of 3 days each. In Phase A, participants were asked to swish a total of 250 ml orange juice for 10 min, 3 times per day with an interval of 3 hours, with a 2-day wash-out period. In Phase B, same protocol was followed with an addition of gum chewing for 15 min after each swishing. A swept-source OCT (SS-OCT) was used to scan the labial surfaces of the right or left maxillary incisors before and after each interval, totalling of 6 scans per day (T1 – T6). The integrated reflectivity (IR) values, derived from the OCT A-scans were used for evaluation and the changes were analysed using paired t-test.

Results: Results revealed that there was a significant increase in the (IR) of the backscattered OCT signals after repeated rinsing with orange juice in comparison to orange juice plus gum chewing (p<0.05) in day 3 for Phase B. However, there were no significant different between T6 and T1 after overnight saliva either in Phase A or Phase B, (p<0.05).

Conclusions: Results showed that this method is a sensitive technique for investigation during initial stage of erosive lesions, suggesting that OCT may be able to quantify early demineralisation in vivo. Thus, this study provides support for further development of OCT to be used as a tool monitoring the progression of initial enamel erosion in a clinical trial.
Effect of Different Cleaning Methods on Sealant Penetration and Nanoleakage

KA Bustami, NM Manan, LA Shoaib, FA Razak

Objectives: The objectives of this study were to compare the effect of cleaning occlusal surface using a toothbrush to a rotary brush before application of fissure sealant on the depth of sealant penetration and nanoleakage occurrence and; to assess the influence of fissure morphology on sealant penetration.

Methods: Thirty-three sound extracted maxillary premolars were randomly divided into three groups of different cleaning methods (1) No cleaning of the occlusal surface (control), (2) occlusal surface cleaned with a toothbrush, and (3) occlusal surface cleaned with a rotary brush attached to a slow-speed handpiece. Following fissure sealant application, teeth were sectioned into halves. Slabs were stained with modified silver staining technique and polished. Depth of sealant penetration was determined using scanning electron microscopy (SEM) according to the scoring method: (1) sealant penetrated one-third of the total length of the fissure, (2) sealant penetrated half of the total length of the fissure, and (3) sealant penetrated the total length of the fissure. Nanoleakage expression was observed along the sealant-enamel interface by measuring silver nitrate uptake using EDX. Data management and analysis were performed using SPSS version 23. Different cleaning methods were compared using Fisher’s exact test (sealant penetration) and Kruskal-Wallis (nanoleakage). Association between fissure morphology and sealant penetration was determined using Fisher’s exact test. The test was considered significant when p<0.05.

Results: No significant association was observed between the different cleaning methods (toothbrush and rotary brush); and the sealant penetration and nanoleakage expression (p>0.05). A significant difference was observed between fissure morphology and the depth of sealant penetration (p=0.025).

Conclusions: Cleaning of the occlusal surface prior to sealant application using a toothbrush is as effective as a rotary brush in relation to sealant penetration and occurrence of nanoleakage. Alternatively, toothbrush can be recommended to clean occlusal surface before application of fissure sealant.
**Extracapsular Spread In Oral Squamous Cell Carcinoma And Its Association With Ggh, Ca9, Cdkn3 And Cbx7**

Nor Aszlitha Burhanudin, Thomas George Kallarakkal

**Purpose of study:** Extracapsular spread (ECS) in oral squamous cell carcinoma (OSCC) indicates tumour aggressiveness and is associated with a higher risk for tumour recurrence, loco-regional spread and distant metastasis. The identification of specific biomarkers that could predict ECS would guide the clinicians in the management of OSCC patients. This study aimed to determine the association between clinical and pathological parameters of OSCC patients with ECS. We also sought to investigate the expression of Gamma Glutamyl Hydrolase (GGH), Carbonic Anhydrase 9 (CA9), Cyclin Dependent Kinase Inhibitor 3 (CDKN3) and Chromobox Homolog 7(CBX7) and their potential use as biomarkers to predict ECS in OSCC.

**Methods:** Association between clinicopathological parameters and expression of these markers with ECS status was analysed using chi-square test. Immunohistochemical staining with anti-GGH, anti-CA9, anti-CDKN3 and anti-CBX7 antibodies was performed on 35 OSCC cases.

**Results:** The number of positive nodes and the highest anatomical level of nodal involvement significantly correlated with ECS (p<0.05). Immunohistochemical staining results indicated that high GGH and CA9 expression was significantly associated with ECS (p<0.05), while no significant association was seen for CDKN3 and CBX7 expression with ECS. However, a trend towards significance was observed with a high level of CDKN3 and low level of CBX7 expression with ECS.

**Conclusions:** The presence of ECS is a predictor for the pathological involvement of greater number of nodes from a higher anatomical level. GGH and CA9 offers potential as a prognostic biomarkers in OSCC, while the role of CDKN3 and CBX7 as prognostic markers need to be validated in a larger sample.
Comparative Molecular Signatures Of Human Mesenchymal Stromal Cells During In Vitro Passaging
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**Introduction:** Significant progress has been witnessed in the last decade documenting the use of human mesenchymal stem/stromal cells (hMSCs) as an alternative resource for cell replacement therapy owing to their intrinsic features of self-renewal and differentiation capacity into therapeutically valuable cell types.

**Objective:** However, the yield of isolated hMSCs from donor tissues is usually inadequate, suggesting the need for the expansion of hMSCs in culture to meet the clinical need. However, hMSCs undergo cellular ageing, thus limiting their proliferation and differentiation potential in long term-culture. Cellular ageing is the manifestation of a complex interplay of molecular pathways between the gene expression and microniche which is govern by many processes including miRNA dysregulation.

**Methods:** In this study, we have employed array-based miRNA and mRNA profiling to determine molecular signatures of primary hMSCs isolated from deciduous pulp (SHED) and Wharton’s Jelly (WJSCs) associated with cellular ageing during in vitro passaging.

**Results:** We found phenotypic changes of primary hMSCs isolated from SHED and WJSCs by passaging in culture. Subsequently, molecular profiling showed a set of diverse miRNA and mRNAs that were deregulated in SHED and WJSCs. With this platform, an overlap of up-regulated and down-regulated miRNAs between SHED and WJSCs was observed. Notably, the hsa-miR-22, hsa-miR-485-5p and hsa-miR-let-7a have been identified as the cellular senescence inducers were show highly up-regulation. Whereas, hsa-miR-302a, hsa-miR-373 and hsa-miR-520e were found commonly down-regulation in both cell types. These miRNAs are known as signature miRNAs in stem cells involved in maintaining stemness biological process. Moreover, the predicted miRNA targets of both samples that captured in this study are show involved in modulate cellular activity by regulating many cellular processes including cell cycle, senescence, proliferative pathways, cell death and survival as well as metabolism related functions. Importantly, the integration analysis of miRNA/mRNA revealed that differentially expressed genes were associated with inflammatory signalling and cell cycle G2/M DNA damage regulation. The data presented here is in agreement with the basic characteristic studies which demonstrate the physiological changes of SHED and WJSCs during in vitro passaging.

**Conclusion:** Taken together, it is intended that our study will contribute to the understanding of these miRNA/mRNA driving the biological process of cellular ageing in hMSCs. These will not only improve our fundamental knowledge of the ageing process but will also advance the development of a more effective and affordable targeted intervention approach for generating therapeutically valuable cell resources for treating many degenerative diseases.
Oral Health Literacy And Its Associated Factors In Malaysian Adolescents
SJM Jeffry, NA Murat, R Saub

Introduction: Oral health literacy (OHL) is a newly emerging interest in dental public health and its importance towards attaining better oral health is being recognized.

Objectives: The objectives of this study were to: 1) cross-culturally adapt and validate a Malaysian-version of Oral Health Literacy Adult Questionnaire (OHL-AQ) instrument for Malaysian adolescents, 2) assess the prevalence of OHL among Malaysian adolescents, 3) investigate the association between levels of adolescents’ oral health literacy with sociodemography and oral health outcomes such as oral health status, oral health-related behaviours and oral health-related quality of life (OHRQoL), and 4) identify factors significantly associated with levels of OHL in Malaysian adolescents.

Methods: In Phase 1, the original English version of the OHL-AQ was cross-culturally adapted to Malaysian adolescents. The translation process involved forward-backward technique and was then pretested on its face and content validity. The pre-final Malay version of the questionnaire was tested for its validity (convergent and discriminant) and reliability (test-retest and internal consistency). In Phase 2 (main study), a survey was conducted involving 401 samples of 16-year-old schoolchildren randomly selected from government secondary schools in Pontian District, Johor. A questionnaire consisted of the Malaysian version OHL-AQ, sociodemography, oral health-related behaviours and OHRQoL was self-administered. The clinical oral examination was carried out to assess dental caries (DMFT index) and gingival status of the schoolchildren (GIS). The data was analyzed by univariate analysis using chi-square, t-test, Spearman’s correlation and ordinal regression to assess the associations between OHL with sociodemography and oral health outcomes. Multivariate analysis was performed to determine the significant factors that may influence OHL. Data was analyzed using SPSS version 22 and p<0.05 was considered as the significance level.

Results: The Malaysian version OHL-AQ demonstrated a good convergent and discriminant validity based on the hypothesis tested. Intraclass correlation coefficient for Malaysian OHL-AQ was 0.706. Overall, in the main study, 65.1% of adolescents had adequate OHL, 24.7% had marginal OHL and 10.2% had inadequate OHL. Higher mean OHL scores were observed in those who had lower DMFT scores, had no gingivitis, used fluoridated toothpaste, consumed sugary food and drinks less than four times in a day, and had low oral impact (p<0.05). From a multivariate analysis, using Malay as the main language spoken at home and achieving good grades for Malay Language, English and Science subjects in PT3 examination, were the significant predictors in having good OHL.

Conclusions: This study shows that although most of the study participants had good OHL, there were still about 10% of the selected Malaysian adolescents with low level of OHL. Identified predictive factors associated with OHL observed in this study should be taken into consideration when planning and developing oral health programmes. As OHL is significantly associated with school examinations’ results, collaborative efforts with the Ministry of Education into incorporating OHL into educational programmes is utmost important towards sustaining better oral health in Malaysian adolescents.
Associations Of Maged4b, Gna12, Ifitm3 and Fjx-1 Expressions with Patient Survival In Oscc Oral Squamous Cell Carcinoma
Wan Nurhazirah Wan Ahmad Kamil, Rosnah binti Zain, Zuraiza Mohamad Zain, Anand Ramanathan

Introduction: Oral squamous cell carcinoma (OSCC) is a major health problem worldwide. The overall survival rate remains at 50%, despite numerous studies and various treatment modalities in OSCC. The presence of lymph node metastasis in OSCC is well established as an independent prognostic factor.

Objective: This present study aims to investigate the association of four tumour antigens; FJX-1, GNA12, IFITM3 and MAGED4B with the socio-demographic and clinico-pathological parameters of OSCC. The potential use of these markers as prognostic indicators of patient survival and lymph node metastasis in OSCC was explored.

Methods: 35 cases of OSCC involving the tongue, buccal mucosa, gingiva, alveolus and floor of various sub-sites of mouth were evaluated by immunohistochemistry for FJX-1, GNA12, IFITM3 and MAGED4B expression. Assessment of the expression of these tumour antigens was based on the cellular sub-site, intensity and percentage of staining in the OSCC samples.

Results: The expression of all four tumour markers was 100% (n=35) in OSCC tissues. All the markers (FJX-1, GNA12, IFITM3 and MAGED4B) showed no significant association with the socio-demographic findings and clinico-pathological parameters. Survival analysis using Kaplan-Meier plots test showed poor prognosis for OSCC patients with high expression of individual GNA12, IFITM3 and MAGED4B individually with poor prognosis in OSCC patients. A combination of markers of GNA12 and MAGED4B demonstrated a significant association with patient survival in OSCC (p=0.014). Multivariate analysis after adjustment for selected socio-demographic factors (age, gender, risk habits and sub-sites of the oral cavity) revealed that high expression of both MAGED4B and GNA12 together remained as an independent prognostic factor for poor prognosis in OSCC (HRR =5.231, 95% CI 1.601,17.084; p=0.006).

Conclusion: High expression of combination marker (GNA12 and MAGED4B) may be used as an independent prognostic indicator in OSCC cases.
Introduction: The concept of oral health has been transformed from merely having healthy teeth to include excellent oral function: the ability to speak, smile, chew and swallow competently, and without pain, improvement in general health and maintaining self-esteem. However, at present, the oral health of older Malaysians is considered suboptimal, though little is known about local factors associated with poor oral health.

Objective: The purpose of this study was to compare hospitalized and non-hospitalized community dwelling older Malaysians with respect to oral health; and to determine risk factors for edentulism in these individuals.

Methods: Individuals who agreed to oral health assessments from the Malaysian Elders Longitudinal Research (MELoR) study and the geriatric ward, UMMC were included. Oral health status was examined according to the format adapted and modified from the 2013 WHO Oral Health Assessment form. Sociodemographics, medical history, and other basic characteristics were compared for the two groups. Poisson log linear regression analysis was used to analyze the effects of study variables on edentulism.

Results: 150 (75 hospitalized and 75 non-hospitalised) participants, mean age = 80.76 (±7.4) years, 45.9% males and 54.1% women, age and gender matched, received oral health screening. The mean number of missing teeth was 23.12 (±10.1) in the hospitalized patients and 17.34 (±5.5) in the non-hospitalized patients (P < .001). Edentulism was observed in 44.6% of the hospitalized patients and 17.6% of the non-hospitalized patients (P < .001). In both groups, male (odds ratio, 0.07; CI, 0.7-0.84), non-Chinese ethnicity (odds ratio, 0.23; CI, 0.95-0.5), living alone (odds ratio, 1.13; CI, 1.9-2.8) and having attained only primary level of education (odds ratio, 1.29; CI, 0.47-2.11) were the strongest risk factors for edentulousness. The treatment seeking behavior of the elderly was similar in both groups with 78.4% of the hospitalised elderly not having visited a dentist in the previous 2 years.

Conclusions: Oral health was poor in both groups with hospitalization being as significant risk factor for poorer oral health. Future studies should consider evaluating whether community-based oral health interventions will reduce risk of hospitalization in older populations.

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