A COMPENDIUM OF ABSTRACTS
2017/2018

Research Projects and Publications of Oral Health Personnel
Ministry of Health Malaysia

Oral Health Programme
Ministry of Health Malaysia
February 2019
It is my pleasure to write this foreword for the 19th publication of the Compendium of Abstract of the Oral Health Programme. This publication presents abstracts of research undertaken by the oral health personnel in the Ministry of Health Malaysia, which were reported to the Oral Health Programme in 2018.

The thirst for knowledge shall continue into the road of success to disseminate clinical and public health research in the country. An unswerving support from all level of management is rudimentary to foster development of research in Oral Health Programme.

This compilation showcase total of 155 research abstract, with 71 papers presented at scientific conference both local and international levels.

I wish to extend my heartfelt gratitude to all officers whose work are featured in this Compendium, as well as to all others who have contributed exceptionally well to put together this Compendium. Congratulations to all of you for plowing in the oral health of the nation.

DR NORLIZA BINTI MOHAMMED
Acting Principal Director
Oral Health Programme
Ministry of Health Malaysia
EDITORS’ NOTE

This Compendium of Abstracts 2018 is a compilation of research abstracts that were reported to the Oral Health Programme, Ministry of Health in year 2018. These were research outputs gathered from health systems research projects, oral and poster presentations at both local and international scientific meetings, dissertations, scientific papers published and other research works of oral health personnel.

As in the past, the Oral Health Programme reserves the right and discretion to edit and modify these abstracts for grammar, length and clarity and to standardize formats in compliance to the requirements of this publication.

Research of public health interest conducted by specialists is included under the respective clinical specialty research categories.

Research work or presentations which are not reported to the Oral Health Programme in 2018 have been excluded from this publication.

The Editor
Compendium of Abstracts 2018
Oral Health Programme
Ministry of Health Malaysia
February 2019
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RESEARCH IN PROGRAMME EVALUATION
1. CARIES PREVENTION PROGRAMME AMONG TODDLERS IN PAHANG

Rapeah MY, Ernieza B

Early Childhood Caries remains the significant Public Health Problem in both developing and developed countries worldwide. National Oral Health Plan for Malaysia aimed 50% of 6-year-old children is caries-free in the year 2020. In Pahang, the prevalence of caries among 5-year-old preschool children was 85.1% (2005) as compared to 76.2% (2005) for Malaysia and the mean dft score was 5.50 (2005) as compared to 6.0 (2005) for Malaysia. Pahang State Health Department had introduced “Toddlers’ Adoption Programme” to strengthen oral healthcare amongst children. The dental nurse acts as an “Adoptive Mother” for a period of 4 years. Ancipatory guidance were delivered to the parents and their child was placed in the “Knee to Knee” position for mouth examination. This is followed by fluoride varnish (FV) application using 5% Sodium Fluoride [22,600ppm] on the child's deciduous teeth using “Lift the lips” technique. Compliance refers to those “Adopted toddlers” who attended all their seven scheduled appointments from the age of one to four years old at every 6 months interval. Percentage of children with Caries-Free-Mouth (CFM) status upon graduation was the impact indicator monitored to analyse the success of the programme. Five batches of toddlers had graduated from this programme from year 2012 to 2016. About 130 to 147 dental nurses were involved as “Adopted Mother” in this programme each year and a total number of 3,012 of toddlers were recruited in the programme of those two thousand two hundred and eighty one (75.7%) complied and graduated at the age of 4-years-old. Compliance rate obtained range from 61.1% to 86.4% and percentage of CFM range from 63.8% to 82.3%. Effects of fluoride varnish application amongst toddlers in Pahang found that “Adopted Toddlers” exhibit significantly better oral heath status as compared to their non-adopted counterparts (p=0.01). Empowerment of parents/caregivers and the clinical preventive application using fluoride varnish among young children were proven effective for their oral healthcare and will be expanded for higher coverage of toddlers.

Oral presentation at the 1st Joint Specialist Conference 2018 on 9-11 March 2018 at Hotel Istana Kuala Lumpur

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2. DENTAL ICON: THE PROUD VOLUNTEERS IN ORAL HEALTH PROGRAMME FEDERAL TERRITORY OF KUALA LUMPUR & PUTRAJAYA

Siti Zuriana MZ, Chia JC, Sharol Lail S, Radzniwan R

Introduction: Oral health promotion enables communities to increase control over the determinants of health and thereby improve their oral health. Hence Dental Icon programme was established in 2017 by the Oral Health Programme Ministry of Health aimed to function as enables. Uniquely this programme elected icons not from dental fraternity but from public people of various field who had volunteered and have been trained through intensive workshops. Methods: Dental Icon Programme in Federal Territory of Kuala Lumpur & Putrajaya (FTKL&P) was developed in 2017. Currently, there are 20 active dental icons in FTKL&P. They were chosen randomly by the Senior Dental Officers from five zones. They were trained using standard modules through one day workshop prior becoming the icon. 3 of the most active dental icons and their activities were shared in this report. Results: Three of the dental icons used the following events in carrying out their duties. Among them were national-level healthy community program (KOSPEN), asnaf and orphanages programme, teaching informally to medical students and briefing to some patients attending Klinik Pakar Kesihatan, Universiti Sains Islam Malaysia (USIM) in Nilai Negeri Sembilan. In fact, one of the icons taught few children in Kunming China during his expedition with international programme conducted by USIM in July 2018. The topic discussed were the basic principles of oral health, the proper way of tooth brushing, dental caries and the prevention of oral cancer. The icons felt that the workshop given prior was useful in delivering their tasks confidently. However, one of them felt that his motivation could affect his activities due to the solely volunteer work. Conclusions: We observed that having the dental icon to provide oral health promotion is beneficial among the public. As they, can empower the community to take care of their own oral health. The activities done by the 3 dental icons above showed the variation of delivering dental health education. However, the concept of ownership of dental icons to maintain this programme should be strengthened and must be guided appropriately by the facilitators.

Keywords: Dental Icon, Oral Health Promotion, Dental Health education

Oral presentation at the 3rd USIM International Conference 2018 “Medical Volunteerism: For the Good of Mankind” on 20 – 21 October 2018 at Hotel Bangi-Putrajaya

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Introduction: Community services are altruistic activities whereby it has becoming a backbone in dental fraternity. Besides their usual role in treating patients, dental staffs also work actively in community service. The Oral Health Programme Ministry of health Malaysia shoulders the major responsibility not only for provision of oral healthcare but also ensuring effective dissemination of health education. The latter becomes the role of a Dental Health Education Unit redesignated recently to Oral Health Promotion Unit. **Objective:** To compare the effectiveness of community service in oral health promotion programme done from 2015 – 2016 without a “Dedicated Team” and 2017 with “Dedicated Team” in Federal Territory of Kuala Lumpur & Putrajaya (FTKL&P). **Methods:** In this esteem community service, a few dedicated teams were established in the early 2017. Firstly, they were trained by standard modules. Their oral health promotion activities were recorded and its evaluated effectiveness. The effectiveness was compared to the programme done in 2015 – 2016 without a “Dedicated Team”. Effectiveness is defined effectiveness when there is a significant increment in the number of participants and activities conducted (>50%). Results: There were 31 dental officers and 17 dental therapists heading the team. Five zones in FTKL&P were chosen to run the activities. Compared between 2015 and 2017, there were significant increment in the number of participants (by 100%) and activities conducted (by 95%). Similarly, when comparing between 2016 and 2017, there were significant increment by 43.8% and 23% in the number of participants and activities respectively in 2017. Hence “dedicated Team” had performed better and are more effectives in the community services in oral health promotion programme in 2017. **Conclusions:** The effectiveness of community services in FTKL&P had increased since the development of the “Dedicated Team”. The team is beneficial in ensuring community participation among the public and is able to empower the community to take care of their own oral health. Having the team, the work of planning, implementation and evaluation of the community services are more focused. Some worked voluntarily in achieving the goal which has proven that community service is an important aspect in oral health promotion activities.

**Keywords:** Dedicated Team, community service, oral health promotion

**Poster presentation at the 3rd USIM International Conference 2018 “Medical Volunteerism: For the Good of Mankind” on 20 – 21 October 2018 at Hotel Bangi-Putrajaya**

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Introduction: Dental caries is a preventable disease. It can be stopped and even potentially reversed during its early stages. If appropriate promotion and prevention programme are implemented, the result will be fruitful. **Objective:** To describe the oral health promotion activities conducted by a “Dedicated Team” and to determine its effectiveness. **Methods:** In January 2017, “Dedicated Team”, was forms in Federal Territory of Kuala Lumpur & Putrajaya involving forty-eight dental personnel comprising of Dental Officers and Dental Therapists. They were divided into eighteen teams and distributed accordingly to five zones which were Lembah Pantai, Titiwangsa, Kepong, Putrajaya and Cheras. The effectiveness of the implementation of Dedicated Team were measured by observing the number of activities conducted and patients seen. The Dedicated Team’s role was not confined to the oral health promotion aspect only. They were also responsible to partake in four other aspects such as clinical prevention, collaboration with other agencies, quality initiatives and administration. **Results:** Notably in 2017, there was an increment (40%) in the promotion activities compared to the previous year (2015). The increment was due to the additional activities conducted by the Dedicated Team which include “Doktor Muda” activities, “Young Adult” activities and collaboration activities with other agencies. In addition, the number of patients who received Mouth Self-Examination training also increases tremendously from 4,233 in 2015 to 11,385 in 2017. **Conclusion:** Forming a “Dedicated Team” is effective in ensuring the implementation of the oral health promotion and prevention activities are carried out proficiently. The team is able to focus exclusively on the planning, implementation and evaluation of the oral health promotion and prevention programme.

**Keywords:** Dedicated Team, promotion, prevention

Poster presentation at the 9th National Public Health Conference 2018 on 15 – 18 July 2018 at the Royale Chulan Hotel Seremban, Negeri Sembilan

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5. PERIODONTAL TREATMENT NEEDS AND WORKFORCE REQUIREMENTS: COMPARISONS BETWEEN DIFFERENT WORKFORCE MODELS AND SKILL MIX APPROACHES

Aznilawati AA, Norintan AM

Objectives: This study assessed the trends of periodontal disease in Malaysia, and identified the differences in dental workforce requirements for periodontal care using three different workforce models namely the Health Needs, The Health Demands and The Workforce to Population Ratio models. The possibility of using difference skill mix approaches for periodontal care of adult population in Malaysia was also analysed. Methods: The prevalence of periodontal disease, periodontal treatment needs, and utilization of periodontal care were assessed based on national reports published by the Ministry of Health for year 1990, 2000 and 2010. The requirements for dental workforce for periodontal care per 100,000 adults were computed and compared between the aforementioned workforce models. The differences in dental workforce requirements were further assessed using three different skill mix scenarios. Results: The prevalence of periodontal diseases and its respective treatment needs in the past three decades remains high in Malaysia at over 90%, however the level of utilization was generally low. The least number of dentists required for periodontal care is when Health Demands model, is used, followed by the Ratio and the Health Needs model. The number of dentists needed decreased and the requirement for dental therapist increased, across the three decades, when some periodontal procedures were delegated to dental therapists in different skill mix scenario. Conclusions: There were marked differences in dental workforce requirements for periodontal care when different health workforce or skill mix models were used. Oral health planners should weigh the strengths and weaknesses of each model to obtain more realistic estimation of dental workforce for periodontal care.

Keywords: manpower, health resources, periodontal diseases, skill-mix

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**Introduction:** “KOTAK” Programme (*Kesihatan Oral Tanpa Asap Rokok*) is one of the national health promotion programme to aim reduce the prevalence of smoking among schoolchildren in Malaysia. This programme is carried out by the School Dental Team where students’ smoking status were screened during oral health screening sessions, briefing given and followed by advanced intervention programme based on their smoking status. **Objective:** This study aimed to evaluate the effects of interventions and attitude towards smoking among school children that had undergone briefing and advanced intervention cessation programme provided by the “KOTAK” programme. **Methodology:** A quasi-experimental study was carried out from October to December 2016. Clustered random sampling was done for selection of states, schools and schoolchildren which fulfilled pre-determined inclusion and exclusion criteria. A total of 1951 schoolchildren from six (6) states in Malaysia responded to the self-administered questionnaires. Data analysis was done using SPSS version 20.0. **Results:** Majority of respondents in the brief intervention groups agreed (agreed and strongly agreed) that the programme benefited them (84.4% primary school; 88.4% secondary school) while percentage was slightly lower for participants from advanced intervention group (73.2% primary school; 69.6% secondary school). There was significant difference in “the intention to smoke next year” and “after leaving the school” among the brief intervention group and the advanced intervention group in both primary and secondary schools (p<0.05; Chi Square Test). The “intentions to smoke next year” and “after leaving school” were higher among advanced intervention groups for both primary and secondary schools. **Conclusion:** Smoking cessation through “KOTAK” program benefited students and is effective in changing children’s attitudes toward smoking. This study suggests that school-based intervention by the School Dental Teams can help in reduce the prevalence of smoking among school children in Malaysia.

**Keywords:** School-based program, smoking cessation
Objective: To assess the methodological quality of existing oral cancer management guidelines for adaptation as the Malaysian guideline. Methods: A systematic search for relevant guidelines published from 2000 to 2016 was performed on selected databases / websites. Two appraisers independently assessed the selected guidelines using the Appraisal of Guidelines for Research and Evaluation (AGREE) II instrument in two stages: i) Screening of all selected guidelines using the Rigour of Development Domain and ii) Complete AGREE II appraisal. Results: Of 3192 articles identified, 15 guidelines were evaluated for their rigour of development. Eight guidelines conforming to the acceptable quality score (60%) were further assessed using all AGREE II domains. The mean quality scores for the eight shortlisted guidelines ranged from 48.9% (Applicability) to 83.1% (The Rigour of Development). Three guidelines performed well in the complete AGREE II appraisal. The National Comprehensive Cancer Network (NCCN) and the Belgian Health Care Knowledge Centre (BKCE) guidelines scored above 60% in all six AGREE II domains and the Scottish Intercollegiate Guideline Network (SIGN) guideline scored above 80% in four AGREE II domains. The intra-class correlation coefficient values ranged from 0.74-0.98. Conclusions: Overall, existing guidelines varied in the methodological and quality of reporting. The study finding suggests that the quality of a guideline needs to be critically evaluated before adapting any recommendation in practice. The NCCN, BKCE, SIGN were considered most appropriate for adaptation as the Malaysian Oral Cancer Management guideline based on the quality assessment.

Keywords: best practice guidelines; oral cancer management; quality assessment.

Poster presentation at the 18th Annual General Meeting of Malaysian Section IADR 2017 held on 18 March 2017 in Malaysia

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The current understanding of dynamic nature of the dental caries process showed lesion progression can be arrested at any stage of the process. This concept is particularly important for early caries lesions because they may self-arrest as part of the natural history of the disease or become arrested due to changes in the local environment. The dental caries pattern has changed from cavitated lesions to non-cavitated lesions especially in urban areas in this country. Considering the low progression rates of caries lesions and the aim of healthcare professionals to prevent dental caries, it has become more important to record and manage not only cavitated lesions but also early caries lesions. Controlling the caries process prior to restoration will break the cycle of re-restoration which may lead to larger restorations; and also reduce cost for restorative treatments and its complexity. At present, dental caries in Malaysia is recorded using the DMFT/X index whereby only cavitated lesions extending into dentine are recorded. This presentation aims to share on the use of the International Caries Detection and Assessment System (ICDAS) in strengthening the detection and management of early caries lesions in school dental services in Malaysia.

**Keywords:** dental caries, detection, early caries lesion, International Caries Detection and Assessment System (ICDAS) and school dental service

Oral presentation at the 1st Joint Specialist Conference 2018 on 9-11 March 2018 at Hotel Istana Kuala Lumpur

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9. **BARRIERS AND ENABLERS IN CONDUCTING ORAL HEALTH ACTIVITIES FOR PRIMARY SCHOOL IN KELANTAN: A QUALITATIVE STUDY**

_Wan Salina WS, Rosasliza A., Ahmad Termidzi Z_

**Introduction:** Daily toothbrush drill (TBD) with fluoridated toothpaste in primary school had been introduced in Kota Bharu, Kelantan since year 2013 to improve the oral health status of schoolchildren. However, since it was implementation three schools had stopped conducting the programme, seven schools reported as not conducting it regularly as required and a number of schools refused to start the programme. **Objective:** To explore the enabler and barrier factors in conducting oral health activities in primary school in Kota Bharu (daily TBD) and identify ways to improve it. **Methods:** This qualitative study using focus group discussion (FGD) approach, involving ‘guru kesihatan’ from primary schools conducted daily TBD successfully and from schools having problems after ethical approval was obtained. Eleven teachers whom agreed to participate were separated into two groups and discussions were conducted until saturated. Audio recording and field notes taken were then transcribed and analysed using thematic approach. **Results:** All ‘guru kesihatan’ generally showed interest in conducting oral health activities in their school. Among the barriers faced were time constraint, lack of information, poor monitoring by oral health staff and less support from other teachers. The enablers were commitment from the school authorities, others teachers and schoolchildren. **Conclusion:** There is a need to improve communication and feedback mechanism between parties involved, so that oral health activities can be implemented smoothly and effectively at school. Oral health awareness among teachers should be increased, so that they can help and participate actively in oral health activities at school.

**Keywords:** Daily toothbrush drill, barriers, enablers

Poster Presentation at NIH Research Week, 21-23 November 2016 at Institute for Health Management, Bangsar, Kuala Lumpur
Third place for Best Poster (Behavioral Management)

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Introduction: Cognitive function impairment is an increasing health and social problem in Malaysia and the world due to the growing number of advanced aged individuals in the population. The impairment causes health, behavioral and lifestyle changes and affects oral health. Objectives: The aims of this study were to determine the prevalence of cognitive function impairment among community-dwelling elderly in Mukim Bukit Jawa, Pasir Putih, Kelantan and its association with oral health. Methods: This is a cross-sectional study where 166 community-dwelling elderly residents were identified as participants. The list of participants was generated from multiple sources including welfare recipients and through local authority records. The elderly were selected randomly and were invited to participate in the study. The criteria for participant’s recruitments are: Malaysian, able to converse in Malay or English, age 60 and above and without psychiatric conditions (self-reported). Data collection involved a structured interview using two questionnaires, Six-Item Screener (SIS) - Malay Version as cognitive assessment tool and oral health information form followed by intra-oral examination. The dependent variables were the SIS scores (Score: 0-6; cut-off point 4 ≥ is cognitively impaired). Independent variables included socio-demographic characteristics, medical conditions, oral health status, practices and behavior which is tested for associations with the dependent variables. Data were subjected to descriptive analysis. Continuous data analyzed with independent t-test, categorical data were analyzed with Chi-Square Test and binary logistic regression to estimate odds ratio (OR). Results: The prevalence of cognitive impaired among elderly in this study was 47%. Cognitive function impairment was more prominent among the older age (mean age: 71.7 years, SD= 7.3 years). A significant declining trend was present, where the proportion of subjects with cognitive function impairments decreases as the education level increases (p=0.002). Unmarried was associated with 2.7 times higher odds of being cognitively impaired. A higher proportion of elderly who were cognitive impaired had root caries and edentulous. Elderly with cognitive impairment had significantly lower tooth brushing frequency and irregular dental visit. Betel nut chewing was significantly associated with almost five times higher odds of cognitive function impairment. Other findings in this study included the use of fluoridated toothpaste among denture wearers as denture cleaners. Conclusion: Cognitive function impairment was significantly associated with age, marital status, educational level, living arrangement, root caries, edentulism, frequency of tooth brushing, regular dental visit and betel nut chewing (p<0.05).

Keywords: Aged, Cognitive Dysfunction, Six Item Screener, Oral Health
Objectives: To evaluate the changes in dietary intake, nutritional status and caries experience after an intervention among cerebral palsy (CP) children. A community intervention study was done among 93 CP children aged 5-17 years (without feeding tube) registered at Kelantan Community-based Rehabilitation Centers. Dietary intake was captured using 24-hour diet recall and cariogenic food frequency (CFF) questionnaire. Assessment of nutritional status involved weight, height and mid-upper-arm circumferences (MUAC). Caries experiences were determined using DMFT/dft index. The variables were assessed during three visits of the 3-month interval study. Nutrition and oral health talks (ON-CP Package Module) were given to the parents/caregivers during the first and second visits (intervention group). Data were entered in IBM SPSS version 24.0 and analyzed using repeated measures ANOVA. The significant level was set as <0.05. Mean (SD) age of the CP children in intervention (n=45) and control (n=48) groups were 11.9 (4.77) and 12.1 (5.04), respectively. No significant changes were found in the nutrient intake for both groups. Energy, calcium and fat of both groups were less than the recommended intake at all level, while protein, iron, vitamin C, vitamin A and sugar were more than the recommended intake. There was a significant increase in the CFF scores in control group (P=0.003). Significant increase were also found in the nutritional status of the intervention [weight (P<0.001) and MUAC (P=0.035)] and control [height (P<0.001)] groups. Caries experiences of both groups were at the moderate level (mean DMFT 3.18-4.09) and significant increase of mean DMFT score was found in the control group (P=0.011). Both nutritional and non-nutritional factors play a role in the nutritional status of the CP children. These results also indicate that controlling the frequency of cariogenic food intake resulted in controlling the caries experiences of the children.

Oral presentation at the Nutrition Society of Malaysia (NSM) Conference 2018 on 25-26 July 2018 at Hotel Istana Kuala Lumpur

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12. DEVELOPING BEST PRACTICE GUIDELINE FOR ORAL CANCER MANAGEMENT IN MALAYSIA

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Introduction: Quality of care at every stages of oral cancer management is crucial to achieve optimal cancer outcome and to improve quality of life of cancer patients. Enhancing the quality of care for oral cancer patients requires an evidence-based framework outlining the current and best practices in patient management. An evidence-based practice guideline can be used as a decision guide for oral cancer teams and cancer patients in selecting the best option of oral cancer care. 

Objective: To develop a best practice guideline for oral cancer management in Malaysia (which includes the stages of diagnosis, treatment and follow-up care) for use by healthcare professionals managing oral cancer patients in the country.

Methods: The concept of “Guideline Adaptation” was used in the development of the Malaysian guideline. The core methodologies used were reviewing of high quality evidence and adoption as well as adaptation of recommendations from the existing guidelines, blended with expert judgements from a multidisciplinary group. Following the Practice Guidelines Evaluation and Adaptation Cycle (PGEAC), the guideline development process consists of six steps: i) identify clinical areas to promote best practice, ii) literature search to identify existing guidelines, iii) assessment of the guidelines in terms of quality, currency and content, iv) adopt and adapt guidelines for local use, v) seek multidisciplinary specialists feedback and vi) finalizing best practice guidelines.

Results: Initially, fifteen potential existing guidelines were selected through a systemic literature search. Of the fifteen guidelines, three guidelines that were developed by the Comprehensive Cancer Network (NCCN), Belgian Health Care Knowledge Centre (BKCE) and Scottish Intercollegiate Network (SIGN) were selected based on their good performance in the quality assessment using the AGREE II instrument. As the currency assessment revealed that all the three shortlisted guidelines were still up-to-date, these guidelines were considered the most appropriate to be included in the development of the local guidelines. On the basis of content analysis, the expert panel agreed to adopt 81 recommendations from the three guidelines whereas 10 recommendations were accepted with modification and one new recommendation was added to the draft guidelines. The draft version of the Malaysian guidelines comprised three sections (Section 1: Introduction, Section II: Development of the guidelines and Section III: eighty-eight clinical recommendations and summary of the evidence) and the algorithm of the whole process of oral cancer management. In response to the specialists’ feedback, some minor changes and additional recommendation were made to the draft. The final 47-pages Malaysian guidelines comprised three similar sections as in the draft, eighty-eight recommendations, as algorithm, and clinical audit indicators for quality management.

Conclusion: The comprehensive Malaysian guideline with a final number of 88 recommendations
was produced through a rigorous process in an attempt to cover all aspects of oral cancer management. Adherence to the guidelines in managing oral cancer patients in this country is expected to improve the quality of care and health outcome of the cancer patients.

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Objective: To determine the factors associated with caries experience (CE) and nutritional status (NS) among children with cerebral palsy (CP). Methods: A cross-sectional study was done on children with CP aged 5-17 years in Kelantan. Data on CE were collected using DMFT/dft index. Weight and height were entered into AnthroPlusTM to obtain the BMI-for-age Z-score (BAZ) and height-for-age Z-score (HAZ). Dental plaque maturity, dietary pattern, parents'/caregivers' oral health (OH) knowledge, attitude, practice and socio-demographics were also collected. Data were analyzed using IBM SPSS version 24.0. Multiple linear regression was used and the significance level was set at p<0.05. Results: Of the 93 subjects [mean (SD) age=12(4.9)], 94% were Malays and 56% were immobile. The median (IQR) DMFT and dft were 0.5(4.00) and 3.0(8.00), respectively. Half and 90% of the children were thin/severely thin and stunted/severely stunted, respectively. Daily sugar exposure (DSE) and mature/acid-producing plaque were significantly associated with DMFT (P<0.05). OH practice was associated with dft (P=0.020). BAZ was associated with the mobility of children, OH practice and vitamin A (P<0.05). Children’s age was associated with HAZ (P=0.001). The other socio-demographic factors, immature plaque, OH knowledge and OH attitude were not significantly associated with the CE and NS of the children. Discussion: It is well-known that sugar and plaque are the factors of dental caries. Parents'/caregivers’ OH practice affected the deciduous teeth due to the dependency of the younger children. Literature supports the association between mobility and BAZ. Vitamin A with the functions of maintaining growth, epithelial cellular integrity and immune function might affect the BAZ. Conclusion: Factors associated with CE of the children with CP were DSE, mature/acid-producing plaque and OH practice, while factors associated with NS were mobility, OH practice, vitamin A and children’s age.
Objective: To determine the ability of secondary schoolchildren receiving incremental dental care in Jempol District to remain caries-free by investigating the incidence, severity and rate of dental caries development among them over a period of 4 years. Methods: This was a 4-year retrospective cohort study, involving all secondary schoolchildren in Jempol aged 13 years in 2013. Each child’s caries experience was recorded annually using World Health Organization criteria. The rates of dental caries were described as relative risk and incidence density of carious lesions, calculated from baseline (2013) to final examination (2017). All data obtained was statistically analysed. Results: The sample consisted of 942 schoolchildren, of which 685 (72.7%) children were caries-free and 257 (27.3%) children had caries at baseline examination. The mean DMFT for both caries-free children and children with caries after four years had increased from 0 to 0.61 and 1.91 to 3.43 respectively. Results also revealed that the incidence of developing caries among caries-free children after four years was 28.76% with a low relative risk of 0.288. The incidence density of caries-affected persons (IDp) within this period was 8.40 persons/100 person-year of observation. Conclusion: Only 51.8% of caries-free children were able to remain caries-free since young. This indicates the need for improvement to reach a higher level of oral healthcare with better tailored prevention, promotion and close monitoring activities.
Cariogenic food intake frequency and oral health knowledge, attitude and practice (KAP) of parents are contributing factors that influence oral health status of the children. Based on literature search, questionnaire in Bahasa Malaysia is not available to measure these factors. This study was carried out to establish linguistically valid and reliable of Cariogenic Food Frequency Questionnaire (CFFQ) and Oral Health Knowledge, Attitude and Practice Questionnaire (OHKAPQ) for parents of children aged 6-11 years old in Kota Bharu, Kelantan. This was a cross sectional study of which the CFFQ and OHKAPQ were selected from studies by Habibian et al. (2001) and Watt et al. (2004) and had undergone a translation process through multi-step procedures. Forward translation had been done by two independent and bilingual translators for each questionnaire. Both forward translations have been synthesized to produce a common Bahasa Malaysia version of CFFQ and OHKAPQ before sending for backward translation. Preliminary Bahasa Malaysia version of both questionnaires was achieved during consolidation stage. Following pre-test stage, ten parents from a primary school in Kota Bharu were recruited via quota sampling. Respondents were asked to give their opinion, suggestion and comments regarding the preliminary Bahasa Malaysia version of CFFQ and OHKAPQ via face-to-face interview. The findings were reviewed back to produce the final Bahasa Malaysia version. In test-retest reliability study, 49 eligible parents from other primary school in Kota Bharu were recruited via quota sampling. They were asked to answer the final Bahasa Malaysia version of CFFQ and OHKAPQ two times, within 7 to 14 days interval. Data collected in this study were entered in IBM SPSS version 22 and analysed using Intraclass Correlation Coefficient (ICC) test. As the result, semantic, idiomatic, experiential and conceptual issues regarding the items were resolved during synthesis and consolidation to produce preliminary Bahasa Malaysia version of CFFQ and PHKAPQ. The final Bahasa Malaysia version of CFFQ and OHKAPQ were achieved the after pre-test stage. Both final questionnaires satisfactorily achieved equivalence between the English version questionnaires. Meanwhile, the total ICC value for the final Bahasa Malaysia version of CFFQ and OHKAPQ were 0.887 and 0.807 respectively, indicated excellent agreement between test and retest study. This showed that Bahasa Malaysia version of CFFQ and OHKAPQ are stable between the two different occasions or time. As for conclusion, Bahasa Malaysia version of CFFQ and OHKAPQ appeared to be linguistically valid and reliable with excellent test-retest reliability (ICC>0.80)

Keywords: linguistic, cariogenic, oral health, questionnaire, test-retest reliability

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Oral healthcare for the adolescents is provided under the School Dental Service, Ministry of Health Malaysia since 1950s. Mobile dental teams and mobile dental clinics are used to cover the maximum number of schoolchildren aged 6 until 17 years old. The Incremental Dental Care (IDC) approach is used to provide comprehensive dental treatment to schoolchildren with the aim to achieve and maintain orally-fit status. On average, 2.7 million primary schoolchildren and 1.9 million secondary schoolchildren were examined annually. Dental examination, dental health education as well as dental treatment are provided to schoolchildren at school. Service data are collected monthly through the e-reporting of the Health Information Management System (HIMS). Impact indicators monitored include dental caries experience and maintaining orally-fit for 12 year-old and 16 years-old schoolchildren. Caries experiences are measured using Decay, Missing, and Filled Teeth (DMFT) index whilst maintaining orally-fit are those who do not require treatment. There is an increasing trend in the proportion of caries free dentition for both age group; from 52.4% (2000) to 67.2% (2015) for the 12 year-old and from 35.0% (2000) to 56.0% (2015) for the 16 year-old. Among those with dental caries, the average mean DMFT for the 12 year-old had also reduced from 1.05 (2005) to 0.82 (2015) and from 1.6 (2005) to 1.4 (2015) for the 16 year-old schoolchildren. Similarly, dental caries experience (D component) has also decline from 0.32 (2005) to 0.26 (2015) for the 12 year-old and from 0.32 (2005) to 0.30 (2015) for the 16 year-old schoolchildren. However schoolchildren are noted to require scaling and oral hygiene instructions due to presence of calculus and gingivitis. This corresponds to the decrease in proportion of schoolchildren maintaining orally-fit from 71.9% (2005) to 69.0% (2015) among the 12 year-olds and from 68.6% (2005) to 68.2% (2015) among the 16 year-olds. More efforts in ensuring good oral hygiene practice among schoolchildren need to be further emphasized.

Keywords: schoolchildren, caries experience, maintaining orally-fit

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Introduction: The oral healthcare services for Orang Asli is provided by the State Oral Health Division namely Pahang, Perak, Kelantan, Selangor, Negeri Sembilan, Johor, Melaka, Terengganu and Kedah through outreach services. The provision of oral healthcare services to the Orang Asli community include promotive, preventive, curative and rehabilitative. **Objective:** To describe the oral healthcare rendered to Orang Asli community by target groups. **Methods:** This is a 5 year retrospective record review. Data were obtained from the Oral Health Data System from 2013-2017. **Results:** Overall, there is an increasing number of Orang Asli seen at Primary Oral Healthcare Services, Ministry of Health, Malaysia from 40,806 (2013) to 46,522 (2017) especially among the toddlers, pre-schoolers, schoolchildren and special needs. Fissure sealant were rendered to 0.5% of the pre-schoolers and 3.8% of the primary schoolchildren in 2013 and increased to 1.7% and 9.3% respectively in 2017. There is also an increasing number of participants for oral health promotional activities from 33,828 (2013) to 52,728 (2017). The provision of dental restorations had increased from 9,456 (2013) to 10,994 (2017) whom the majority were provided to primary schoolchildren. In 2017, 14.5% of the secondary schoolchildren seen received scaling with an increase of 10.5% from 2013. Meanwhile, the number of permanent teeth extracted had reduced from 1,852 (2013) to 1,734 (2017). Similarly, provision of dentures had also reduced from 0.8% (2013) to 0.7% (2017) for adults and 4.3% (2013) to 2.6% (2017) for senior Orang Asli. **Conclusion:** There is a need to increase accessibility to oral healthcare services for Orang Asli community especially among adults and senior Orang Asli.

**Keywords:** Orang Asli, target group, oral healthcare services

Poster presentation at the 20th Islamic Medical Association of Malaysia Annual Scientific Conference 2018 on 28-30 September 2018 at Grand Blue Wave Hotel, Shah Alam

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Objective: To determine oral health status of schoolchildren in Malaysia in terms of dental caries, gingival condition, traumatised anterior teeth and denture status. Methods: This cross-sectional survey targeted 12-year-old schoolchildren attending the government, government-assisted and registered private schools. A two-stage stratified cluster sampling was employed. List of the government, government-assisted and registered private schools in year 2016, formed the Primary Sampling Unit (PSU), while list of schoolchildren of the selected schools who were born in 2005 was used as the Secondary Sampling Unit (SSU). A total of 399 schools were randomly selected using the probability proportional to enrolment size, while the children were selected through a Simple Random Sampling Technique. Data collection through oral examination on schoolchildren based on the WHO criteria (2013) was carried out by calibrated Dental Examiners. Results: A total of 12,020 children were eligible to participate in the survey with 11,511 were successfully examined, yielding a 95.8% response rate and were weighted to represent 444,626 schoolchildren aged 12 years. Almost all children [99.8%, (95% CI, 99.57 – 99.91)] had gingival bleeding with the mean number of teeth affected with gingival bleeding per child was 21.16 teeth. About one-third [33.3% (95% CI, 31.91 – 34.71)] had dental caries with mean DMFT per child was 0.78 (95% CI, 0.74 – 0.82). About 7.2% (95% CI, 6.50 – 7.99) have traumatised anterior teeth. Only 19 schoolchildren of the weighted population (0.00%) had denture and 0.16% needed dentures. Conclusions: Almost all schoolchildren had gingival bleeding. About 1 in 3 had dental caries, 7 in 100 had traumatised anterior teeth and very few were found wearing dentures. There is a continuing need to seriously enhance empowerment on oral health awareness among the schoolchildren with emphasis on the importance of self-responsibility of good oral hygiene.

Keywords: oral health status, Malaysia, 12-year-olds, schoolchildren

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19. PERCEPTION ON ORAL HEALTH STATUS AMONG ELDERLY PATIENTS ATTENDING CHERAS GOVERNMENT DENTAL CLINIC, KUALA LUMPUR

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**Background:** As the percentage of older population continue to increase in Malaysia, the need for extensive and current information on this older population increases. Hence, a systematic collection of data on the oral health status (OHS) of the elderly is timely. This is required to plan and implement the elderly programme in an effective manner. It is necessary to take into account their perceptions towards OHS, their expressed demand for treatment and the need for dentures, as the demand for it is still high. **Objectives:** This study investigated the perception of the elderly towards Oral Health Status in Cheras, Kuala Lumpur. **Methods:** This was a cross-sectional study involving elderly who were attending the government dental clinics in Cheras. Face-to-face interview using a validated Geriatric Oral Health Assessment Index (GOHAI) questionnaire was conducted with consenting patients. This was followed by an oral examination by a trained dental officer. **Results:** In all, 240 subjects from three government dental clinics (Cheras, Bandar Tun Razak and Cheras Baru) participated in the study. Amongst them 132 (55%) were males and 108 (45%) were females. Mean age was 67.5 + 5.8 years and range from 65-90 years. More than half of the sample perceived their OHS to be ‘Good’. There were no significant differences in perceived OHS and gender (P>0.05). The educational level of subjects and those who perceived their OHS as ‘Good’ were significant (P=0.001). Similarly, the proportion of subjects who perceived their OHS as ‘Good’ were significantly different from those who need dentures (P<0.001). **Conclusion:** There is a need to strengthen oral health promotional activities, in particular, the importance of maintaining good oral health status in the elderly in our community.

**Keywords:** Epidemiology, Elderly, Oral Health Status
20. PERSONAL HYGIENE AMONG ADOLESCENTS IN MALAYSIA: NATIONAL SURVEY FINDINGS IN 2017

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Introduction: Personal hygiene (oral and hand hygiene) is considered as one of the basic preventive measures to improve community health towards the prevention of communicable and infectious diseases among adolescents. **Objective:** To assess the prevalence of hygiene practices (including oral hygiene) among Malaysian adolescents. **Methodology:** This cross-sectional survey was undertaken in 2017 over a 3 month period, involving schoolchildren aged between 13 and 17-years-old. A two-stage cluster sample design was utilised. Data was collected using self-administered questionnaire and was analysed using SPSS version 22. Usage of fluoridated toothpaste, frequency of tooth brushing, hand washing before eating and after using the toilet as well as the use of soap were among the main measurements. **Results:** For oral hygiene practice, only 58.3% of adolescents used fluoridated toothpaste and 12.8% demonstrated poor oral hygiene practice (did not brush, brushing once and less than once per day). In terms of hand hygiene practice, 11.6% never or rarely use soap during hand washing, 6.1% never or rarely wash hands before eating and 4.8% never or rarely wash hands after using the toilet. **Conclusion:** There is a need to further inculcate good oral and hand hygiene practice, in schools and at home through health promotion activities and health education among adolescents and agents of behavioural change such as school staff, parents and the public.

**Keywords:** Oral hygiene, personal hygiene, adolescents, Malaysia Adolescent Health Survey

Poster presentation at the 32nd International Association for Dental Research (IADR) on 11-14 September 2018 at Da Nang City, Vietnam

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**Introduction:** Oral Health-Related Quality of Life (OHRQoL) measures should be tested for their sensitivity and responsiveness to changes in OHRQoL if they are to be used as outcome measures in clinical interventions. **Objectives:** (a) To evaluate the sensitivity of the Malay version of Early Childhood Oral Health Impact Scale (Malay-ECOHIS) to dental treatment of early childhood caries (ECC) under General Anaesthesia (GA) by: (i) assessing changes in the distribution of Malay-ECOHIS scores before and after treatment under GA, (ii) assessing the association between Malay-ECOHIS change scores and severity of decayed teeth (dt) categorized by the median and percentile score, (iii) assessing the correlation between Malay-ECOHIS change scores and the number of decayed teeth, and (iv) assessing the correlation between Malay-ECOHIS change scores and number of extracted teeth; (b) evaluate the responsiveness of the Malay-ECOHIS to dental treatment of ECC under GA by comparing whether the observed changes in Malay-ECOHIS scores and effect size (ES) took the form of a gradient across the global transition judgement; and (c) establish the Minimal Important Difference (MID) of the Malay-ECOHIS. **Methods:** A consecutive sample of parents of 158 preschool children (aged 6 and younger) with ECC attending five public hospitals in Selangor for dental treatment under GA was recruited over an 8-month period. Parents self-completed the Malay-ECOHIS prior to and following their child’s dental treatment. In addition, parents answered a global health transition judgement concerning the change in their child’s overall oral health condition compared to before treatment. Data were analyzed using independent and paired samples T-test, ANOVA, Pearson correlation, and standardized scores. **Results:** Overall, 138 children completed the study with response rate of 87.3%. The final sample comprised parents of 76 male (55.1%) and 62 female (44.9%) preschool children with mean age of 4.54 years (SD=1.01). The ECOHIS mean score after treatment was significantly lower compared to before treatment. This significant reduction in mean score existed for total Malay-ECOHIS, Child Impact Section (CIS), Family Impact Section (FIS), and all the sub-domains, respectively (P<0.001). The magnitude of change (ES) of total Malay-ECOHIS following treatment was +1.0 and among domains ranged from +0.4 to +1.9. There was no significant association between Malay-ECOHIS change scores and severity of decayed teeth (dt) categorized by median or percentile score. However, there was a weak, positive correlation between number of decayed teeth (dt) and Malay-ECOHIS (r=0.165, p=0.05) and CIS change scores (r=0.175, p<0.05), respectively. No significant correlation was found between Malay-ECOHIS change scores and number of extracted teeth. Based on global health transition judgement, 62.3% of parents reported their child’s oral condition “a little improved” while
37.7% reported “much improved” following treatment under GA with ECOHIS mean change score of 6.7 (ES=+1.1) and 9.6 (ES=+1.2), respectively. There was an observed gradient in the changes of Malay-ECOHIS scores and effect sizes in relation to global health transition judgement of oral change following treatment, supporting the responsiveness of the measure. The Malay-ECOHIS MID was found to be 7-point change with large ES of +1.0. **Conclusion:** The Malay-ECOHIS is empirically proven to be sensitive and responsiveness to dental treatment of ECC under GA.

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Oral presentation at 16th Annual Scientific Meeting and 18th AGM of Malaysian Section IADR at Armada Hotel, Kuala Lumpur.

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Purpose of the study: To determine and correlate the dental caries experiences, dental plaque maturity score (DPMS) and daily sugar exposure (DSE) among cerebral palsy (CP) children in Kelantan. **Materials and Methods:** A cross-sectional study was conducted on 96 CP children aged 5-17 years from Community-Based Rehabilitation Centres in Kelantan who were not on feeding or gastrostomy tube. Dental caries experiences was determined by DMFT/dft index. DPMS was determined using GC Tri Plaque ID Gel® (0=without plaque, 1=immature plaque, 2=mature plaque and 3=acid-producing plaque) and DSE is used to measure the caries risks of the children (0-4=low risk, 5-7=moderate risk and ≥8=high risk). Statistical analysis was done using IBM SPSS version 24.0. Pearson correlation analysis was used and the significant level was set at <0.05. **Results:** Among 96 CP children, majority were boys (54.2%) with the mean (SD) age of 11.9 (4.86) years. Almost half (42.7%) of the children never had any dental visit. The mean (SD) DMFT, dft, DPMS and DSE were 3.7 (5.47), 3.1 (4.99), 2.5 (0.68) and 6.1 (2.49), respectively. There was no significant correlations before caries experiences and DPMS with DSE (P>0.05) as well as before DPMS and DSE (>0.05). **Conclusions:** CP children in Kelantan had a moderate level of caries experience, with presence of mature to acid-producing plaque and at moderate risk of dental caries based on DSE. Both dental caries experience and plaque maturity were not significantly correlated with DSE. Parents of CP children should play a crucial role in controlling the daily sugar consumption, plaque removal and regular dental visits to improve their oral health status. This study was supported by CPRC RU Top Down Grant No.1001.CSKK.870020 and CPRC team members.

**Keywords:** Cerebral palsy, oral health, sugar exposure.

Oral presentation at 1st Joint Specialist Conference on 9th – 11th March 2018 at Istana Hotel, Bukit Bintang, Kuala Lumpur.

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Background: The Early Childhood Oral Health Impact Scale (ECOHIS) is used to assess oral impacts on the quality of life of preschool aged children and their families. The objective of this study was to perform a cross-cultural adaptation of the ECOHIS into Malay and assess its psychometric properties. Methods: The cross-cultural adaptation of ECOHIS into Malay comprised of translating the ECOHIS into the Malay language (Malay-ECOHIS) by experts followed by face validation of the Malay-ECOHIS by a group of mothers. The Malay-ECOHIS was back translated into English and this was compared with the original ECOHIS. Minor changes were made to the Malay-ECOHIS before it was finalised. The Malay-ECOHIS' psychometric properties were assessed in terms of construct, convergent and discriminant validity as well as internal and test-retest reliability based on two separate studies involving 127 parents of 4–6 year old preschool children followed by oral examinations of 860 preschool children from 25 kindergartens from two districts in Selangor state, Malaysia. Non-parametric statistics were used to assess the relationships between the Malay-ECOHIS and the subjective and clinical outcome measures. Results: The Cronbach’s alpha was 0.83 and the weighted Kappa was 0.95 (intraclass correlation = 0.94). The Malay-ECOHIS demonstrated significant associations with different subjective and normative measures, i.e. levels of oral health satisfaction, perceived oral health status, perceived oral health need, toothache experience, pattern of dental attendance, and caries status of preschool children. These significant associations supported its construct, convergent and discriminant validity as well as internal and test-retest reliability. Conclusion: This study showed that the Malay-ECOHIS is a valid and reliable instrument to assess the negative impacts of oral disorders/conditions on the quality of life of 4–6 year old preschool children and their families in Malaysia.

Keywords: Malaysia, Oral health, Preschool children, Quality of life


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RESEARCH IN BEHAVIOURAL ASPECTS IN RELATION TO ORAL HEALTH
Dental radiography is an integral part of everyday practice in dentistry. Although the radiation dose of dental radiography is relatively low in comparison to other medical radiographic procedures, the cumulative effect of repeated exposure should be heeded. Radiation hazards are harmful and it becomes precarious if there is professional negligence or ignorance. In Sarawak, Dental Surgery Assistants (DSAs) are trained to take dental radiographs. **Objectives:** To assess the awareness, attitude and clinical application regarding the practice of safe radiation procedures among DSAs, their level of confidence in radiograph taking and their training needs in radiation safety in Sarawak Public Health Oral Health Service. **Methods:** A cross-sectional study was conducted on 260 dental surgery assistants in Sarawak Public Oral Health Service. A survey using a self-administered structured questionnaire (based on the Malaysia Dental Council’s guideline on radiation safety and other validated instruments) was undertaken among DSAs who took dental radiographs in year 2017. The questionnaire consisted of DSAs’ demographic information, availability of radiation safety facilities and equipment in their clinics, DSAs’ awareness, attitude and clinical application of radiation safety, training needs, and their level of confidence. Reliability, face and content validity of this questionnaire was assessed. Descriptive and bivariate statistics were used for analyzing the data using SPSS version 22.0 software. Statistically significant level was set at p<0.05. **Results:** The overall response rate was 86.9%. Fourth-fifths of the respondents worked in urban clinics. About 41.2% of the clinics had conventional x-ray machines, whereas 56.2% was equipped with digital x-ray machines. All the clinics had lead aprons, but x-ray film holders were still lacking. Majority of the clinics used round collimator and D-speed films. Three-quarters of the DSAs had moderate awareness of radiation safety (poor = 11.1%, moderate = 73.5%, good = 15.4%). In terms of attitude, two-thirds of them had good attitude regarding radiation safety (poor = 38.1%, good = 61.9%). In terms of compliance to clinical application, majority of them only partially complied to the clinical application of radiation safety measures (partial compliance = 96%, full compliance = 4%). Only about two-thirds of the DSAs read the MDC’s Guidelines on Radiation Safety. Two-thirds of them received prior training, but most of the training was received more than two years ago. DSAs’ awareness and attitude were significantly correlated with their clinical application. Their awareness, attitude and clinical application of radiation safety were not significantly associated with gender, working experience, and clinic location. The mean score of awareness was significantly associated with prior training received, and the mean score of clinical application was significantly associated with the reading of MDC guidelines. The confidence level of radiograph
taking was significantly associated with their awareness, attitude and clinical application of radiation safety as well as prior training received and timing of last training. **Conclusions:** It can be concluded that DSAs’ awareness, attitude and clinical application of radiation safety in Sarawak Public Oral Health Service is deemed not satisfactory and in urgent need of further improvement. Therefore, more emphasis should be placed on radiation safety and radiation protection methods in the existing DSAs’ training curriculum and in-house continuous dental education at the state and district level. Besides that, monitoring of radiation safety should be improved through quality assurance program.

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Introduction: Due to the high caries prevalence (71.3%) among 5-year-old children in the recent national oral health survey (Oral Health Division, 2017), future interventions should target younger aged group children including their teachers. The literature showed that teachers’ oral health literacy (OHL) was significantly associated with children’s oral health status. They tended to provide good supportive environment for health to children to develop good oral hygiene habits. However, such evidence is lacking among TASKA teachers in Malaysia. If such associations exist, a suitable programme targeting TASKA teachers could be introduced or made compulsory to improve their OHL. Objectives: 1) To assess the OHL of TASKA teachers. 2) To assess the presence of oral health-related activities, facilities and nutrition policy at the TASKA. 3) To assess the utilization of oral health service by TASKA teachers. 4) To assess the association between teachers’ OHL and socio-demographic factors, oral health-related activities, facilities and nutrition policy at the TASKA, and their utilization of the oral health service. Methods: A cross-sectional study was done using universal sampling on 252 TASKA teachers from the Petaling District, Selangor. Teachers answered self-administered questionnaire consisted of items on teachers’ socio-demographic characteristics, the Malay version of Dental Health Literacy Assessment Instrument (DHLAI), TASKA-based oral health-related activities, facilities and nutrition policy, and teachers’ utilization of oral health service. Data collected were analysed using SPSS version 23 software. Data analysis involved parametric and non-parametric statistics. Statistically significant level was set at p<0.05. Results: The response rate was 93.7%. In terms of TASKA teacher’s OHL, 78.6% of teachers had good OHL, 25.8% had good score in the knowledge domain, 36.0% in the comprehension domain and 90.6% in the skills and motivation domain. Mean score for total OHL was 40.7 (95% CI = 40.0, max range = 0-56), knowledge domain was 7.0 (95% CI = 6.7, 7.3, max range = 0-12), comprehension domain was 4.0 (95% CI = 3.8, 4.1, max range = 0-5) and skills and motivation domain was 29.4 (95% CI = 28.8, 30.0, max range = 0-39). There was a significant association between knowledge and comprehension domains with types of TASKA (p=0.0020 and p=0.013, respectively). There was a significant association between knowledge and comprehension domains with attendance of oral health seminar (p=0.006). For TASKA-based activities, there was a significant association between knowledge domain and ‘lift the lip’ oral examination (p=0.012). A significant association was also found between the comprehension domain and oral health-related quizzes, drawing and colouring, and hand hygiene practice (p=0.041 and p=0.025, respectively). The teachers’ skills and motivation were significantly associated with hand hygiene practice of the children (p=0.034).
Conclusion: Majority of the teachers had good OHL with significant impact on TASKA-based oral health-related activities, facilities, nutrition policy and utilization of oral health service. The potential of teachers in becoming an agent for oral health promotion activities in TASKA should be considered in future oral health promotion programmes.

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Introduction: Electronic cigarettes (e-cigarettes) have become increasingly popular among smokers worldwide. Concern has been expressed about the use of e-cigarettes attributed to the harmful effects of e-cigarettes. Recent data demonstrate the growing use of e-cigarettes among young adults, especially the college or university students. This is concerning as a significant proportion of them reported being non-tobacco smokers. Despite the increasing trend, very limited research has been found on e-cigarette awareness, knowledge, usage and perceptions among young adults especially university students in Malaysia. 

Objectives: To determine awareness, knowledge, use and perception on e-cigarettes among the undergraduate students at the University of Malaya (UM), compare the study outcomes by gender, ethnicity, faculties (health, science non-health, non-science) and smoking status as well as associations between demographic information, awareness, knowledge and perception with the use of e-cigarette. 

Methods: A cross sectional study was conducted among 1475 final-year undergraduate students in the UM from February to March 2018. A multi-stage sampling method was employed and a customized self-administered questionnaire was used to measure awareness, knowledge, use and perception of e-cigarettes. Data were analysed by SPSS version 23.0 software using both descriptive and inferential statistics. The P-value was set at <0.05. 

Results: Of the 1475 participants, almost all had ever heard, ever seen but less had ever touched e-cigarettes in their life. The majority knew what e-cigarette was or what vape means but did not know the types, content and level of nicotine in the e-cigarettes. Only a small proportion (8.9%) of the participants were the ever e-cigarette user. Some of the participants perceived that e-cigarettes made them addictive similar to tobacco cigarettes, got a bad cough, had trouble catching their breath, and got them into trouble. Some disagreed that e-cigarettes were able to be used in places that do not allow smoking, made them look more mature, and gave them better concentration. A significant proportion of the participants also perceived that e-cigarettes could make them feel less stressed, could help to cut down on cigarettes, and make the users look cool. Significant differences were found across gender, ethnicity and smoking status in the awareness, knowledge, use, perceived risks and total perception. Significant associations between had ever touched, knowing the types of e-cigarettes, learning e-cigarettes from friends and television, perceived risks of having mouth sores and get into trouble as well as perceived e-cigarettes as being less harmful than tobacco and the use of e-cigarette among these undergraduate students were also observed. 

Conclusion: Prevalence of awareness, knowledge, perception and use of the e-cigarettes among the final year undergraduate students in UM ranged from very high (97%) to low (8.9%)
respectively. Although faculty background had a low impact on the study outcomes, significant differences were exhibited between gender, ethnicity and smoking status. Awareness, knowledge and perception were significantly associated with the use of e-cigarettes of which preventive measure could be planned and implemented.

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Volunteerism is always seen only as a substance to only strengthen a resume. But many missed out as how much volunteerism can be used as a tool to reach the community. Doing my project under the name Dental Relief Malaysia, little knows that this is actually a one man mission and not a team. With support from random volunteers, I have been doing dental awareness camp since 2016 and indirectly impacted around 3000 people around the world in only 2 years focussing on marginalized community, refugees and rural area My mission is not restricted in spreading dental awareness only but also to provide simple training to local leader who can monitor villagers oral health, especially in village at the radius above 50km from the nearest dental clinic. Currently, I am starting a Social Enterprise called Little Happiness Project Enterprise. LHP will be a platform to generate income for my upcoming mission in which for each toothbrush sold, one will be donated to the rural community who are unaware on the importance of oral health. Used toothbrush can be returned back to us to be exchange for pencil. By doing so, we are tackling 5 main United Nation Sustainable Development Goals (SDGs) which are:

GOAL 3: Good Health and Well-being
GOAL 4: Quality Education
Goal 12: Responsible Consumption and Production
Goal 14: Life Below Water
Goal 15: Life on Land

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Introduction: Oral health problems are common in people with HIV/AIDS (PLWHA). Objective: To identify oral health knowledge, attitudes towards oral healthcare and oral health related quality of life (OHRQOL) among PLWHA. Oral health status, treatment need, oral healthcare seeking behaviour, barriers to oral healthcare, and factors associated with oral healthcare utilisation were also determined. Methods: This cross-sectional study involved 224 patients who sought medical care at the Infectious Disease Clinic, Hospital Raja Perempuan Zainab 2 Kota Bharu, Kelantan. Self-administered questionnaire was used to obtain information on variables of interest. Clinical oral examination was done and patients’ medical records were reviewed. Results: Almost half of the respondents (43.7%) perceived their oral health as good or very good although majority reported at least one oral health problem (88.4%). More than half answered incorrectly or did not know about common oral health problems related to HIV. Almost half (45.1%) were unwilling to disclose their HIV status to dentist. For most respondents, the last dental visit was more than two years ago (51.8%) and 4.5% had never been to a dentist. More than half (63.4%) claimed they will seek care immediately if they have oral health problem. Perceived barriers to oral healthcare include low perception towards oral health (81.7%), dissatisfaction with quality of services (66.5%) and dental fear (44.6%). The prevalence of dental caries was 98.2%, and 87.9% was untreated. Most required restorations (68.0%) and extractions (67.5%). Only 2.9% had healthy periodontium and more than half (74.3%) presented with clinical attachment loss. HIV-related oral lesions were found in 18.3% of the respondents. The prevalence of impact due to oral health problems was 46.9%. Respondents who were female, infected through homosexual relationship, unwilling to disclose HIV status, had intention to seek immediate oral care when having problem, not on antiretroviral treatment, not having dental fear, having at least one oral health problem, and not having untreated carious tooth were more likely to utilise oral healthcare within the last two years. Conclusion: Most PLWHA in this study were not aware about common oral health problems associated with HIV. Their oral health status was poor and dental treatment needs were high. Their OHRQOL was also negatively affected. Oral health care utilisation was poor although most reported positive oral healthcare seeking behaviour. This study highlights the importance of oral health education among PLWHA and incorporation of regular oral examinations as part of patient management.

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29. **IKON GIGI PROGRAMME: CREATING AWARENESS AMONGST PERAK’S ABORIGINE COMMUNITY**

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Aborigines, almost in anywhere in the world are often neglected. Till today it is estimate that only 70% of all aborigines in Malaysia are registered with the National Registration Department. Their lack of presence to the rest of the community results in a gap in health care service and health education, causing poorer overall oral health status amongst the aborigines. Perak, being one of the states with high percentage of aborigines in the country, through the Oral Health Department Perak, takes the opportunity to expand its oral health awareness efforts by extending it to the aborigine community. The dental ambassador, aptly name *Ikon Gigi* are the pioneer for this effort with collaboration from government sector, NGOs and private companies. Activities are done periodically by the *Ikon Gigi* including tooth brush drill, talks, oral health screening and treatment and oral health care demonstration. This has proven to be fruitful as the number of aborigines in Perak in participatin in health care programs dramatically increased over the past 2 years since this effort was started. **Aim:** To educate the aborigines of Perak on oral health care through implementation of, the *Ikon Gigi* Programme. **Materials and methods:** Volunteerism and platform for activities at the aborigines’ residency. **Conclusion:** The community has shown to react positively to the *Ikon Gigi* Programme. This is especially true for the aborigines in Perak, whom was previously avoiding promotion efforts by the oral health team. An increase of public participation in oral health related activities and acceptance of oral health messages are testaments of the achievement of the programme. *Ikon Gigi* marks a new way of conducting oral health promotion effort and may serve as our way forward in the future.

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30. KNOWLEDGE, ATTITUDE AND PRACTICE ON INFECTION CONTROL AMONG TRAINEE DENTAL NURSES IN CHILDREN DENTAL CENTRE AND TRAINING INSTITUTE MINISTRY OF HEALTH (DENTAL) GEORGE TOWN, PENANG

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Introduction: Infection control is one of the important aspects in clinical dental setting as oral health practitioners are at risk of infections caused by microorganism such as Hepatitis B and HIV. It can be transmitted through infectious materials, equipment, environmental surface, water or air. Thus, the aims of the study were to determine the level of knowledge and attitude towards infection control among the Trainee Dental Nurses as they are at risk of exposure to infectious diseases.

Materials and methods: This is a cross-sectional study using a self-administered structured questionnaire for the 2nd and 3rd year trainee Dental Nurses in 2015. Data on knowledge and practice of infection controls were obtained and analyzed using t-test. Results: A total of 248 responses were analyzed in which 116 were in 2nd year whilst 132 were in 3rd year of courses. The mean age of the respondent is 24.4 years old and majority of the respondents were Malays. On the level of knowledge, 204 (82.3%) of the respondents have “good” knowledge whilst 44 (17.7%) have “moderate” knowledge. The 3rd year group have lower level of knowledge than the 2nd year (P = 0.001). The 3rd year group show better compliance on handling percutaneous injury (P=0.02). Both group show better attitude and practice on hand washing (97.6%) as compared to hand rub (82.5%). About 99.6% of the respondent felt that PPE were important, of which 92.7% of them wearing mask and glove while about 81.5% only wore face shield. Approximately 95% of 2nd year trainees felt that instrument drying before sterilization were important as compared to 3rd year trainee which was only 4.5%. Conclusion: Trainee Dental Nurses has moderate level of knowledge, attitude and practice on standard precaution, PPE and percutaneous injuries. It also reported poor attitude and practice on sterilization among trainee dental nurses. Emphasizing on this matter on knowledge and skill is a paramount agenda in this institution and more continuous monitoring in clinical setting has been executed to produce competent dental auxiliaries in the Ministry of Health, Malaysia.

Keywords: infection control; trainee dental nurses; level of knowledge, attitude and practice.

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Introduction: *Modul Boneka untuk Prasekolah* is the only available puppet module for oral health education of pre-school children in Malaysia, based on the *Sukatan Kurikulum Standard Prasekolah Kebangsaan*, Ministry of Education Malaysia (MOE). The literacy of the module is unknown since its publication was only about a year ago. **Objective:** To evaluate the literacy index of *Modul Boneka untuk Prasekolah* developed by Oral Health Division, Ministry of Health Malaysia (OHD MOH) and Sultan Idris Education University (SIEU). **Materials and Methods:** This study was a cross-sectional study among dental therapists at Precint 9 Putrajaya Dental Clinic. The subjects were given Suitability Assessment of Materials (SAM) Scoring Sheet and User’s Guide to assess the literacy demand and suitability of the module. Khadijah Rohani formula was used to determine the readability grade level. Data were entered using SPSS version 24.0. Frequency, percentage and Pearson correlation analysis was used and the significant level was set at <0.05. **Results:** A total of four dental therapists were recruited in this study with all of them were Malay females. The module was rated as superior materials by the subjects, scored 78.13% for the literacy demand and 71.32% for the suitability. The graphic factor was significantly affected the literacy index of the module ($P=0.049$). The findings are subjected to the dental therapists only and cannot be inferred to the pre-school teachers who are also the potential readers of the module. The readability score was 3.02 (Primary 3 education level) which indicates that it is within the reading capability of adults such as the dental therapists and pre-school teachers. **Conclusion:** The *Modul Boneka untuk Prasekolah* is a superior oral health education material, suggesting that it is very suitable for dental therapists as a module in conducting the puppet session for pre-school children. However, minor improvements should be considered for the betterment of the module.

**Keywords:** Pre-school children, puppet, puppet module.

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32. PERCEIVED MALOCCLUSION AND ORAL HEALTH RELATED QUALITY OF LIFE (OHRQoL) AMONG YOUNG ADULTS

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Introduction: Malocclusion, a common tooth misalignment problem that is prevalent worldwide. Despite the fact that it is neither a disease nor a life-threatening condition, World Health Organization (WHO) ranks malocclusions third on a dental health issues priority. Assessment on malocclusion usually focuses on normative, clinician-measured criteria based on orthodontic indices. In many situations, patients’ self-perceived of their malocclusion is not inclusive for justification of treatment. The impacts of malocclusion are visibly seen in young people as they feel physical attractiveness as an important factor affecting social relationships and interaction. Therefore, it is essential to evaluate the impact of self-perceived malocclusion on oral health related quality of life (OHRQoL) among young adults. The first year undergraduate students in University of Malaya (UM) were taken as a proxy of young adults. Objectives: To determine self-perceived malocclusion and treatment need using aesthetic component (AC) of IOTN, intention to seek treatment and oral health-related quality of life using OHIP-14 among undergraduate university students in the University of Malaya as well as associations between socio-economic and demographic factors, intention to seek treatment and OHRQoL with self-perceived aesthetic malocclusion. Methods: A cross-sectional study was carried out on 586 first-year undergraduate students of the UM, using self-administered questionnaires which consisted of four sections: socio-demographic characteristics, self-perceived aesthetic malocclusion, intention to seek treatment and a short Malaysian version of Oral Health Impact Profile (OHIP-14). Data were analysed using SPSS version 22.0 software using both descriptive and inferential statistics. The p-value was set at <0.05. Results: Of the total 586 participants, the majority of the participants (92.5%) perceived their malocclusion in Grade 1-4 of AC Score, which indicated no treatment need and good dental attractiveness. In overall, almost two-third (60%) of them had intention to seek treatment. Mean severity and the extent of impact of OHIP-14 were psychological, physical pain and handicap. Of all factors, only intention to seek treatment and OHRQoL were significantly associated with self-perceived aesthetic malocclusion. Despite the high prevalence in perceived no treatment need, more than half (88%) had the intention to seek orthodontic treatment. Mean severity and the extent of impact were significantly higher in the definite and moderate group (P<0.001). Half of OHIP-14 items were significantly associated with self-perceived malocclusion: “bad breath”, “food getting stuck”, “felt shy”, “avoided eating certain foods”, “avoided smiling”, “disturbed concentration”, “less confident of yourself”, where significantly higher proportions of participants were observed in the ‘no treatment need’ group (reflecting Grade 0-4 perceived malocclusion) compared to moderate and definite treatment need group (P<0.001). Conclusions: The
prevalence of self-perceived aesthetic malocclusion using AC IOTN was found to be high ranged from Grade 1-4 ‘no treatment need’ group among the young adults. Despite that, majority of the young adults still had intention to seek for orthodontic treatment. Although, there was low impact of oral health on the young adults’ quality of life, self perceived malocclusion was significantly associated with intention to seek treatment and OHRQoL of the young adults.

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Aim: To reach out various communities in East Malaysia, through oral health promotional activities in an effort to improve the region’s oral health status. Brief Description of Activities: The Malaysian Dental Association Eastern Zone (MDAEZ) is the youngest and largest zone of MDA in terms of geographical area. It comprises the states of Sabah, Sarawak and Federal Territory of Labuan. Since its inception in the year 2010, other than serving the members, serving the community has always been the top priority and honour of the MDAEZ. Over the years we had gone from limited participation and joint programmes with other NGOs and government bodies, to initiating and propagating our own Community Service Responsibility (CSR) projects. It is now a zone policy to put aside money from our budget every year to support at least two CSR projects in each state. We seek to network with dental traders and suppliers as partners, involving them in our CSR projects to create further awareness of the needy in the community. The MDAEZ firmly believes in dental education and awareness as the first step in improving the oral health status of the community, and yearly oral health awareness campaigns are being conducted. We also try to incorporate dental screening and simple treatment for the community visited. Many outreach programmes are needed due to many deprived communities in rural areas and economic difficulties. Conclusion: To ensure sustainability of volunteerism, MDAEZ hopes to create awareness amongst members on the importance of giving back to the community and create platforms for service.

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Objective: People living in areas of Baram, Ulu Limbang, Ulu Lawas and Ba’kelalan of Sarawak have extreme difficulties in accessing basic medical and dental care. The regions’ remoteness traversed by treacherous terrains and the vast distances, hampers accessibility to existing rural health clinics. Moreover, as the local population consists of subsistence farmers and hunter-gatherers with low cash income, the high cost of travel to the nearest healthcare center comes at a premium. REACH SARAWAK aims to improve equity of access to basic medical and dental care to these communities. Brief description of activities: The REACH SARAWAK Rural Health Project is a nonprofit community effort by local volunteers funded through private donations. Volunteers of medical and dental specialists and officers, pharmacists, allied healthcare and dental auxiliary professionals visit these remote villages and provide free medical and dental care. Many patients with serious previously undiagnosed conditions including heart disease, infections, cancer, pregnancy-related illnesses, children’s growth disorders and dental diseases have benefitted from the team’s visits. Patients with severe illnesses, such as pneumonia and life-threatening injuries have been provided with transport to urban hospitals for further treatment. In addition, the absence of local dental care in the region accrords popularity to our volunteer dental team who provides much needed relief of dental pain. Currently, more than 20,000 people have benefited from the care provided by REACH SARAWAK, which has conducted over 60 trips to the region, with more than 200 volunteers, since 2003. Conclusions: Health inequalities exists in rural Sarawak. Volunteers of REACH SARAWAK strives to remove barriers and bridge the gap.

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Introduction: Assessment of malocclusion usually focuses on normative based using different orthodontic indices. In recent years, there is a growing number of studies incorporating patient’s values on dental attractiveness into an evaluation of self-perceived treatment need. Self-perceived aesthetic maybe translated into their intention or demand for orthodontic treatment (OT). Factors like perceived aesthetics, knowledge on OT, willingness to pay and information seeking behavior may influence treatment uptake. To date, there is lack of study reported on self-perceived dental aesthetic with aforementioned variables in particular among young adults. Objectives: To determine the self-perceived dental aesthetic and its association with demographic characteristics and demand for OT among young adults. Also, to explore attitudes of those with OT demand and their main reason for treatment, willingness to pay, knowledge and information seeking behavior on orthodontic service. Methods: A cross-sectional study was conducted using self-administered questionnaire in four polytechnics in Pahang and Melaka. The aesthetic component (AC) of the Index of Orthodontic Treatment Need (IOTN) was used to assess the self-perceived aesthetics and the outcome was categorized into self-perceived OT need. A structured questionnaire was used to assess demand for OT, main reason for treatment, willingness to pay, knowledge and information seeking behavior on orthodontic service. Data were analyzed using SPSS version 23.0 software using descriptive and Chi Square tests. Results: The results show that the majority of students rated their dentition at most attractive scale (AC grade 1 to 4). There was low percentage of respondents (13.4%) rated themselves at the less attractive end of the scale which indicate “moderate to definite” treatment need (AC 5-10). Although the self-perceived treatment need was low, the demand for orthodontic demand was high (61.9%) and the difference was statistically significant. The main reasons for OT demand were to improve dental function and attractiveness. Self-perceived dental aesthetics was not significantly associated with socio-demographic profile of respondents, except for gender. More males perceived themselves less attractive compared to females. Among those who demanded OT, their WTP range from RM1504 to RM2282. In terms of knowledge on OT, there were small proportion of respondents reported they prefer to seek treatment at non-dental settings and assumed dental nurse (37%) and beautician (7.1%) as a qualified orthodontic providers. Although most respondents reported positive attitudes towards information seeking behavior, most of them did not search for qualification of practitioner prior to seek OT. Conclusion: Although the majority perceived their dental aesthetic within the most attractive scales which indicate no treatment need, many of them still demand for OT. Only gender was found to be significantly associated with self-perceived AC-IOTN. The mean WTP for
OT is within the government rate for OT and far below the amount suggested for private sector. A small number of respondents had poor knowledge on who can provide OT and where to get OT. The majority reported positive attitudes towards information seeking behavior prior to seek OT using both, offline and online sources.

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Introduction: Oral cancer is highly prevalent among indigenous people in Sarawak as this population lacks awareness and is known to practice high-risk habits. Objective: To develop and evaluate the impact of an educational intervention to improve oral cancer awareness and practice of preventive behavior among high-risk indigenous communities in Sarawak, Malaysia. Methods: A quasi-experimental study was undertaken involving adults in a Bisaya community (with high risk habits) in Limbang, Sarawak. The intervention group received a structured, Health Beliefs Model (HBM) theory-based oral cancer education module, while the control group was exposed to the conventional oral cancer education method during Ministry of Health’s community oral cancer and pre-cancer screening program. Face-to-face interviews using a validated structured questionnaire were conducted to obtain baseline information prior to intervention and after one and three months. Descriptive and multivariate statistics were used for analyzing the data using SPSS software. Results: The overall response rate was 99.5%. The final sample comprised of 204 respondents (89 in the control group and 115 in the intervention group). At baseline, 75.1% of respondents had heard about oral cancer, however their in-depth knowledge on risk factors, signs and symptoms and prevention were lacking. The control group had better awareness than the intervention group. Smoking and alcohol drinking were more prevalent in the intervention group, whereas betel quid chewing and practice of mouth self-examination (MSE) were more evident in the control group. At 1-month and 3-month follow-up, there were significantly higher mean scores in all aspects of oral cancer awareness among respondents in the intervention group and these improved levels of awareness were maintained over a period of 1- and 3- months. There were higher proportion of smokers, alcohol drinkers and betel quid chewers in the intervention group who reported quitting their habits or reducing the number of cigarettes smoked per day, frequency of alcohol drinking and betel quid chewing than the control group. The respondents in the intervention group also had significant increase in uptake of MSE and higher proportions who performed it once a month. Conclusion: The structured HBM-based oral cancer health education intervention was shown to have significant impacts on oral cancer knowledge and awareness, cessation and reduction of risk habits and increased the uptake of MSE among respondents in the intervention group of this indigenous community. Therefore, the introduced structured health education intervention is recommended for other communities in Malaysia that practice the same oral cancer risk habits. Considering this indigenous community is of lower socioeconomic status (SES), the introduced intervention could also be extended to other lower SES groups in Malaysia.
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Introduction: There is a need to gauge preparedness to enter workforce after graduation to ensure safe practitioner produced. Clinical skills, attitudes and mentorship were among attributes use to measure preparedness of dental graduates. **Objective:** 1.To determine an association between self-perceived confidence skills and socio-demographic characteristics 2. To determine the adequacy of experience gained during the undergraduate training. **Methods:** A cross sectional survey involving 1,617 dental graduates in October 2016 and 2017. A self-administered questionnaire consist of 2 parts; socio-demography and self-perceived confidence in related skills were distributed during induction course [“Pelan Transformasi Minda (PTM)”]. Data was analysed using Statistical Package for Social Science (SPSS) version 21. Binary Logistic Regression were computed to determine an association between the socio-demographic of graduates with self-perceived confidence. **Results:** In term of overall confidence to practic, only 5 in 10 were found to be highly confident to practice. Perceived confidence to practice among dental graduates were significantly higher among: male (OR: 2.12) than female; public (OR: 2.2) & private university graduates (OR: 1.2) than overseas university; Among those who have waited for 7-12 months (OR: 1.6) to be called for a compulsory service started from the date of registration with MDC as compared to those who have waited more than 12 months. Perceived confidence in skills attained to practices was influenced by working experience. It was significantly higher among: batch of Oct 2016 (OR: 2.0) than other batches; male (OR: 2.3) than female dental graduates; public (OR: 4.4) & private university dental graduates (OR: 1.7) than overseas dental graduates. Perceived confidence in interpersonal skill with staffs also influenced by working experience. Perceived confidence in skills on patient management were significantly higher among dental graduates from local public university (OR: 2.1) & private university (OR: 1.6) than overseas university. Perceived confidence in leadership skills was significantly higher among male (OR: 1.3) than female dental graduates. The graduates admitted they lacked of confidence to perform certain clinical procedures in particularly Minor Oral Surgery [(MOS), 37.6%], RCT (22.1%), extraction (15.7%) and denture fabrication (15.1%). The top most reason of lack in confidence cited by the graduates was they have not seen sufficient cases/patients. **Conclusion:** As waiting time of more than 12 months to be called for a compulsory service in MOH had affected the graduates’ level of confidence to practice, waiting time of less than 12 months is deemed appropriate to maintain the graduates’ level of confidence to practice. There is a dire need to enhance the graduates’ competency in performing the Minor Oral Surgery (MOS), RCT, extraction and denture fabrication among the graduates. Self-motivation training towards lifting up the leadership skills among the graduates is necessary. The NDO programme with duration of 12 months shall be continued.
An existing one-year compulsory service in MOH is deemed necessary as a significant number of dental graduates felt that they lacked the confidence.

**Keywords:** work preparedness, clinical skills, attributes of dental graduates

Presented during Dental Public Health Specialist Meeting 11-12 Mei 2018 and Dean’s Caucus Meeting 22 Mei 2018.

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RESEARCH IN
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Ludwig’s angina is a rapidly progressive cellulitis affecting the posterior oropharynx, submaxillary and sublingual spaces. It usually arises following a dental infection and potentially fatal due to airway obstruction. Necrotizing fasciitis is a rare soft tissue infection resulting in the death of subcutaneous and fascial tissue. Ludwig’s angina can seldom be complicated by necrotizing fasciitis. We report here a rare presentation of a case of Ludwig’s Angina complicated by necrotizing fasciitis in a 35 year old healthy male. He was referred to our department for further management of left facial swelling resulting in dysphagia, stridor and the limited mouth opening. He presented with history of toothache on lower left side for past 1 year. Clinically there was a gross diffuse swelling extending superiorly from left infraorbital region to supraclavicular region inferiorly and it crossing the midline with erythematous skin changes. Intraorally, swelling was noted on the floor of mouth, displacing his tongue superoposteriorly. Blood investigations showed high creatinine level (191 mcmol/L) and WBC (18.03 x 10^3/UL) revealing acute kidney injury secondary to sepsis. Computerised tomography scan showed diffuse soft tissue thickening in the left submandibular and paraparyngeal region, extending superiorly to the left infra-temporal region and inferiorly to superior mediastinum at the level of left clavicle. Histopathologically, confirmed the diagnosis of necrotizing fasciitis. This patient has undergone multiple incision and drainage and extensive wound debridement under general anaestesia. His wound healing was further complicated with orocutaneous fistula. This is a case of extreme life threatening Ludwig’s angina with significant morbidity, complicated by cervical necrotizing fasciitis illustrating the urgency of prompt diagnosis and management. Innocuous dental caries if left untreated can potentially be life treatening.

Keywords: Ludwig’s angina, Necrotising fasciitis, Life threatening

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**Introduction:** Oral lipomas are benign tumours of mature adipose tissue and accounts for 1-4% of tumours found in the oral cavity. Variants of lipoma include classic lipoma, fibrolipoma, spindle cell/pleomorphic lipoma, intramuscular lipoma and angiolipoma. Although uncommon, formation of cartilage or bone can be found within lipomas. However, it is rare to find both components in the same lesion. A literature search showed only 5 reported cases in the oral cavity to date. Several authors proposed that these lesions had formed as a result of repeated trauma which stimulate transformation of undifferentiated mesenchymal stem cells into cartilage and bone. **Case Report:** We report a case of a 70-year-old male presented with a painless growth on dorsal tongue for a month. Excisional biopsy was performed under local anaesthesia. The histological features showed a well-circumscribed lesion composed of mature adipocytes that were randomly interspersed by thin fibrous septa. Within the lipomatous lesion, there was an osteocartilagenous foci with fibro fatty marrow and bounded by fibrous connective tissue. A diagnosis of osteochondrolipoma was given. Patient review and follow up showed uneventful recovery with no recurrence. **Conclusion:** Intraoral lipomas with cartilage and osseous differentiation are rare but can be a possible diagnosis for a growth on the tongue. Our case will be the sixth reported in the oral cavity.

**Keywords:** osteochondrolipoma, tongue swelling, benign

Poster presentation at 10th Sarawak State Health Research Day 2018, on 13 -14 September 2018 at CRC, Sarawak General Hospital

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40. BASAL CELL AMELOBLASTOMA IN AN 8-YEAR-OLD IBAN GIRL: RAREST OF THE RARE

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Introduction: Ameloblastoma is a benign intraosseous and progressively growing odontogenic epithelial neoplasm. It is characterized by bone expansion and has a tendency for local recurrence. Ameloblastoma in children is rare with an occurrence approximately in a range of 6-20% and an average age of 13-15 years old. Less than 10% of the cases occur under the age of 10 year old. Basal cell ameloblastoma (BCA) is the least common histologic variant of ameloblastoma. It consists of nest of cribriform of basaloid cell and is histologically similar to basal cell carcinoma. To date, there are only 15 reported cases of BCA in the English language literature and only one case of reported BCA in Malaysia. Case Report: We report a case of BCA in an 8 year old Iban girl. She underwent hemimandibulectomy and reconstruction of the mandible with costochondral graft. A 6-months review showed uneventful healing process. She is under regular follow up and monitoring in view of high recurrence and unpredictable growth of the costochondral graft. We also reviewed the literature on the occurrence of BCA especially in children and the treatment options available. Conclusion: Due to the aggressive behaviour of the lesion, surgery is the main treatment option.

Keywords: Ameloblastoma, basal cell ameloblastoma, hemimandibulectomy, costochondral graft

This poster presentation was presented at the Joint Specialists Conference 2018 at Istana Hotel, Kuala Lumpur.

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**Introduction:** Facial trauma is one of the major challenges in public health. The presence of facial injuries has been shown to increase the odds and risks of sustaining cerebral concussion. However, the association between facial injury characteristics and cerebral concussion is unclear. **Objective:** The aim of this study was to determine the association between facial injury characteristics and cerebral concussion. **Methods:** A retrospective record review study utilizing patients’ medical records at the Universiti Kebangsaan Malaysia Medical Centre (UKMMC), Kuala Lumpur, Malaysia was performed. Records of subjects with history of facial trauma from 1 April 2012 to 31 December 2012 were selected. Various levels and surgical speciality records were reviewed to ascertain the diagnoses of facial injuries and cerebral concussion. **Results:** A total of 348 medical records with the diagnosis of facial injuries were included. The prevalence of cerebral concussion among these patients was 41.4% (95% CI 36.2-46.6). The majority of the patients with cerebral concussion were in the age group of 18-25 years old. Patients with or without facial lacerations that were located on the lower face had a significant association with cerebral concussion, \( p = 0.001 \), compared to other types of soft tissue injury. In addition, a statistically significant association was observed between facial fractures occurring to the middle face and cerebral concussion, \( p = 0.018 \). Pearson chi square test also showed statistically significant association between severity of facial injuries and cerebral concussion, \( p = 0.018 \). **Conclusion:** Cerebral concussion should be suspected in patients with facial injuries and particularly those with lower face lacerations, midface fractures, moderate to severe facial injury and presence of multiple injuries.

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**Background:** The incidence of oropharyngeal squamous cell carcinoma (OPSCC) has been rising in Western countries and this has been attributed to human papillomavirus (HPV) infection. p16 expression is a marker for HPV infection and p16 positive OPSCC is now recognized as a separate disease entity. There are only limited data available regarding HPV-related OPSCC in Asian countries and no data from Malaysia. **Methods:** We identified 60 Malaysian patients with OPSCC over a 12-year period (2004–2015) from four different hospitals in two major cities, Kuala Lumpur and Penang. The detection of HPV was carried out using p16 immunohistochemistry and high risk HPV DNA in situ hybridisation. **Results:** Overall, 15 (25%) tumours were p16 positive by immunohistochemistry, 10 of which were also positive for high risk HPV DNA by in situ hybridisation. By comparison, a matched cohort of UK patients had a p16 positive rate of 49%. However, between 2009 and 2015, where cases were available from all four hospitals, 13 of 37 (35%) cases were p16 positive. In our Malaysian cohort, 53% of patients were of Chinese ethnicity and 80% of the p16 positive cases were found in these patients; no Indian patients had p16 positive disease, despite representing 35% of the total cohort. **Conclusion:** The proportion of OPSCCs associated with HPV in Malaysia appears to be lower than in European and American cohorts and could possibly be more prevalent amongst Malaysians of Chinese ethnicity. Further, our data suggests that the burden of HPV-related OPSCC could be increasing in Malaysia. Larger cross-sectional studies of Malaysian patients are required to determine the public health implications of these preliminary findings.
Our aim was to examine the clinicopathological features of squamous cell carcinoma (SCC) of the oral cavity and oropharynx in a group of young patients who were diagnosed during a 15-year period (2000-2014). Patients' clinical details, risk factors, and survival were obtained from medical records. Formalin-fixed, paraffin-embedded, tissue was tested for high-risk human papillomavirus (HPV). The results were compared with those of a matching group of older patients. We identified 91 patients who were younger than 45 years old, and the 50 youngest patients were studied in detail. The male:female ratio was 2:1, with more tumours located in the oral cavity than in the oropharynx (35 compared with 15). HPV-related SCC was restricted to the oropharynx. When matched for site, stage and HPV status, five-year overall survival was similar in young and matched older patients (log-rank test, p=0.515). Our findings suggest that young patients with oral SCC have a disease profile similar to that of older patients with the condition. It is plausible that prognostic information generally available for oral cancers is applicable to young patients with the disease.
Introduction: Various factors and surgical techniques may affect the degree of malocclusion that is reflected in dental arch relationship among Unilateral Cleft Lip and Palate (UCLP) patients. Incomplete understanding of this association has resulted in various surgical protocols worldwide. Objective: This study is to evaluate the dental arch relationship and palatal morphology of UCLP patients by using EUROCRAN index, and to assess the factors that may affect them. Methods: A total of 107 patients from age 5 to 12 years old with non-syndromic UCLP that has received cheiloplasty and one-stage palatoplasty surgery were included. Five assessors trained in using EUROCRAN index underwent calibration and ranked the dental arch relationships. All scorings were evaluated with intra- and inter-rater agreement with weighted kappa statistics. Variable factors that were collected included demographic factors, site, type and family history of UCLP; absence of lateral incisor on cleft side, cheiloplasty and palatoplasty technique used. Associations between various factors and dental arch relationships were assessed using logistic regression analysis. Results: Dental arch relationship among UCLP in local population was worse than other counties. Crude logistics regression analysis did not demonstrate any significant associations among the various factors with the dental arch relationship outcome. This study has great epidemiological advantage where all subjects received their primary operations performed in the same center. However, some limitations identified were: having multiple operators performing the surgeries and the inability to access the influence of underlying cranio-facial variability on the treatment outcome. Conclusion: Factors that can affect UCLP treatment outcome are multifactorial in nature and remained controversial. Further well-designed long-term studies that differ only in a single factor, such as surgical techniques only, are recommended to provide clinicians a better understanding on its’ effect on dental arch relationship.
Objective: To validate the accuracy of the mandibular canal region in 3D biomodel produced by using Digital Imaging and Communications in Medicine (DICOM) data obtained from cone-beam computed tomography (CBCT) of cadaveric mandibles. Methods: Six hemi-mandible samples were scanned using the i-CAT CBCT system. The scanned data was transferred to OsiriX software and used to fabricate the customized cutting jig and 3D biomodels based on rapid prototyping technology (RP). The hemi-mandibles were segmented into 5 dentoalveolar blocks using the customized jig. Digital calliper was used to measure the various distances surrounding the mandibular canal on each section: Superior Distance; Inferior Distance; Buccal Distance; Lingual Distance; Mandibular Width; Mandibular Length. The same distances were measured on the corresponding cross-sectional OsiriX images and the 3D biomodels of each dentoalveolar block. One way ANOVA test was carried out to determine the accuracy of the canal position measurement in cadaveric blocks, OsiriX images and 3D biomodels. Results: From the six distances determined a total of 330 measurements were obtained. Statistically no significant difference was found when measurements from OsiriX images and 3D biomodels were compared to the gold standard - direct digital calliper measurement of the cadaveric dentoalveolar blocks. All the p value exceeded 0.05. Moreover, the mean value difference of the various measurements between the different study components was also minimal. Conclusion: The various distances surrounding the mandibular canal from 3D biomodels produced from the CBCT scanned data was comparable to that of direct digital caliper measurements of the cadaveric specimens.

Keywords: 3D biomodels, STL model, stereolithography, CBCT, mandibular canal
46. DISLODGED BONDED MOLAR TUBE INTO WOUND DURING ORTHOGNATHIC SURGERY

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Introduction: Dislodgement of orthodontic appliance into operation wounds may occur while performing orthognathic surgery. Its occurrence is commonly associated with bonded upper molar tube. Case Report: A 25-year-old gentleman presented with recurrent upper right vestibular abscess three months following a bimaxillary orthognathic surgery. A bonded molar orthodontic tube had dislodged into the wound during the operation. The clinical presentation initially mimics an odontogenic infection until our investigations revealed that it originated from the dislodged appliance. The abscess was drained, the wound site was explored, and the molar tube and neighbouring rigid fixation plates and screws were removed. The patient recovered well following the procedure. Conclusion: Dislodged metal orthodontic appliance in oral wound acts as a foreign body that may exert allergic reactions, infection, or inflammation. Pre- and postoperative intraoral examination of fixed orthodontic appliances including its count should be recorded in orthognathic surgery protocol.

Keywords: Orthognathic surgery; Molar tubes; foreign body


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Objective: The purpose of this study was to compare the incidence of complications between surgical removal of third molar and germectomy, objectively and subjectively. Material and Methods: A prospective non randomized study for all patients who were undergoing minor oral surgery of mandibular third molar was carried out in the Oral & Maxillofacial Department (OMF) of Sultan Abdul Halim Hospital, Malaysia (HSAH). The indication for surgery was for orthodontic reasons. The patients were divided into three groups according to their radiographic root morphology, namely Group 1 (root not formed), Group II (root partially formed), and Group III (root fully formed). Results: A total of 44 patients were enrolled into this study; 2 teeth from each patient, henceforth involving 88 teeth. There was a statistically significant difference in the age between the three groups (p<0.05). Germectomy was the shortest procedure. In the objective evaluation conducted 1 week post-surgery, no sign of trismus and facial swelling was observed in these three groups. In the subjective evaluation, we found there were significant differences in patients’ ability to tolerate orally (p<0.05) and ability to perform daily activities (p<0.05) among the three groups. Conclusion: This study shows low incidence of complications in all three groups. Germectomy is a simple and safe procedure; thus, this prompted the author to advocate the early removal of mandibular third molar.

Keywords: Germectomy, Mandibular Third Molar, Surgical Removal

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48. INTRAORAL PSORALEN ULTRAVIOLET A (PUVA) IRRADIATION IN TREATING PATIENTS WITH ORAL CHRONIC GRAFT VERSUS HOST DISEASE: A CASE SERIES

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Introduction: Graft Versus Host Disease (GVHD) is a common and serious complication following Allogenic Haematopoetic Stem Cell Transplantation (AHST). There are two forms of GHVD, acute or chronic. In acute GVHD (a-GVHD) the symptoms appear within 100 days after transplantation while in chronic GVHD (c-GVHD) the symptoms occur after 100 days post-transplantation. Both forms may cause varying degrees of deterioration on the patient’s quality of life. GVHD causes a variety of clinical syndromes typically involved the liver, digestive organs, and skin. In chronic graft versus host disease, oral manifestations may occur in up to 90% post-transplantation cases. Symptoms of oral c-GVHD includes erythema, ulceration, mucosal atrophy, leukoplakia, perioral pain, and xerostomia.

Case Series: Three cases of c-GVHD were referred to the Oral and Maxillofacial Surgery Clinic by the Haematology Department Hospital Ampang from 2017-2018. All three patients who developed oral manifestations of c-GVHD were treated with Psoralen and Ultraviolet-A (PUVA) therapy as part of the management. These patients have shown significant reduction in symptoms and improved oral intake and quality of life.

Conclusion: Intraoral PUVA therapy provides promising outcomes in treating patients with oral c-GVHD. Oral lesions improvement can be achieved after several sessions of PUVA therapy and can significantly improve patient’s symptoms, oral intake and quality of life.

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Background: Squamous cell carcinoma (SCC) of the tongue is the most commonly seen oral cancer in Europe and America. Mortality rate was reported as high as 50% once there is neck metastasis. Currently, there is no consensus regarding early neck management of small oral tongue SCC. Disagreement of survival benefit of elective neck dissection (END) is the core of the debate. A systematic literature review and meta-analysis is presented to solve this dilemma. Methods: A structured systematic literature search, with predefined inclusion and exclusion criteria from relevant computer databases and journals were performed. The journals were evaluated and critically appraised by two reviewers separately in two rounds. Papers were assessed for their level of evidence, risk of bias, the quality of methodology and homogeneity. Extracted data was compiled for descriptive and meta-analysis. Results: Only three papers with moderate to low evidence level were included in this review. END did not show superior survival benefit when compared to “watch and wait” (WW) [R=0.50, P=0.18, 95% CI=0.19 to1.36, I² =48%]. There was strong evidence favored END at an earlier disease stage with the weighted odds of regional recurrence 9 times lower than the WW group [OR=0.09, P <0.0001, 95% CI=0.05 to 0.16, I²=0%]. Conclusions: END is the gold standard treatment for small tongue SCC without clinically detectable nodes. Although there appeared to be no superior survival benefit subjecting patients to END, subsequent management can be guided by the histological report of the neck specimen. Observation remains a conservative alternative to early neck intervention provided a stringent follow up scheme is strictly adhered to. Immediate surgical intervention when lymph node remains small is the key to high salvage rate and overall survival outcome. Future research should focus on identifying characteristics of early oral tongue SCC that will benefit more from END.

Keywords: Oral cancer, Squamous Cell Carcinoma, Tongue Cancer, Prophylactic Neck Dissection

Thesis for Master in Dental Surgery (Oral and Maxillofacial Surgery), The University of Hong Kong, Hong Kong. 2015

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**Introduction:** Myiasis is the infestation of tissues of vertebrate animals and less commonly humans by Dipteran fly larvae. It can be classified based on the degree of parasitism or anatomical position. In comparison to cutaneous myiasis, the incidence is relatively rare as oral tissues are not perpetually exposed to the external environment. **Case Report:** A 76-year-old Chinese male patient presented with a laceration wound of moderate size over the upper lip due to an alleged fall. After toilet and suturing, he was discharged with antibiotics back to his nursing home, where he had been a long-term resident. Upon his review visit one week later, he presented with extensive breakdown of tissues involving his upper lip, anterior maxillary ridge and palate with infestation of maggots. After diagnosis of oral myiasis, the patient was admitted and wound exploration and debridement was done with over 100 maggots removed. The treatment protocol and outcome are also further discussed in this paper. **Conclusion:** Though rare, oral myiasis is still prevalent especially in less developed countries. No standard treatment protocol exists and neglected oral hygiene, poor wound care and senility have been identified as the predisposing factors. Hence, Prevention is better than cure.


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Lechen sclerosus (LS) a rare chronic inflammatory disorder with unknown aetiology, affects the mucocutaneous parts of the body with a predilection for the anogenital region. Oral involvement is uncommon and isolated cases of oral mucosal LS are even rare. The characteristic histopathological features present in oral LS are epithelial atrophy, focal hydropic degeneration of the basal cells, subepithelial homogenization and hyalinization with loss of elastic tissues and presence of band-like inflammatory infiltrate which is located in the deeper connective tissues. Clinically, oral LS often resemble other oral white lesions. We report a case of suspected isolated oral LS in an Indian woman who complained of oral burning sensation. She presented with mild reticular white striae and a palpable fibrous band on an erythematous background with no reported skin/genital lesions. Patient defaulted follow-up after the initial visit.

Keywords: Lichen sclerosus, lichen planus, inflammatory disorder

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ORTHOKERATINIZED ODONTOGENIC CYST OF THE MANDIBLE: A RARE CASE REPORT

Muhammad Ridwan Yi, Sumairi I

Orthokeratinized odontogenic cyst (OOC) is a relatively rare developmental odontogenic cyst that occurs in the jaw bones. It was initially defined by Wright in 1981 as Orthokeratinized variant of Orthogenetic Keratocyst (OKC) with distinct clinicopathologic entity. Due to its minimal tendency to recur, the choice mode of treatment is enucleation. The purpose of this article is to present a case of OOC arising in the right angle of mandible which is associated with impacted lower right wisdom tooth.

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53. PROGNOSTIC FACTORS OF LATE STAGE ORAL SQUAMOUS CELL CARCINOMA IN A 10 YEARS COHORT

Zhi HL, Chia ML, Fong SH

Introduction: This study aims to present a 10-year retrospective prognostic factor analysis of late stage oral squamous cell carcinomas (OSCC) seen in an oral and maxillofacial surgery (OMFS) clinic within a tertiary hospital of Malaysia. Methods: 182 patients with pathologically confirmed advanced OSCC treated in a tertiary hospital had their complete clinical and follow-up data recorded. The 5 year survival rate was calculated using Kaplan-Meier analysis. Positive contributing factors among groups were identified with Simple Cox Regression analysis and further analyzed with Multiple Cox Proportional hazard regression model to examine the interaction between them. Results: The overall mean survival time was 47.90 months with a 37.5% average 5-year survival rate. Our univariate analysis showed that stage IV SCC, nodal involvement with diameter more than 4cm and the presence of perineural invasion were risk factors affecting prognosis individually (p < 0.05). Multivariate analysis found neck node status and perineural invasion as significant predictive factors. Conclusion: Neck node status and perineural invasion were the true factors affecting prognosis of late stage disease. The risk of death was increased by 8.8 times when the size of the neck node was more than 2 cm.

Keywords: Oral cancer, Squamous Cell Carcinoma, Prognostic Factor

Awaiting acceptance from International Publisher

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Introduction: The Caregiver Quality of Life Index-Cancer (CQOLC) is used widely to evaluate the quality of life (QoL) of caregivers of cancer patients. Oral cancer, its treatment have significant consequences on the physical, mental, emotional and psychosocial wellbeing of the patients which significantly affects their daily life. Cancer patients need family caregivers during treatment and post treatment periods which significantly burdens those associated in providing care. However, the quality of life of the caregivers is often overlooked. A greater understanding of the factors contributing to caregiver psychological health may have important implications not only for improving caregivers’ outcome but also for patient outcome and the healthcare system. Objective: This study aims to assess the QoL of caregivers of oral cancer patients in Faculty of Dentistry, University of Malaya and to determine aspects of caregivers’ QoL that are negatively and positively impacted during their caregiving for the oral cancer patients. Methods: The CQOLC was translated to Bahasa Malaysia by forward and backward translation and pre-tested on 5 caregivers. Pilot study was conducted with clinical consecutive convenience sampling of 32 caregivers from oral cancer clinic at Faculty of Dentistry, University of Malaya. The inclusion criteria includes caregivers who were literate, aged 18 years and above, cancer free, and living with patients during caregiving. Results: The translated CQOLC-Bahasa Malaysia demonstrated good internal consistency, Cronbach’s alpha is 0.853 and test-retest reliability shows no significant difference (p=0.194). The mean QoL in this study is 83.96, ranging from 109-60. The caregiving burden is influential and negatively affects the caregivers QoL.
Purpose: Diagnostic tonsillectomy is rarely an oncologic operation owing to close or positive margins. The standard of care is for further treatment to the primary site, typically with adjuvant radiotherapy. Methods: 14 patients with close or positive margins following a diagnostic tonsillectomy underwent transoral robotic surgery (TORS) and lateral oropharyngectomy; five patients with the longest follow-up had their excision specimens examined with a step serial sectioning technique (SSS). Results: Conventional histopathological examination of the TORS resection specimens did not demonstrate residual carcinoma in 13 patients, confirmed by examination using SSS in 5 patients. There were no post-operative complications or long-term functional deficit. Seven patients received surgery alone with 100% overall and disease specific survival, respectively (median follow-up 27.5 months; range 5.2-50.4). Conclusions: This prospective study suggests that TORS lateral oropharyngectomy alone is an oncologically safe treatment when close or positive margins are identified on diagnostic tonsillectomy in HPV-positive SCC.
56. ROUTINE INCLUSION OF LEVEL V LYMPH NODES DISSECTION IN ORAL SQUAMOUS CELL CARCINOMA CASES IN HOSPITAL UNIVERSITY SAINS MALAYSIA: IS IT JUSTIFIED

Muhammad Fadzlyazwad K

Introduction: Oral squamous cell carcinoma (OSCC) is the most common malignant tumour of oral cavity arising from stratified squamous cell epithelium. The traditional approach for surgical treatment of neck node metastasis was radical neck dissection (RND), it provides comprehensive clearance of the cervical chain, but resulted in functional and aesthetic morbidity like shoulder dysfunction. In this study, we evaluated the justification of level V lymph node (LV) dissection in patient with OSCC in Hospital USM (HUSM) between January 2000 and December 2016.

Objective: The aim was to assess the prevalence of tumour infiltration involving LV, its association to other cervical lymph nodes and to different primary tumour sites.

Methodology: Clinical and pathological data were retrospectively reviewed for 20 patients with OSCC, including clinically negative neck (cN0) and positive neck (cN+) where RND was performed. The prevalence of pathological metastasis to LV on both the ipsilateral and contralateral sides was investigated. Predictive risk factors for LV metastasis, such as age, sex, primary site, and status of other levels (I-IV), were also evaluated. Statistical analysis was performed using Fisher’s exact test.

Results: 22 RND done in 20 patients, with 2 patients (10%) had simultaneous bilateral RND. Positive lymph nodes occur more on the upper jugular (level II) and mid jugular (level III) chain by 30% and 35 % respectively. Results revealed no positive lymph nodes at Level IV or LV, therefore no significant association found between LV to other positive cervical lymph nodes, likewise no association in relation to tumour site. However, evidence of metastases to other cervical lymph nodes mostly related to the lateral border of tongue, n=7, 35%.

Conclusion: This study accords with those past reports about the prevalence of LV metastases in OSCC cases. Since low metastases rate to LV, and considering postoperative radiotherapy outcome, selective neck dissection excluding LV can be considered in cases without clinical & radiographic evidence of LV involvement. However, this is not a recommendation on sparing LV since this study represents a small sample hence a larger number of populations are required to justify this matter.
**57. SUBMENTAL FLAP FOR ORAL RECONSTRUCTION: OUR EXPERIENCE IN MIRI, SARAWAK**

Komalam M, Lisamarie S, Shim CK

**Introduction:** Many techniques have been described for the reconstruction of small to moderate defects caused by the surgical treatment of oral cancer. The submental island flap (SIF) is a simple and feasible technique that has been used since 1993. In this case report, we share our experiences in using this technique for oral reconstruction. **Cases:** Three cases of patients who were diagnosed with oral cancer of the mandible, age ranging from 19 to 73 are included. Patients had undergone cancer surgery between early-2012 until mid-2017, with their oral cavity defects reconstructed using the submental island flap, with varying degrees of success. The patients also underwent subsequent radiation and/or chemotherapy. **Discussion:** Of the three patients, none of them experienced complete flap failure. All donor site defects were satisfactorily closed. No residual nodal or metastatic tumour growth within the flaps have been observed, but one patient has undergone post-radiation neck dissection due to suspected nodal metastases of the cervical lymph nodes. **Conclusion:** The submental island flap is a convenient and valid technique for reconstruction of small to moderate orofacial defects. However, its use could be limited by the site and size of the defect and submental lymph node metastases.

**Keywords:** oral cancer, submental island flap, oral & maxillofacial reconstruction

Oral presentation at the 25th MDA Scientific Conference and Trade Exhibition 2018 26th-28th January 2018 held at PWTC, Kuala Lumpur.

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Background: ‘Susuk’ is a superstitious and traditional practice common in the South-East Asian region. Believed to bring and enhance the beauty, health, wealth and strength of its wearers, these talismans called charm needles are inserted subcutaneously in different areas of the body but more commonly of the orofacial region. Case report: A 28-year-old Malay gentleman presented with pain at the left cheek for one week. He claimed to have charm needles inserted by a traditional practitioner 4 years ago in his face and hands. Clinical examination was unremarkable except for a vaguely palpable area of firm tissue at the site of complaint. CBCT imaging showed a radiopaque foreign object measuring 1cm, resembling a hook-like needle. Surgical removal of the charm needle was done under local anaesthesia in our department with no complications. Conclusion: Interestingly, few or no reports have been found on the possible adverse effects, signs and symptoms or complications of ‘susuk’. It is increasingly being discovered as incidental radiographic finding and generally, no definitive treatment is required. However, a misdiagnosis of endodontic fillings, amalgam retention pins, brachytherapy beads or surgical clips may be possible and hence an awareness of this traditional practice is vital to prevent any mismanagement.
Purpose of study: The aim of this study was to analyse and describe the pattern of maxillofacial injuries presenting to the Oral & Maxillofacial Surgery Department, Hospital Ampang from year 2008 to 2017. Materials and Methods: Clinical records of facial injury cases, from 2008 to 2017, including demographic, aetiology, fracture and injury sites and treatment were collected and analysed. Results: In total, 1297 facial injury cases were documented, the majority aged 20 - 29 years. Most cases were male, Malay ethnic group were the majority involved. The main cause was road traffic accidents, among those, the majority were motorcyclists. The types of injuries mainly seen were soft tissue injuries, bony fractures and dentoalveolar fractures. Conclusion: Motor-vehicle accidents is the main aetiological factor causing maxillofacial injuries in our centre. There is a need for measures to be taken on prevention in high risk groups to reduce road traffic accident related maxillofacial injuries.
**60. THE USE OF A MODIFIED INTRA ORAL SPLINT IN INTENSIVE CARE PATIENT: A CASE REPORT**

*Dayang Fadzlina AI, Lorend TAI*

**Introduction:** 3-year-old Chinese boy was referred from PICU due to persistent tongue biting causing multiple laceration wounds on the tongue resulting in active bleeding. He has refractory seizure characterized by lip smacking, clenching of teeth and rythymic movement of both upper and lower limbs despitess on multiple anti-epileptic drug. The patient was intubated to preserve the airway. His medical condition includes febrile encephalopathy in status epilepticus of unknown origin, possibly autoimmune, neurological sequalae such as extrapyrimidal symptom, orofacial dystonia and motor dyskenia. Tracheostomy was done later in view of prolonged ventilation. **Objective:** To prevent neuropathological chewing and self inflicted injury in intensive care patient, allow healing of the traumatic tissue and to preserve the teeth. **Management:** Toilet and suturing of the laceration wound. Fabrication of both upper and lower splint. This appliance covered the posterior teeth with bite riser, leaving some space between the anterior teeth, and thus preventing the patient from biting the tongue. **Result:** The lesions healed satisfactorily and the oral mucosa preserved from traumatic chewing. **Discussion:** The use of splint provides a relatively easy, inexpensive and non harmful way to treat the injured tongue and showed dramatic results within short period of time. The use of modified splint with posterior bite riser is an effective technique to prevent further trauma and permits healing to the tongue and oral mucosa tissue. **Conclusion:** Early intervention and team approach is crucial in preventing and treating patient with self inflicting injury.

**Keywords:** neuropathological chewing, splint, posterior bite riser

Poster Presentation at the Malaysia Association of Paediatric Dentistry Mac 2017 at Primula Hotel, Terengganu. Poster published in Malaysia Association of Paeditric Dentistry website on April 2018.

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Mucormycosis is a rare fungal infection and with high mortality that commonly affects patients with the weakened immune system. We present an unusual case of tongue necrosis probably due to the healthcare-associated mucormycosis (HCM) in a diabetic patient. Although cannot be proved with certainty, we surmise that intubation as a risk factor in our case. The diagnosis was confirmed by histopathological examination (HPE) of the necrotic tissue specimen. The patient responded well to lipid complex amphotericin B (250 mg) regime after surgery. Subsequent follow up revealed no signs of recurrence. Early recognition, diagnosis, prompt treatment and awareness among clinician are the most effective way of managing the disease.
RESEARCH IN
ORAL PATHOLOGY & ORAL MEDICINE
Background: Grading of Oral Epithelial Dysplasia (OED) by a pathologist is currently the key guide used for treatment planning of Oral Potentially Malignant Disorders (OPMDs). Conventional Oral Examination (COE) detects OPMDs but may not predict their risk status to transform to cancer. Therefore, there is a need for a reliable test to predict OED in OPMDs. This study was conducted to evaluate COE, Liquid Based Cytology (Cytopath) and DNA Image Cytometry (Ploidy) in predicting OED in OPMDs. Methodology: A total of 179 patients from Malaysia, India and Indonesia underwent COE followed by brush biopsies and scalpel biopsies. Brush-biopsy samples were analyzed for cytopathology and DNA Ploidy at Dental Faculty, University of Malaya. Histopathological findings of presence/absence of OED were used as the reference standard. Calculations for sensitivity (Sn), specificity (Sp), positive predictive value (PPV), negative predictive value (NPV) and accuracy (A) were done for individual tools and in combinations. The Youden index (Sn+Sp-1) was used as a measure of overall performance. The relevant Medical Ethics Committees of the different research locations approved the study. Results: For COE, the sensitivity (Sn) was high (100%) and the specificity (Sp) was low (5.9%), while both Cytopath and Ploidy showed a low sensitivity (Sn) (28.6% and 22.2%) and high specificity (Sp) (94.3% and 82.3%). All 3 tools individually have high negative predictive value (NPV) for predicting presence of OED (COE-100%, Cytopath-66.7%, Ploidy-78.5%). When combining results from all 3 tools, the best performance indicated by Youden index (42.1) is that defining a positive case when both COE and Cytopath show abnormal. In general, using results from at least 2 tools had better Youden indices than using these tools individually. Conclusion: COE as a screening tool by virtue of its high Sn would be a suitable first level diagnostic test, while the Cytopath and the Ploidy individually with high Sp maybe used as a second level test to predict presence of OED. Combining the COE with Cytopath would be the best combination for a high performance of the tools. Cytopath (when performed by a trained cytologist) would allow for most of the false positives from the first level test to be correctly identified as true negative at the second level. Longitudinal data are needed to assess which of these may correcting identify the malignant potential of OPMDs.
**Introduction:** Melanotic neuroectodermal tumour of infancy (MNTI) is a rare benign neoplasm that usually occurs during the first year of life. MNTI is a locally aggressive tumour with a high recurrence rate. The tumour is generally accepted to be of neural crest origin. MNTI shows striking trend for the maxilla (68-80%) and less occurrence sites reported are skull, testis, mandible and brain. **Case Report:** We report a case of MNTI in a 3-month-old Malay infant presented with a swelling at the upper anterior ridge causing labial fullness on upper lip and obliteration of the upper sulcus. MRI and ultrasound findings were suggestive of a well-defined soft tissue tumour. A complete surgical excision was performed by an intraoral approach. Histological findings of a well circumscribed lesion with the characteristic biphasic population of large pigmented epithelioid cells and small round blue cells was observed. The histological findings were supported by the immunohistochemical studies. **Discussion:** The immunohistochemical findings showed both small and epithelioid cells were diffusely positive for Vimentin, Synaptophysin and NSE. CK AE1/AE3 and HMB45 immunostaining show positivity to the epithelioid cells while CD56 and GFAP highlighted the small round blue cells population.

Poster presentation presented at International Congress of Pathology & Laboratory Medicine (ICPalm)
Introduction: Recent evidence suggests that presence of cancer stem cells (CSC) can contribute to the aggressiveness in many types of tumour but not much is known about their role in salivary gland tumours. Objective: To determine the expression and localization of four cancer stem cell (CSC) markers ALDH1, Bmi1, CD44 and ABCG2 in benign and malignant salivary gland tumours and to speculate their role in tumour aggressiveness. Methods: 15 pleomorphic adenomas (PA), 14 mucoepidermoid carcinomas (MEC) and 11 adenoid cystic carcinomas (ACC) were examined by immunohistochemistry for expression of CSC markers with normal salivary glands served as baseline. Descriptive and semiquantitative analysis was performed to assess the staining level between tumour parenchyma and stroma, and between tumour centre with periphery. Results: All CSC markers were heterogeneously detected in all salivary gland tumours and normal salivary glands with cytoplasmic and membranous distribution for ALDH1, CD44 and ABCG2 and nuclear localization for Bmi1. Generally all CSC markers (except ABCG2) demonstrated significant expression in tumoral epithelium compared to stroma, \( P < .05 \) in both benign and malignant tumours. Significant expression of ALDH1 is seen within tumoral epithelium at tumour centre of MEC \( (P = .006) \) and ACC \( (P = .02) \) whilst CD44 also significantly increased at tumor center of ACC \( (P = .008) \). Conclusions: Our data showing significant levels of ALDH1, CD44 and Bmi1 in the tumoral epithelium indicate that cancer stem cells most probably reside in the parenchyma of salivary gland neoplasms. Interesting finding is significant expression of ALDH1 and CD44 within tumoral epithelium are found at tumour center of malignant tumours in our study suggest that it may influence biological behavior through yet unknown mechanisms.

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Introduction: Ameloblastoma is a clinically significant odontogenic tumour in our region with considerable work has been carried out in the hope of gaining a better understanding of this disease. Being benign in nature, the most controversial behaviour of this tumour is its invasiveness into the surrounding bone with the exact mechanism of bone resorption involved remains unclear. Objectives: To determine the immunoprofile of pro-osteoclastic markers, receptor activator of nuclear factor κ-B (RANK), RANK ligand (RANKL) and it’s decoy receptor, Osteoprotegerin (OPG) in solid/multicystic ameloblastoma (SMA) and unicystic ameloblastoma (UA) and to speculate their impact on the biological behaviour of ameloblastoma subset. Materials and methods: Forty paraffin-embedded ameloblastoma cases comprising SMA (n=24) and UA (n=16) were examined immunohistochemically for the expression of RANK, RANKL and OPG. Semiquantitative scoring method was applied for the immunoexpression, considering pre-ameloblast-like cells (PA-like cells), stellate reticulum-like cells (SR-like cells) and stromal cells via digitized images. The study was approved by the Medical Ethic Committee, Faculty of Dentistry, University of Malaya [Ethics DF OP1201/0001(L)]. Results: The pro-osteoclastic markers were differentially expressed in ameloblastoma with predominantly subcellular localization of both cytoplasmic and membranous (RANK and RANKL) and mainly cytoplasmic for OPG. RANK expression levels in the epithelial and stromal cells in SMA was significantly higher than in UA (P<0.05). Overexpression of RANKL with low expression of OPG was observed in tumour epithelial cells in SMA whereas UA demonstrated predominantly under expression of RANKL with localized overexpression of OPG. In correlation with clinical parameters, the immunoreactivity of OPG was significantly associated with tumor location (P=.028). Conclusion: The RANK-RANKL-OPG triad was heterogeneously expressed in SMA and UA, indicating the active local bone activity in ameloblastoma. Predominant cellular localization of overexpression of RANK and RANKL with low expression of OPG in SMA, permits the speculation of an active bone resorption in SMA compared to UA.
Purpose of the study: The study aimed to look at the prevalence and clinicodemographic features of the various immune-mediated vesiculobullous diseases (IVBD) among patients attending the Oral Medicine Clinic (OM) at Hospital Kuala Lumpur (HKL). Materials and Methods: Clinical records of patients diagnosed with IVBD and followed-up at OM clinic of HKL from January 2005 until February 2017 were reviewed retrospectively. Data were collected and analysed using SPSS version 16.0. Results: A total of 34 cases were included in this study. Pemphigus vulgaris formed the commonest IVBD (41.2%) followed by Steven Johnson Syndrome (20.6%) and erythema multiforme (14.7%). Other types of IVBD seen are bullous pemphigoid, pemphigus foliaceous, pemphigus herpetiformis and toxic epidermal necrolysis. More than 50% of the patients were of Malay origin while the Chinese ethnic constituted the least affected group with only 11.8%. A slight female preponderance was observed. Approximately 41% of patients showed oral as the first site of presentation. Conclusion: The study showed that pemphigus vulgaris was the most frequently presented blistering disease to the Oral Medicine clinic with the Malays showing the highest prevalence of IVBD.

Keywords: Vesiculobullous disease, pemphigus, pemphigoid

Poster presentation at the 1st Joint Specialist Conference, on 9-11 March 2018 at Hotel Istana, Kuala Lumpur.

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Introduction: Ramsay Hunt Syndrome (RHS) is a rare complication of herpes zoster which happens after reactivation of Varicella zoster virus (VZV) from geniculate ganglion. It should be differentiated from Bell’s palsy which is a commoner cause of peripheral facial palsy. Early treatment upon diagnosis should be initiated. Case Presentation: We present a case of 57-year-old man who attended our clinic with itchiness, tingling sensation, fever, tinnitus of right ear. Painful ulcers inside of his mouth and skin eruptions developed. Based on the history and clear clinical presentation, he was diagnosed as having herpes zoster. Treatment was commenced with acyclovir tablet 800 mg, five times daily for 1 week duration. After 1 week, he developed paralysis of right facial nerve motor function and severe throbbing pain on his right side of face. The patient was thus diagnosed as having postherpetic neuralgia (PHN) with RHS and was prescribed with prednisolone, amitriptyline and vitamin B12 tablets. After 1 month review, the pain has decreased to discomfort sensation and his right facial nerve function has fully regained. Conclusion: This case reports an occurrence of one of the rare complications of herpes zoster. This highlights the importance for long term follow up of patients with herpes zoster. The importance to differentiate RHS with Bell’s palsy and further management are also discussed.

Poster presentation at Malaysia International Dental Exhibition and Convention (MIDEC) 2016, on 20-22 July 2018, Kuala Lumpur Convention Center
Published in Journal of Oral Medicine

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67. RAMSAY HUNT SYNDROME AFFECTING CRANIAL NERVES VII AND VIII: A CASE REPORT
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RESEARCH IN PAEDIATRIC DENTISTRY
**Background:** Looked after children (LAC) are more likely to suffer from health problems. Foster carers can influence their oral health, yet no research to date has explored foster carers’ experiences supporting looked after children’s oral care. **Aim:** This study explored the oral health knowledge and attitudes of foster carers in Tower Hamlets, UK; and captured their experiences of managing children’s oral health care. **Design:** We recruited a purposive sample of foster carers from 130 foster households. Maximum variation sampling (using invitation letters and through monthly foster carers’ support groups) captured multiple perspectives. Focus group interviews used a piloted topic guide with interviews continuing until we reached thematic saturation. The focus groups were tape-recorded, transcribed and analysed following a six step thematic analysis. **Results:** Two themes emerged from three focus groups involving 12 long-term foster carers. Foster carers had adopted an oral health caring role, responding to the poor oral health of LAC on entering the care system. They were hyper-vigilant about establishing and monitoring children's oral health routines, seen as an integral part of being good foster carers “in loco parentis”. They were knowledgeable about the causes of children’s oral ill-health, gained from their own dental experiences and their experiences of looking after LAC and their own children. They had positive oral health attitudes despite having some negative experiences with dentists while seeking care for young LAC. **Conclusion:** This study emphasises the role foster carers play in supporting the oral health of LAC and the need to provide further support.

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Introduction: Pemphigus vulgaris is an uncommon autoimmune disease in which the body produces antibodies against specific proteins on the skin and mucous membrane causing blistering and erosions. It predominantly affects women aged 40 to 60 years with majority of the lesions appearing in the oral cavity first. Case Report: This report describes a fit and healthy 13-year-old boy who was referred to the Paediatric Dental Department for evaluation of peri-oral vesicles and worsening oral ulcers. The vesicles appeared two days after a general medical practitioner prescribed antifungal medications to treat multiple oral ulcers. He developed multiple fluid filled vesicles peri-orally with desquamation of epithelium on both upper and lower lips leaving an erythematous bleeding base. Intra-orally, there were generalized desquamative lesions in the oral mucosa with evidence of pus formation. The initial working diagnosis was erythema mutiforme secondary to drug allergy. Subsequently vesicles started to appear on the neck, abdomen and genital area. A biopsy was done and the histopathology report confirmed the diagnosis as Pemphigus vulgaris. Together with the Dermatology Department; he was treated with immunosuppressants and topical medications. Comment: As this disease entity is rare in occurrence in children or adolescents, awareness and raising the index of suspicion are crucial for diagnosis. This case also illustrates the importance of early detection to ensure that appropriate treatment is given.

Poster Presentation at the Malaysia International Dental Exhibition and Conference (MIDEC) 2016, on 30 July 2016 at Putra World Trade Centre (PWTC), Kuala Lumpur.

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Introduction: Children may present with various pathological lesions within the oral and maxillofacial (OMF) region. The type and behavioral characteristics of these lesions may vary from those seen in adults. Objectives: To analyse the age, gender, race, anatomic location and pathologic diagnosis of the paediatric OMF lesion biopsied at Department of Paediatric Dentistry Kuala Lumpur Hospital.

Methodology: This was a retrospective study of clinical records of patients that underwent OMF biopsy at this department from year 2000 till 2016. The relevant data were retrieved from biopsy logbook and dental records. Data was collected and analysed statistically.

Results: A total of 518 biopsied OMF lesions, 287 (55.4%) were found in 6-11 years age group. The majority of the biopsies were taken from female gender (56.8%), particularly Malay comprised the predominant ethnic group (69.5%). Almost all the acquired biopsy specimens were soft tissue origin (92.7%). The mandible (76.3%) were more common than maxilla (23.7%). Cystic lesions with the mucous extravasation cysts formed the majority 60.4% of all lesions.

Discussion/Conclusion: Most of OMF pathological lesions in children were benign and require minimal intervention. Although the paediatric oral malignancies are less common, early detection and diagnosis are crucial to refer those cases at early stage and required urgent management to minimize deformation of the developing oral and maxillofacial structures.

Keywords: paediatric biopsies, paediatric oral lesion, pathological lesions
71. A STUDY OF CRANIOFACIAL MORPHOLOGY AND DENTAL AGE ESTIMATION IN TRANSFUSION DEPENDENT THALASSAEMIA 6 TO 16 YEARS OLD MALAY PATIENTS

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Introduction: Thalassaemia diseases are common in Southeast Asia. Skeletal deformities, growth retardation, delayed puberty and delayed skeletal maturation are commonly seen in thalassaemia patients. However, information about the craniofacial morphology and dental age maturation are deficient in this area.

Objective: To investigate the craniofacial and dental characteristics, as well as dental age estimation in Malay transfusion dependent thalassaemia patients (TDTP).

Methods: A comparative cross sectional study was carried out to compare the craniofacial morphologies which are the skeletal, dental and soft tissue morphology and estimation of dental age in Malay TDTP age between 6 to 16 years old with a control group.

Results: A total number of 43 Malay TDTP participated in this study. Majority of TDTP presented with Class II Angle malocclusion and Class II skeletal pattern. Soft tissue analysis revealed protrusion of the upper and lower lips and the nasolabial angle was acute in TDTP. There was a significant association between Angle malocclusion and skeletal pattern in TDTP. Chronological age for both TDTP and control group are almost similar. However, in term of dental age estimation TDTP showed delayed in dental age maturation compared to control group.

Conclusion: TDTP have high prevalence of Class II Angle malocclusion with Class II skeletal pattern compare to the control group. This could be attributed to the effect of thalassaemia to the craniofacial bone. Not only thalassaemia can lead to growth retardation, delayed puberty and delayed skeletal maturation, this study has concluded that delayed dental maturation is also present in TDTP.

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72. AN IN-VITRO STUDY OF ANTI-STREPTOCOCCUS EFFECTS OF VIRGIN COCONUT AND OLIVE OILS

Halimah MN

The natural products are sought to be an alternative mouthwash in controlling the dental caries especially in children. The objectives of this study were to determine the minimum inhibitory concentration (MIC) of the virgin coconut and virgin olive oils in inhibiting *Streptococcus mutans* in a various salivary pH, to predict the effect of oil concentration and salivary pH on bacterial inhibition activity by the oil and to compare anti-*Streptococcus mutans* effect between coconut oil, olive oil and chlorhexidine in various salivary pH. Methodologically, the *Streptococcus mutans* strain was cultivated in brain heart infusion agar. The inhibition of *Streptococcus mutans* was tested on 96-well microtiter plate. The growth of bacteria was enhanced with 1% glucose, and artificial saliva. The artificial saliva was prepared in six different pH i.e.; pH 6.0, 5.7, 5.4, 5.1, 4.8, and 4.5. The bacterial inoculum was incubated at 37°C for 48 hours to allow the formation of a biofilm. The bacterial biofilm was then exposed to VCO and VOO in serially diluted concentration (100%, 50%, 25%, 12.5%, 6.25%, 3.13%, 1.57% and 0.79%). The inhibition was measured under a microplate reader. As the result, the MIC value for both oil was read according to each salivary pH. The oil concentration which caused bacterial inhibition >80% was the MIC. The bacterial inhibition by the oils can be predicted by the oil concentration and salivary pH (p < 0.01). Then, factorial between group analysis of variance (ANOVA) was carried out to compare the anti-*Streptococcus mutans* among the VCO, VOO and chlorhexidine. VCO at concentration of >25% showed significantly more superior antibacterial activity against *Streptococcus mutans* than VOO (MIC 100%) and chlorhexidine (MIC 0.12%), even in acidic environment (pH 4.5) (p < 0.05). VCO can be an alternative mouthwash to chlorhexidine especially in children because it is non-toxic, easily obtainable, and edible.

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**Introduction:** Dental caries has historically been considered the most important subject of the global oral disease burden. Despite the decline in caries prevalence over the past 30 years, it is still a major public health problem in most countries. There is still high demand for control of dental caries through restorative care in spite of reinforcement on preventive care. Hence, the research on restorative dental care has grown significantly over the past 10-15 years and recently there is increasing evidence suggests that bioactive materials have great potential to form apatite like structure for caries remineralisation. **Objective:** The purpose of this study was to investigate the ability of GICs to form apatite in Tris buffer solution, to evaluate the effects of i) immersion time, ii) amount of bioactive glass incorporated into the GIC on apatite formation and also to compare the effects of different bioactive and ionomer glass compositions used in this study on the apatite formation. **Methods:** Two ionomer glasses in the system SiO₂ – Al₂O₃ – P₂O₅ – CaO – CaF₂ (0.75 P₂O₅ and 0.5 P₂O₅) and two bioactive glasses from the SiO₂ – P₂O₅ – CaO – CaF₂ (QMMM7- 9.3 mol% CaF2 and QXJCO3- 6.0 mol% CaF2) were synthesized via melt quench route. The bioactive glasses in 5%, 10% and 20% amount were added into the glass powder as apatite nuclei. The set cements in pellet form were immersed in the Tris buffer solution for 1 day, 7 days, 14 days, 28 days, 3 months and 6 months. The apatite formation was analyzed using ³¹P MAS- NMR and ion release in solutions were measured with ICP-OES. **Results:** The ³¹P NMR spectra showed significant increase in apatite formation in GIC with bioactive glass incorporation over time. The apatite formation also increased drastically by adding more bioactive glass into the GIC. The 0.5 P₂O₅ based ionomer glass and QMMM7 bioactive glass showed the greatest amount of apatite formation. **Conclusion:** GIC and bioactive glass has great potential to form apatite, with lower phosphate content ionomer glass and higher fluoride content bioactive glass showed superior effect. However, further work need to be carried out to validate the results.
74. AUTOTRANSPLANTATION, A TREATMENT OPTION FOR AN ECTOPICALLY POSITIONED INCISOR: A CASE REPORT

Mohamad Haziq MZ, Jama’iah MS, Ganasalingam S

**Introduction:** Dental autotransplantation or autogenous transplantation is defined as the movement of teeth from one position to another, within the same person. In children particularly, autotransplantation can be considered as a treatment option for repositioning of an ectopic tooth or replacement of an unrestorable tooth with a redundant tooth in the same position. **Case Report:** A 15-year-old Malay boy was referred to our department for exposure and bonding with gold chain of impacted 21. The tooth was previously impacted and unerupted secondary to the presence of compound odontome. Surgical removal of the odontome was done in May 2014, followed by attachment of stainless steel wire 0.3 at the labial surface of 21 for orthodontic traction purpose. However, patient was referred back to us in December 2015 as the wire had debonded during traction. 21 was noted to be high up in alveolus, anterior-posterior position with the crown pointed anteriorly and the root was just under the floor of the nose. Hence, autotransplantation was suggested. Autotransplantation of 21 was done under general anaesthesia and 21 pulp was extirpated and apical seal was placed using GIC intra-operatively. Surgical site has healed uneventfully with 21 exhibiting no pathological sign or symptom to date. **Discussion:** Attempting to track down an ectopic incisor tooth may not be favourable option in certain situations due to the position of these teeth. When conditions are favourable such as suitable preparation of recipient site, suitable root length and form of ectopic tooth, then autotransplantation may be a possible treatment option in such situation.

Oral presentation at the Malaysian Association of Paediatric Dentistry (MAPD) Scientific Meeting & Annual General Meeting 2017 held on 3-5 March 2017 at Primula Hotel Terengganu Malaysia (Won 1st prize oral presentation)

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Malaysia lies in South East Asia and along the equatorial line. She occupies a land area approximately 330,803 square kilometres. Malaysia comprises a population of about 32 million. Malaysia is known for her multiracial population consisting of about 69% Bumiputera, 23% Chinese, 7% Indians and 1% others. Toddlers *0-5 years comprise about 8.5% of the total population. Dental caries experience reported in the preschool population is based on findings of three national epidemiological studies carried out by the Ministry of Health Malaysia. These are the National Oral Health survey of preschool children was carried out in 1995, 2005 and 2015. In 1995 the caries prevalence reported was 87.1% with mean dmft 5.82. In 2005 the caries prevalence reported was 76.2% with mean dmft of 5.60. In the latest survey caries prevalence reported was 71.3% with mean dmft of 4.83. The main provider of oral health care for this group of the population in Malaysia is the Ministry of Health. Other providers are the dental schools in universities, the dental services of the Armed Forces and the private sector. Malaysia introduced national water fluoridation as a primary preventive strategy in 1970’s. Almost 73% of household receiving piped water are exposed to 0.4-0.6 ppm fluoride in their water supply. Fluoridated children’s toothpaste is widely available, and it’s use actively promoted by oral health care professionals. The Ministry of Health has also introduced several programs targeted at preschool children and toddlers. These aims on creating oral health awareness among parents, children and child care providers to reduce the incidence of dental diseases in this group of the population. Curative care is provided by mobile dental squads visiting Kindergartens, at dental clinics and hospitals where Paediatric Dentistry Services are available. In summary caries prevalence in preschoolchildren in Malaysia is still high. It is also acknowledged that there is a high unmet treatment need in this group of the population. It is known that high caries exposure in early childhood is a risk factor to high caries experience in later ages. Recognising this problem, the Ministry of health being the main provider of oral health care services in Malaysia aims to strengthen existing oral health care programs and improve and expand accessibility for curative care for this high-risk group of the population.

Poster presentation at the 11th Biennial Conference of the Paediatric Dentistry Association of Asia 2018 on 14-16 September 2018 at Beijing, China

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Background: Amelogenesis imperfecta is an inherited disturbance of enamel formation qualitatively or quantitatively in the primary and permanent dentition. It manifests clinically as discoloured, pitted, grooved or worn out enamel on teeth. Case Report: A 12-year-old male patient presented with a complaint of sensitive teeth and dissatisfaction with his appearance. Patient had no significant medical history. Dental history revealed that the primary dentition appeared broken down. Patient’s family members didn’t have similar problem. Clinically, patient had mixed dentition with pitting and yellow discolouration of teeth and severely attrited molars with short clinical crowns. Oral hygiene was poor with generalised gingival inflammation. Orthopantomogram revealed the presence of generalised thin radiopaque layer of enamel with normal radiodensity. A diagnosis of hypoplastic amelogenesis imperfecta was made. Treatment was carried out to improve oral hygiene, enhance esthetics, restore masticatory function and reduce tooth sensitivity. Preventive phase was initiated with dietary advice and oral hygiene instructions. Restorative phase begun next with placement of stainless steel crowns on first molars. Direct composite build up were done on the incisors and premolars. The second molars were temporized with glass ionomer cement. Follow Up: Maintenance phase involves monthly recall and oral hygiene reinforcement. Conclusion: Management of amelogenesis imperfecta beginning at childhood progressing to adulthood can be a challenge to clinicians. A multidisciplinary approach will be required during the permanent restorative phase.

Oral presentation at the Seminar and Workshop on Developmental Defect of Enamel, University of Malaya on 9 – 11 March 2018 at Istana Hotel, Kuala Lumpur

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Introduction: Cemento-ossifying fibroma (COF) is a rare benign type of odontogenic tumour which is also called ossifying fibroma and cementifying fibroma. Case Report: A case of 11 year old girl presented with a swelling over the buccal sulcus of 22 to 24 region for 4 months and increasing in size. On examination the swelling sized about 4 cm diameter, was hard in consistency and was slightly tender on palpation. Radiographic examination shows radiopaque mass on buccal of 24 with palatally displaced 23 to palatal of 21. Surgical removal of the lesion was done and the diagnosis was consistent with Cemento-ossifying fibroma. Post-operatively, the surgical site was healed and periodic review appointments were given to monitor for any signs of recurrence. Discussion: This lesion is called juvenile ossifying fibroma if they are identified in children, in which they are more aggressive and have higher recurrence rate. It is commonly seen in female gender, at premolar region of mandible between the third and fourth decades of life. The tumour consists of varying amount of cementum, bone and fibrous tissue. Since this lesion is well circumscribed and demarcated from the bone, the treatment option is conservative surgery.

e-Poster presentation at the 1st Joint Specialist Conference on 9 – 11 March 2018 at Istana Hotel, Kuala Lumpur

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78. CONSERVATIVE MANAGEMENT OF UNILATERAL CONDYLAR FRACTURE IN A 12-YEAR-OLD MALE: A CASE REPORT

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Introduction: Unilateral condylar fractures are reported to occur approximately three times more frequently than bilateral fractures. Unilateral condylar fracture may occur as an isolated case or with fracture of mandible or other facial bone. Condylar fractures in children must be managed properly in order to prevent future disorders in dentofacial development, skeletal deformity and articular dysfunction. Case Report: A 12-year-old healthy boy was referred to the Department of Paediatric Dentistry, HKL with a right condylar neck fracture and greenstick fracture on the left posterior body of mandible due to road traffic accident. Clinical examination and radiographic investigation confirmed the diagnosis. It was decided to manage the fracture conservatively with intermaxillary fixation and intermittent use of acrylic occlusal wafer. Lesson Learnt: Certain condylar fractures can be managed conservatively in growing children. Appropriate conservative treatment can achieve good clinical results and acceptable bone remodelling in the growing children. Discussion/Conclusion: As a result of the unilateral condylar fracture, the occlusion was deranged with an open bite on the non-fracture side and premature contact on fracture side due to shortening of vertical ramus height at fracture side. The acrylic occlusal wafer was placed at the permanent contact side to establish the original vertical height of the ramus on the fracture side. The placement of the acrylic occlusal wafer was also to distract the fracture side in order to allow spontaneous repositioning of the condylar head.

Oral presentation at the CRiPD 2018: 2nd Case Reports in Paediatric Dentistry on 21 April 2018 at Sungai Buloh Hospital, Selangor

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Dr. Raja Zarina Raja Shahardin
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Introduction: Anterior crossbite is commonly seen in children. This malocclusion can be corrected using various treatment modalities but every technique has its shortcomings. Interceptive treatment done at an early stage is clearly beneficial and can impede a range of adverse effects. Untreated anterior crossbite can lead to possible effects such as increased mobility, occlusal trauma, enamel wear and proclination of teeth leading to periodontal pathosis. This study demonstrated the use of a simple technique to correct anterior crossbite by using Fuji VII Glass-Ionomer (GIC) slope to tip teeth to the desired inclination. Case Report: In each of the cases presented, a build up with an inclined plane using GIC Fuji VII was used. The malocclusion was corrected within a period of 10-14 days. Successful outcomes in these cases help to outline the criteria for good case selection and the possible detrimental effects. Discussion: The use of this method produces rapid result, incurs minimal cost and does not require specialized skill. It is also a valuable treatment option for patients who cannot cope with complicated treatment or those with insufficient number of teeth for the retention of appliances. Applying this technique to a bigger group of patients will require more scientific evidence to support its use, as this method have its limitations. This technique is definitely advantageous to Paediatric Dentists as an interceptive treatment to correct crossbite in a mixed dentition stage, specifically for a specific group of patients.

Poster presentation at the Malaysian Association of Paediatric Dentistry (MAPD) Scientific Meeting & Annual General Meeting 2017 held on 3-5 March 2017 at Primula Hotel Terengganu Malaysia (Won 2nd prize poster presentation)

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Objective: Aim of the study is to obtain data on status of caries and gingival health among patients with Special Needs from 3 institutions in Kota Kinabalu. This study will also provide data on type of disability, number of referrals made to the Department of Paediatric Dentistry, Queen Elizabeth Hospital (QEH), and number patients treated under general anaesthesia. Methods: Data is collected from PG201 following visit by the mobile dental squad to Taman Didikan Kanak-Kanak Kurang Upaya Sembulan (TDKKUS), Seri Mengasih (SM) and Cita-Cita Learning Institution (CHILD) and also from the Special Needs database in the Department of Paediatric Dentistry, QEH. Results: The mean age for patients from TDKKU (n=15) was 12.85 years (5 years – 43 years). Types of disability and status of caries and gingival health are as follow. (Autism:3, Down’s Syndrome:1, Cerebral Palsy:9, Learning Disability:2, total dfx:28, total DMFX:37, percentage Gingivitis free mouth (MBG):25.00%). Number of patients unable to complete treatment at institution was 10. 9 patients were referred to QEH for follow-up care and of these 5 patients required treatment under general anaesthesia. The mean age for patients from SM (n=120) was 14.42 years (5 years – 29 years). There were 47 patients above 16 years of age. Types of disability and status of caries and gingival health are as follow. (Autism:28, Down’s Syndrome:43, Cerebral Palsy:5, Learning Disability:37, Other disability:5, Unknown:1, total dfx:90, total DMFX:337, percentage MBG:71.15%). Number of patients unable to complete treatment at institution was 54. 34 patients were referred to QEH for follow-up care but only 22 attended. Of these 10 patients required treatment under general anaesthesia. The mean age of patients from CHILD (n=31) was 7.17 years (2 years – 12 years). Types of disability and status of caries and gingival health are as follow. (Autism:17, Cerebral Palsy:3, Learning Disability:9, Other disability:2, total dfx:64, total DMFX:19, percentage MBG:66.67%). Number of patients unable to complete treatment at institution was 21. 6 patients were referred to QEH for follow-up care and of these, only 16 patients attended and all required treatment under general anaesthesia. Conclusion: The study shows that the dental treatment needs from the 3 institutions in Kota Kinabalu is still high and require further management at the Department of Paediatric Dentistry, QEH.

Keywords: Special needs, dental treatment needs

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Introduction: Dentigerous cysts involving impacted and unerupted supernumerary teeth in the anterior maxilla are very rare. Most dentigerous cysts reported are those associated with the third molar teeth of the mandible and only 5-6% of dentigerous cysts are reported to be associated with supernumerary teeth. Case Report: This report presents a case of incidental finding from an OPG that showed a unilocular radiolucent lesion accruing in the left maxilla involving unerupted and displaced supernumerary tooth in a 12 year old girl. Clinical examination revealed mesially angulated tooth 23 with mobility grade 1 and fullness noted over the upper left quadrant, painless on pulpation. Tooth 23, 24 and 25 responded to sensibility test. Excisional biopsy with complete enucleation and chemical curettage with Carnoy’s solution and placement of BIPP was performed under general anaesthesia. Specimen was sent to laboratory. Histopathological examination revealed fibromyxoid tissue lined in parts by thin non-keratinising stratified squamous epithelium with occasional mucous metaplasia and confirmed the diagnosis of dentigerous cyst. This patient was under periodic follow up and there have been no sign of recurrence over the past one year. Comments: As in this case, unerupted supernumerary teeth are most likely to be associated with pathology. When diagnosed, these teeth may need to be removed. If there is no immediate indication for removal, then they will need to be closely monitored so that early pathological changes associated with these teeth can be detected and treated without delay.

Oral presentation at the Malaysia-International Dental Exhibition and Conference (MIDEC) 2017 on 27-30 July 2017 at Kuala Lumpur Convention Center (KLCC)

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Introduction: Recently, the calcium phosphate-based delivery systems and xylitol-coated calcium and phosphate have been incorporated in topical fluoride varnish (TFV) to enhance its remineralization potential. However, no study has compared the remineralization potential of calcium phosphate-based TFV to conventional TFV. Objective: To compare the remineralization potential of different TFV with calcium phosphate-based delivery system. Methods: Six groups of prepared human enamel specimens were prepared and randomly selected as Group 0: Control (no varnish application), Group 1: Duraphat®, Group 2: MI Varnish™, Group 3: Embrace™ Varnish, Group 4: Enamel Pro®, and Group 5: Clinpro™ White Varnish. Artificial caries lesions were created on the enamel specimens, by immersing in a demineralization solution for 96 h. Each specimens was then, immersed in artificial saliva for 6 h after TFV application and pH cycling was performed for 8 days. Specimens were evaluated using Knoop surface microhardness and transverse microradiography. Data were analysed with one-way ANOVA to examine the effect of TFV on change in percentage of surface hardness recovery (%SHR), change in lesion depth (ΔLD) and change in mineral loss (ΔΔZ). Results: Group 1 showed significantly higher change in %SHR than Group 3 and 4. The ΔLD and ΔΔZ were significantly higher in Group 1 than Group 2, 3 and 4. However, there were no significant differences in %SHR, ΔLD and ΔΔZ between Group 1 and 5. Conclusion: Duraphat® alone achieves significant remineralization of enamel carious lesions. The mineralization effects of Clinpro™ White Varnish is similar to Duraphat®.
**Introduction:** The Department of Paediatric Dentistry is a tertiary referral centre for children under 16 years of age, located at the Paediatric Institute Hospital Kuala Lumpur. The priority groups of children referred to us are children with special healthcare needs including medically compromised, mentally challenged, physically challenged, adverse dental behavior, the very young and others. The teams involved are the staff of the paediatric dental clinic and from the Microbiology Unit. **Problem:** Patients and staff of dental clinics are at risk for infection. The consequences of cross contamination can be severe especially for the immune-suppressed individuals, who form the majority of our patients. **Assessment of problem and analysis of its causes:** From observation, there are certain areas in our clinic that may be heavily contaminated but there is no objective method of assessment of level of bacterial contamination in our settings. Surface bacterial sampling was done as baseline data and only the team members involved was aware that the study was done. The pre-remedial results were informed to our staffs and the importance of daily scheduled cleaning and disinfecting activities was reinforced. **Intervention:** Apart from routine surface cleaning and disinfecting, an aerosol disinfecting agent containing 6% of hydrogen peroxide was used weekly to disinfect the waiting area and dental surgery room. The usual cleaning job was done by a permanent cleaner who strictly adhered to the cleaning times as proposed by us which is first in the morning, during lunch time and in the evening after the last patient. Surveillance on the cleaning and disinfecting procedures was done by sister in charge. **Strategy for change:** Before intervention was carried out, a baseline sampling was done on the 28 September 2015 to assess the level of bacterial contamination in the waiting room and dental surgery room. After implementing the changes for about four months, samplings were done on 14 January 2016 and 23 March 2016 to assess the level of bacterial contamination. The dental surgery assistants and housekeeping staff were briefed on the strategies for improvement prior to the implementation of changes. Roster planning and monitoring ensures the disinfection and cleaning procedures run smoothly and efficiently. **Measurement of improvement:** Surface sampling was done on the selected surfaces in the waiting room (entrance door’s handle, countertop, soft toys and children’s playmat) and dental surgery room (dentist’s writing desk, mobile toy at dental chair, switches panel and light handle at dental chair, floor) using Replicate organism Detection and Counting (RODAC) plates containing agar medium. These sites were sampled 3 times in a day according to our daily scheduled cleaning and disinfecting activities: T⁰ before clinical activity –after morning cleaning and disinfecting is done. T¹ during clinical activity at its peak – before midday; T² after the last patient and after cleaning and disinfecting for the day. The RODAC plates were
then sent to Microbiology Laboratory for microbiological analysis. The results for microbiological analysis are expressed as CFU/cm² (colony forming unit) after 48 hours incubation at 20-25⁰C. At present, there is no available data on the standard acceptable level of surface contamination at a dental clinic in Malaysia. Based on the clinical activity with aerosol and splatter coming from handpieces and ultrasonic scalers, we proposed that there should be less than 10 CFU/cm² of organisms at rest (T₀ before clinical activity; T² after the last patient) and less than 20 CFU/cm² when in operational (T¹ during clinical activity) on the selected surfaces. The microbiological analysis revealed high CFU/cm² in all surfaces where sampling was done and did not meet the standard CFUs set in accordance to the three timings. Effects of changes: Most of the housekeeping surfaces and clinical contact surfaces met the standard CFUs set, except the soft toys and children’s play-mat after the last patient; the floor in dental surgery room prior to the clinical activity. We have learnt that some surfaces like the children’s play-mat and soft toys are the potential place to harbor microorganisms. Proper and consistent cleaning procedures must be tailored to these surfaces. During the process of change, non-compliance from the staffs in cleaning and disinfecting procedures was encountered. Lessons learnt: Continuous surveillance on the cleaning and disinfecting procedures is essential to minimize the level of bacterial contamination at paediatric dental clinic. Soft toys were discarded as it harbour potentially dangerous bacteria. Monitoring the level of microbial contamination at a paediatric dental clinic is important. Surface bacterial sampling can be carried out in other dental clinic to assess the level of bacterial contamination and thus, improvement on the infection control practices can be done accordingly.

Poster Presentation International Forum in Safety and Quality in Health 24-28 August 2017 Kuala Lumpur

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Introduction: Children affected by generalized enamel defects; for example amelogenesis imperfecta or chronological hypoplasia, require full mouth rehabilitation to restore functions and aesthetics. However, construction of individual composite crowns are tedious, time-consuming, technique-sensitive and poorly tolerated in young children. This paper presents two cases that describes a simple technique to do full mouth rehabilitation in children, by using thermoformed templates. Case Report: The cases are, a nine-year-old girl affected by amelogenesis imperfecta associated with anterior open bite, and a pair of non-identical nine-year-old male twins affected by chronological hypoplasia. In both cases, stone casts models were constructed and the defective teeth surfaces were built-up with wax. Impression of the reconstructed models were then taken with polyvinylsiloxane and poured with stones. A thermoformed templates were fabricated from the models. For the child with amelogenesis imperfect, composite crowns were constructed in the laboratory while for the twins composite crowns were constructed on chair side. In both cases, the thermoformed templates become a mould in recreating the anatomy of the affected teeth and allows a simple and quick construction of multiple composite crowns in one sitting. Discussion: Management of dentition of children with generalized enamel defects are difficult because most of the times they are unable to tolerate long clinical procedures required in constructing composite crowns. By means of this simple and low-cost technique of using thermoformed templates, it allows the construction of multiple composite crowns in a single visit, accurate anatomy of the affected teeth and shorten the chair-side time making it well-tolerated in young children.
Introduction: General anaesthetic (GA) session in Hospital Wanita dan Kanak-kanak Sabah (HWKKS) is carried out on Wednesday and Friday every week and on Saturday once in 2 weeks. The GA session is basically for children mostly below 12 years old. The procedures were included multiple filling and extractions, surgical removal of impacted teeth, pathology and trauma cases. Every year the number of patients who require treatment under GA increased. Therefore, three level of different type of urgency has been practiced since 2013. This is to classify the patients depending on the priority and urgency. Level 1 - 4-6 months (not urgent), Level 2 – 2-4 months (semi urgent) and Level 3 – 1 day-2 month (urgent).

Objective: To evaluate GA waiting time for dental care in children in HWKKS. Methodology: This is a retrospective study. Data were collected from patient’s case note who had undergone treatment under GA in HWKKS from January 2014 to December 2014 using data collection form. Result: A total of 187 case notes were collected and consist of 109 cases for Level 1, 24 cases for Level 2, 46 cases for Level 3 and 8 case notes showed that the patient did not attend during the day of GA. It was noted that for Level 1, the mean waiting time was 5.61 months. If an earlier date was obtained, the mean waiting time is 3.72 months, while if a later date was necessary, the mean waiting time increased to 8.68 months. For Level 2, the mean waiting time was 3.21 months. If an earlier date was obtained, the mean waiting time was reduced to 1.85 months while if a later date was necessary, it increased to 6.86 months. As for Level 3, the mean waiting time was 0.43 months. If the original date can’t be kept, the mean waiting time within the range of 1 day – 2 months was 0.86 months and if a later date was necessary, the mean waiting time increased up to 6.62 months. Summary: It was noted that the mean waiting time for the 3 different tiers for “same date” appointment was within the range. The mean waiting time for “earlier date” for Level 1 and Level 2, usually due to complain of recurrent dental abscess or other cancellation cases, was earlier than respective time range. Patients who had GA later than the pre-determined date (same date), mainly due to recurrent upper respiratory tract infection, uncontactable, water shortage or no electric supply, had the mean waiting time exceeded the time range.

Keywords: General Anesthesia, waiting time, paediatric

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Introduction: Tooth evulsion should ideally be treated with immediate replantation. Replanting an avulsed tooth outside extraoral dry time period has not been considered as an emergency as prognosis is not time dependent. Judicious decision is required for the benefit of replanting the avulsed tooth in the future management of the patient’s dentition. Case Report: Eleven-year-old healthy Malay boy allegedly fall from bicycle and sustained avulsion of upper central permanent incisors. Both teeth were kept dry in a plastic bag for 18 hours and were brought to the clinic during his first visit. Radiographically, sockets of 11 and 21 has complete avulsion and intact alveolar and crestal bone. Despite the dry time of the teeth was more than 60 minutes, both teeth were replanted back into their sockets and was splinted for 4 weeks using composite wire splint. The root canal treatment was initiated on day 8 after replantation. A one month follow-up showed both teeth were asymptomatic with no mobility. Periapical radiograph showed no sign of inflammatory root resorption on 11 and 21. Lesson learnt: In all avulsion case, despite of recommended extraoral dry time, replantation of avulsed tooth should be considered. Conclusion: Duration of extraoral storage of an avulsed tooth is critical for functional healing and affects tooth survival. Even if delayed replantation of avulsed teeth should fall later, delayed extraction of poor prognosis teeth can preserved space for future restoration of missing teeth in a growing patient.

Oral presentation at the 2nd Case Reports in Paediatric Dentistry “Oral Injuries in Children” on 21 April 2018 at Hospital Sungai Buloh

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Introduction: Odontogenic infections are among the most common infections of oral cavity. The causes of odontogenic infections are dental pulp necrosis secondary to dental caries, deep dental restorations or dental trauma. Early diagnosis and treatment are critical as paediatric patients with facial infection become dehydrated and systemically ill very rapidly. At present, there are no local clinical practice guidelines (CPG) available on this topic and anecdotal observations conducted have shown that health care providers sometimes face difficulty in making appropriate clinical judgements and there are variations of clinical practice. 

Objective: The main aim of the guidelines is to enable practitioners to make informed decisions for individual patients in the detection and management of acute orofacial infection of odontogenic origin in children. Methodology: This CPG was based on 7 clinical questions and was developed through scientific evidences from literature search, and adapted according to local practices. However, where there was a lack of evidence, recommendations were based on consensus of group members. This guideline was also reviewed independently by both internal and external reviewers. This guideline was also presented to the Technical Advisory Committee for CPGs, and Health Technology Assessment and CPG Council for approval. The 7 clinical questions addressed in this CPG are: (i) What are the epidemiological characteristics of AOI?; (ii) What are the clinical presentations of AOI?; (iii) How to diagnose a child with AOI?; (iv) What are the indications for hospitalisation and for referral to Paediatric Dental Specialist?; (v) What are indications for referral to other medical specialties?; (vi) Management of AOI: (a) When should surgical intervention for AOI be carried out?; (b) What are the effective / safe analgesics to be used in AOI? And (c) What are the effective / safe antibiotics to be used in AOI?; and (vii) What are the criteria on how to assess AOI that is under controlled and for discharging patient? Conclusion: Acute odontogenic infection in children should managed promptly based on adequate clinical examination and radiographic investigation. Moderate to severe cases of acute odontogenic infection may require referral and hospitalisation for further management. Adhering to the proposed algorithm will ensure a systematic management of the patient and timely referral to the specialist for optimal outcome.

Keyword: Odontogenic infection, Paediatric, Management
Introduction: Management of mandibular fracture in paediatric patients is challenging and demands a very careful consideration in determining the optimal treatment strategy. It requires knowledge on the development of the growing mandible and developing dentition. This case report presents the management of mandible fracture and the discussion on iatrogenic extrusion of upper left lateral (UL2) secondary to Intermaxillary Fixation (IF) placement. Case report: A 15-year-old boy with no known medical illness was referred to Paediatric Dental Department, Hospital Tengku Ampuan Rahimah for further management of facial trauma due to motor vehicle accident. Clinical examination revealed soft tissue injuries on lower lip, right cheek and lower right retromolar area. He also presented with limitation of mouth opening, mobility of mandible with step deformity between lower left canine and lower left permolar and occlusion derangement seen. Computer tomography mandible showed displaced fracture of right body of mandible and left parasymphisis of mandible. Extrusion of UL2 was seen 2 weeks post placement of arch bar and IF. Open reduction and fixation was carried out under general anaesthesia. Unerupted lower right third molar was noted at the fracture line and was left in situ. The plates and screws were removed 6 months post placement with a good outcome noted clinically and radiographically. Conclusion/ Lesson learnt: Careful consideration must be taken when placing wire especially on single rooted tooth during IMF.

88. MANAGEMENT OF MANDIBLE FRACTURE IN A 15-YEAR-OLD BOY: A CASE REPORT
Nabihah D, Kalaiarasu P, Mimi Syazleen AR, Bahruddin S

2nd Case Report in Paediatric Dentistry Conference 2018, Hospital Sungai Buloh

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Introduction: Recently, there have been considerable improvements in the management of maxillofacial injuries in children. The pattern of fractures and frequency of associated injuries are similar to adults but the overall incidence is much lower compared to them. Management of facial and dental injuries in children requires knowledge about child’s particular stage of development and accordingly modification of the treatment approach keeping the future growth and development in mind. Case Report: A 9 year old Malay boy with no known medical illness presented to dental clinic complaining of right facial swelling and pain following trauma. Upon clinical examination, the diffuse swelling was tender upon palpation and there was a limitation in mouth opening. Intraorally, no sublingual haematoma but a slight derangement in occlusion was noted. Radiographic investigation revealed minimally displaced right angle of mandible fracture. Close reduction with modified Gunning splint has been done and the patient was put under flexible maxillomandible fixation (MMF) for two weeks. With a good sign of bony healing radiographically, the splint was removed after a month. Conclusion: Managing maxillofacial fracture in young growing child requires special attention to the anatomic and physiologic considerations. Majority of the cases can be managed conservatively by observation or closed reduction in non-displaced or minimally displaced fractures. Long term follow up is required to monitor potential growth abnormalities.

Oral presentation at the 1st Joint Specialist Conference 2018 on 9 – 11 March 2018 at Hotel Istana Kuala Lumpur

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Introduction: Ameloblastoma according to the classification of odontogenic tumors by WHO in 2005, is classified as a benign neoplasm of odontogenic epithelial origin. One to three percent of tumors and cysts of the jaws are comprised of ameloblastomas. The tumor is locally aggressive, but often asymptomatic, showing a slow growth which is manifested as a facial swelling or radiographic incidental finding. Case report: A case of 8 years old, Malay boy with unknown underlying medical illness, is presented with swelling at lower left side buccal gingiva. The case history reveals swelling which started since 1 week and is associated with mobile left lower molar deciduous tooth. Extraction was carried out at a private clinic but the swelling did not resolved. The clinical examination showed the presence of mild facial swelling over the body of left mandible and remarkable buccal expansion of left mandibular body with tender to palpation. Orthopantomogram reveals extensive unilocular radiolucency with diffuse margin, localized to the left lower mandibular body extending from the lateral incisor to first molar including both premolars inside the lesion. Incisional biopsy was performed and histopathological examination revealed ameloblastoma. Surgical enucleation was performed with extraction of 34, 35 and 36 subsequently. Post-operative radiographic evaluation at 3 month and 6 months showed bone regeneration. Conclusion: Ameloblastoma is uncommon in children. Good results can be achieved in the treatment of ameloblastoma in children using conservative surgery. There is no recurrence for 1 year follow-up. Patient compliance and careful follow-up are important.

Poster presentation at the 1st Joint Specialist Conference at Hotel Istana, Kuala Lumpur on 9 – 11 March 2018

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91. MANDIBULAR UNICYSTIC AMELOBLASTOMA IN CHILDREN: A CASE REPORT

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Introduction: Ameloblastoma in children and adolescents are thought to be rare. They account for approximately 10-15% of all reported case of ameloblastoma. Some authors have proposed the theory that ameloblastoma probably starts to develop in childhood. The unicystic ameloblastoma is the most commonly reported type of ameloblastoma in children. Case report: a 12-year-old Malay girl with no underlying medical illness presented to our clinic with a swelling which gradually increased in size located on left mandible region since 2 months. There was no history of trauma noted. On examination, there was a diffused firm swelling at the left body of the mandible with a normal overlying skin. Surgical enucleation of the lesion was done under general anaesthesia and patient is currently under periodic follow up. Recovery was uneventful. Conclusion: The diagnosis of unicystic ameloblastoma was based on clinical, histopathologic and CT features. It is a tumor with a strong propensity for recurrence, especially when the ameloblastic epithelium penetrates the adjacent tissue from the wall of cyst. The ability to predict this potential occurrence prior to surgery would greatly enhance therapeutic strategies for reducing the incidence.

Poster presentation at the 1st Joint Specialist Conference at Hotel Istana, Kuala Lumpur on 9 – 11 March 2018

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Introduction: The Malaysian indigenous Orang Asli (OA) children have poor oral health which may impact on their daily performances. Objective: To assess the oral health status, oral health-related behaviours and oral health-related quality of life (OHRQoL) of Malaysian OA children in Cameron Highland (CH), Malaysia and to identify factors associated with OA children’s OHRQoL. Methods: A cross-sectional study was conducted on 249, 11-12 year-old OA primary school children in CH. Children were clinically examined and completed a validated self-administered questionnaire which comprised items on demographic information, oral health-related behaviours and the Malay Child-OIDP index. Results: The response rate was 91.2%. Prevalence of dental caries in permanent and primary teeth were 61.6% and 41.4%, respectively with mean DMFT of 1.36 and dft of 1.01. Majority (62.6%) of the children had a CPI2 (calculus on tooth surface) while 33.4% had bleeding on probing (CPI1). Despite brushing teeth >2x/day (83.7%), more than two-thirds chewed betel quid >1/day (67.4%). More than half of the children (58.6%) had at least one oral impact on their daily life. Eating was the most common performance affected (35.2%). The severity of impact was high on cleaning teeth (2.6%) and doing homework (1.8%). The main oral conditions causing impacts were gum bleeding (66.2%), toothache (56.4%) and fractured tooth (52.6%). Three factors, i.e. dft score >3, father’s salaried occupation and frequency of eating sugary foods >3 times a day had significant associations with OIDP score when all other factors were standardized. Conclusion: OA children in CH had high prevalence of caries and gum disease which impacted on their daily life performances. OA children’s OHRQoL was significantly associated with caries in primary teeth, father’s occupation and frequency of sugary foods intake.

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Introduction: Epidermolysis Bullosa (EB) is a diverse group of inherited disorders that presents as blister formation with tissue separation occurring at variable depth in the skin and or mucosa as common features. Currently, there are over 150 estimated sufferers in Malaysia. Intraoral manifestation vary greatly from occasional blistering with small discrete vesicles that heal rapidly, to severe intraoral blistering with subsequent scar formation resulting in microstomia, obliteration of the oral vestibule, and ankyloglossia. Case Report/Description: A 12-year-old girl with Dystrophic Type EB was referred to our department for management of oral ulcers and poor oral hygiene. Upon examination, she presented with generalized skin involvement, with lesions on her body in various stages of healing. She also presented with microsomia and severe limitation of mouth opening. Intraorally, she was in the mixed dentition stage with multiple carious teeth, Class III incisal malocclusion, with severe crowding and constriction of both maxilla and mandible. There was generalized gingival inflammation along with erythematous ulceration noted over palate and tongue region. In view of clinical findings and need for multiquadrant dentistry, comprehensive dental treatment under general anaesthesia was performed taking necessary precautions. She is currently on routine periodical follow up with our department. Discussion/Conclusion: EB is a debilitating disease, which greatly affects the quality of life of the patient. Oral complications can significantly contribute to such problems. As such, early referral to a dental centre can significantly aid patients to achieve greater comfort and quality of life, through preventive approaches, timely intervention and treatment.

Poster Presentation 2nd Hospital Kuala Lumpur Research Day on 10 August 2017 di Auditorium Utama, Hospital Kuala Lumpur

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Objective: To evaluate the treatment outcome of revascularization procedure on non vital immature permanent teeth (NVIPT). Methods: All NVIPT of healthy children which were treated by means of a standardized revascularization protocol from year 2013 to 2017 and had been periodically followed up of a minimum of 24 months were included in the study. All teeth were assessed clinically and radiographically. Romexis radiographic system was used to carry out quantitative analysis of the radiographs (degree of changes in root length and dentinal wall thickness). The data obtained were analysed statistically using descriptive analysis and Chi-square test. Result: Out of 82 cases, 57 NVIPT of 53 children with the mean age of 12 (SD ± 2.2) fulfilled the inclusion criteria. They were monitored closely for an average of 30 months (range of 24 to 48 months). 37 (64.9%) cases showed complete success with signs of resolution of periapical radiolucency, thickening of dentinal wall, continuation of root growth, apical closure and positive response to sensibility test. 14 (24.6%) cases demonstrated acceptable success with absence of signs and symptoms but lacking in any criteria of complete success. 6 (10.5%) cases had signs of treatment failure, needing further treatment which reduces the survival rate to 96.5%. There was significant association of treatment outcome and root formation stage of NVIPT (p<005). Conclusion: This study confirmed that revascularization is an effective treatment modality in treating NVIPT with favorable clinical outcome of thickening of dentinal wall, root growth and achieving apical closure.

Oral presentation at the 1st Joint Specialist Conference 2018 on 9 – 11 March 2018 at Hotel Istana Kuala Lumpur

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Seremban
95. PATTERN OF ANTIBIOTIC PROPHYLAXIS PRACTICE FOR DENTAL PROCEDURES IN CHILDREN WITH CONGENITAL HEART DISEASE

Jama’iah MS, Raja Zarina RS, Sockalingam G

Various antibiotic prophylaxis guidelines have been published such as the American Heart Association 2007, British Society for Antimicrobial Chemotherapy 2006, National Institute for Health and Clinical Excellence (NICE, 2008), European Society of Cardiology 2015 and in Malaysia, The National Antibiotic Guideline 2014 and Clinical Practice Guidelines for the Prevention, Diagnosis and Management of Infective Endocarditis 2017. **Objective:** To determine the pattern of antibiotic prophylaxis practice for dental procedure in children with congenital heart disease (CHD) at the Department of Paediatric Dentistry, Kuala Lumpur Hospital. **Methods:** Data from year 2010 to 2015 was collected which include source and reason of referral, types of heart condition, dental procedure and antibiotic given. **Results:** There were 210 patients with CHD, 70% had acyanotic CHD and 21.9% cyanotic CHD. About 46% were referred by paediatric cardiologist and 31.9% by Institut Jantung Negara. The common cause for referral was dental assessment (47.6%). Antibiotics were prescribed to 23.3% (49/210) patients of which, 34.7% was given ampicillin or amoxicillin/clavulanic acid. About 96% cyanotic heart cases undergoing invasive dental procedures were prescribed antibiotic prophylaxis. Almost 31% were prescribed with antibiotic prophylaxis even though it was not indicated. **Conclusion:** This study shows that there is variability in prescribing antibiotic prophylaxis and it is important for dental clinicians to standardize the practice of giving antibiotic prophylaxis.

**Keywords:** antibiotic prophylaxis; dental treatment; congenital heart disease in children

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Introduction: Hyperimmunoglobulin E Syndrome (HIES) also known as Job’s syndrome or Buckley syndrome is a rare immunodeficiency disorder characterized by markedly elevated serum immunoglobulin (Ig) E, recurrent cutaneous and pulmonary infections and chronic eczema. Incidence of HIES is about 1:100,000,000, autosomal dominant and recessive transmission patterns have been described, with no gender predilection. Aetiology of HIES has been identified as mis-sense or inframe deletion in transcription factor STAT 3 and signaling abnormalities of cytokines, in which are thought to cause dental, skeletal, and immunological disorders. Other common manifestations described are characteristics facies (prominent forehead, deep set eyes, broad nasal bridge facial asymmetry), and dental manifestations (delayed exfoliation of primary teeth, delayed eruption of permanent teeth, periodontitis, supernumeraries, microdontia, and high arched palate).

Case Report: A 5-year-old Malay girl was referred to the Department of Paediatric Dentistry, Hospital Kuala Lumpur from the primary care due to bleeding during brushing and mobile teeth. There was no history of gum or facial swelling. Parents revealed that patient suffered from multiple episodes of eczema and skin infection requiring admission. However, they had defaulted their medical reviews. Intra-oral examination showed poor oral hygiene with generalized plaque, calculus and hypomineralised teeth, and generalized gingival recession with multiple grade III mobility. Gingiva appeared red and edematous with spontaneous bleeding upon palpitation. Orthopantomogram revealed widespread advanced horizontal alveolar bone loss, involving the inter-radicular region of primary molars. We suspected patient has underlying immunodeficiency condition and referred her to our medical counterpart for further evaluation. Based on medical records, she had multiple admissions due to bronchitis, infection of right hand and forearm and candida sepsis and was also diagnosed with eczema, otitis media, and microcytic hypochromic anaemia. Laboratory investigations were performed to rule out underlying immune deficiency syndrome. She was diagnosed with HIES due to her elevated total serum IGE of 270 iu/mL (normal value 60 iu/mL for children 1 – 5 years). Diagnosis of periodontitis in a patient with HIES was made and treatment plan was to institute strict oral hygiene for good plaque control.

Comments: HIES is a multi-system disorder with a wide range of clinical manifestation, affecting the immune system, connective tissue, skeleton and dentition. A HIES scoring system developed at the National Institutes of Health (NIH) can be used to reach the diagnosis. However, it does not allow diagnostic certainty in infants as some manifestations may not be present in very young patients. Paediatric dentists play a vital role in recognizing oral manifestations in patients with underlying medical
conditions. Thus in this case, it shows the importance of an early diagnosis and periodical reviews to treat the periodontal disease in providing a better quality of life to patient.

Poster presentation at the 11th Biennial Conference of the Paediatric Dentistry Association of Asia on 15-16 September 2018 at Beijing International Convention Center (BICC)

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Introduction: Stevens Johnson Syndrome (SJS) is a severe hypersensitive reaction that can be precipitated by infection, systemic diseases, physical agents, foods and drugs. SJS is potentially life threatening and presented as severe mucosal erosions with widespread erythematous, cutaneous macules or atypical targets. Case Report: A 5-year-old boy was treated with Amoxicillin for upper respiratory tract infection. Unfortunately, he developed SJS and was referred to us for management of oral complications. Generally, patient was lethargic, feverish with rashes on the body and having difficulty in oral intake. Ulceration and edema of eyelids were noted. Lips were edematous and erythematous with crusted tissue that bleeds spontaneously. Intraorally, severe orofacial coalescing were ulcers noted on the labial, bilateral buccal mucosa, palate, floor of mouth and ventral surface of tongue. We treated the oral condition with thorough daily oral toilet using Difflam mouthwash under topical anaesthesia and application of topical steroids and hyaluronic acids. Discussion: In this case, amoxicillin was the causative agent since patient developed severe signs and symptoms following consumption. The oral complications were managed with only topical medication as the patient responded well. Conclusion: As a clinician, we have to be more vigilant when prescribing even the most common drugs in children as they may lead to unexpected outcome.

Presented at 39th Asia Pacific Dental Congress (APDC) on 22-25 May 2017 at Macau

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Complicated crown-root fractures account for a small percentage of traumatic dental injuries seen in children; however, management of these injuries can be very challenging to clinicians. Factors such as complexity of the injury, patient’s age and dentition stage, patient’s cooperation and parental demands may have some bearing on the type of treatment undertaken and its outcomes. In some children, these injuries may have significant impact on their quality of life. The purpose of this article is to describe two cases of complicated crown-root fracture which were successfully managed through orthodontic extrusion using a sectional fixed orthodontic technique. The basis for the treatment technique and its favourable outcomes were highlighted with its advantages and drawbacks.

Case Report in Dentistry Volume 2018 Article ID 8715647

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**Introduction:** Self-inflicted injury may be a manifestation of a behavioural anomaly. Perioral and oral tissue mutilation may be precipitated by such behaviour, sometimes seen in children. These children may present with different patterns of injury to lips, cheeks or tongue depending on the causative behaviour or habit. Persistent tissue damage can lead to pain, infection, scarring and disfigurement. There are various conditions in the paediatric population which may be related to self-mutilating behaviours, namely genetic syndromes such as Lesch-Nyhan Syndrome and Cornelia de Lange Syndrome, mental retardation, congenital malformation and infectious disease such as encephalitis.

**Case Report:** We are presenting three cases of paediatric patients with different clinical entities ie Lesch-Nyhan Syndrome, mitochondriopathy disease and autoimmune encephalitis who required intervention and management for their mutilation behaviours. Intervention using splint therapy was adopted as one of the treatment modalities for these patients. Satisfactory outcome was achieved in preventing further tissue damage.

**Comments:** Scientific evidence from the literature are scarce and are usually in the form of reports of case series. Various types of appliances have been advocated to help prevent injury and possibly change behavioral pattern. Splint therapy may serve as a habit breaker whilst allowing healing to take place. Factors such as aetiology and the mechanism of oral mutilation should be identified so that the design of the splint can be customized to the individual patient’s need. The management on such patients is always challenging and requires a multidisciplinary approach.

Oral presentation at the Malaysia-International Dental Exhibition and Conference (MIDEC) 2017 on 27-30 July 2017 at Kuala Lumpur Convention Center (KLCC)

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Introduction: Successful stem cell therapy by cell transplantation requires sufficient numbers of cells with high viability and pluripotency. Objective: This study investigated the effects of different types of dissociation reagents during in vitro expansion of deciduous dental pulp stem cells (SHED) in order to obtain an optimum number of quality cells for tooth banking and regenerative therapy purposes. Methods: Three independent biological replicates of cryopreserved SHED in passage one (SC1) were expanded in vitro using the enzymatic dissociation method. Before commencing the experimental study, some basic characterization of mesenchymal stem cells (MSCs) was done to make sure the cells used conformed to the proposed criteria for MSCs. It was followed by SHED expansion with the three different dissociation reagents namely, Trypsin-EDTA 0.25%, TrypLE Express and StemPro Accutase. The morphology of SHED was assessed under the microscope for every passage with passage three (SC3) as the baseline. Following that, the assessment of SHED viability with MTT assay was done after enzymatic dissociation with three different reagents from SC4 until SC6. Later, gene expression study was done with qPCR to assess whether the different dissociation reagents affected the pluripotency/stemness of SHED. Result: SHED was successfully dissociated into single cells by Trypsin within 5 minutes as compared to TrypLE and Accutase which formed cell clusters. SHED treated with all three dissociation reagents displayed and maintained a fibroblast-like spindle shape morphology until passage six (SC6). This finding suggests that the expansion of SHED using TrypLE and Accutase yields more cells as compared to Trypsin. Accutase-treated cells forms larger colony of adherent cells in comparison to other dissociation reagents. In general, the percentage of cell viability was reduced in subsequent passages for all three reagents. Significant reductions in cell viability were observed for SHED treated with Trypsin in comparison to TrypLE and Accutase. Gene expression of OCT4, SOX2, NANOG and REXI were gradually down regulated in all three dissociation reagents during cell expansion. Nevertheless, there are no significant differences in term of pluripotency/stemness of SHED among the different types of dissociation reagents used. Within the limitations of this study, the enzymatic dissociation method using TrypLE and Accutase are more recommended for yielding greater amounts of quality cells for therapeutic purposes. However, TrypLE is preferable for a larger scale study due to convenience in use and cheaper price as compared to Accutase.

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Introduction: The overall oral health condition is crucial for end stage renal failure (ESRF) children especially while transplantation is planned. Good oral hygiene helps to reduce the overall health burden in these children. Therefore, this study aims to assess the oral hygiene status, calculus deposition, salivary urea levels and determine the association between dental calculus and salivary urea levels as well as the correlation between salivary and serum urea in children with ESRF. 

Methods: Ethical approval was obtained and a total of 99 participant with 33 ESRF children and 66, age and gender matched healthy controls were recruited. A calibrated examiner carried out interview, record tracing, clinical examination and collection of unstimulated whole saliva for urea analysis. The salivary urea concentration was determined using a commercialized Jung reagent. 

Results: ESRF children had comparable oral hygiene but significantly higher calculus deposition and higher salivary urea concentration than the healthy controls. Even though the result showed higher salivary urea levels significantly associated with serum urea levels, there was no significant association found between calculus deposition and salivary urea levels. 

Conclusions: ESRF children had heavier calculus deposition and this requires attention. Earlier referral upon ESRF diagnosis is highly recommended.

Keywords: End Stage Renal Failure, Simplified Oral Hygiene Index, Volpe-Manhold Index, Salivary urea and Serum Urea.
Introduction: Burkitt’s lymphoma is a malignant, highly aggressive form of non-Hodgkin’s lymphoma which develops from B-cell type lymphocytes. Generally, this tumour may presents in the oral region as a rapidly growing mass, which is usually misdiagnosed as odontogenic infection. The usual clinical presentation is swelling of the mandible or maxilla and presence of altered tooth mobility. Case report: A 6 year-old boy with no underlying co-morbidity was referred to us for management of right cheek swelling of two weeks duration, intermittent pain and mobile right molar teeth. Child had been brought to medical and dental practitioners, both had suggested the possibility of a dentoalveolar abscess, and had started antibiotic therapy. Extra oral examination revealed a large firm cheek mass. Intra-oral examination showed raised buccal sulcus and mobile, non-carious right deciduous molars and first permanent molar teeth. CT scan of mandible revealed a large ill-defined enhancing radiolucency lesion with cortical thinning and bony erosion over the right mandible. An incisional biopsy under general anaesthesia was done, leading to a histopathological diagnosis of Burkitt’s lymphoma. The Ki67 showed nuclear positivity in almost 100% of the tumour cells. The patient then was referred to the Paediatric Oncology Clinic in University Malaya Medical Centre for further management of his tumour. Discussion: The purpose of this paper was to report a case of Burkitt’s lymphoma in a child, who was first diagnosed as odontogenic infection. As a clinician, it is imperative that we should maintain a high degree of suspicion and act promptly in lesions with unusual presentation and behaviour.
Objective: The study aimed to determine the prevalence, characteristic features, complications and dental anomalies associated with the occurrence of unerupted permanent incisors among children and adolescents attending a university dental teaching hospital. Methodology: A retrospective review was performed on the all the available clinical records of 15987 children and adolescents who had attended the hospital between January 2005 and December 2015. All patients who had at least one unerupted permanent incisor tooth and matched the definition of unerupted permanent incisors were included. Results: A total of 266 subjects with 320 unerupted permanent incisors were identified. Permanent maxillary central incisors (70.6%) were the most commonly affected teeth. The most common causes for unerupted incisors were dilacerations (n=83, 36.7%) for maxillary central incisors; developmental dental anomalies (n=22; 30.6%) together with unfavourable root development (n=22; 30.6%) for maxillary laterals incisors; and abnormal tooth/tissue ratio (n=11, 50.0%) for mandibular incisors. The most common complications associated with unerupted incisors are ectopic/displacement/rotation of the unerupted incisors (46.6%). Significantly higher proportion of unerupted permanent incisors was associated with the presence of dental anomalies than without (p<0.001). Significantly higher proportion of male patients had unerupted permanent incisors associated with hyperdontia, ectopic eruption of permanent canine and double tooth when compared to female patients. For the unerupted maxillary central incisors, a significantly higher proportion was associated with the supernumerary teeth (p<0.001); whereas for unerupted maxillary lateral incisors, a significantly greater proportion was associated with ectopic eruption of permanent canines when compared with other groups of dental anomalies (p<0.001). Increasing number of unerupted permanent incisors increased the total numbers of dental anomalies (p=0.007; Correlation Coefficient=0.151). Conclusion: The prevalence of unerupted permanent incisors among children and adolescents attending a university dental teaching hospital was 2.0%. The most common causes for unerupted incisors were dilacerations for maxillary central incisors; developmental dental anomalies together with unfavourable root development for maxillary laterals incisors; and abnormal tooth/tissue ratio for mandibular incisors. Majority of unerupted incisors presented with complications, which can have a general effect on the dentition, on the impacted incisor itself and/or its adjacent structures/teeth. Unerupted permanent incisors were significantly associated with supernumerary teeth and ectopic eruption of permanent canines.

Keywords: unerupted permanent incisor, prevalence, characteristic features
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RESEARCH IN ORTHODONTICS
During orthodontic retention phase, majority of patients complain of difficulty in pronouncing certain consonance such as ‘t’ ‘d’ ‘k’ ‘n’ and ‘s’. Consequently, patients not wearing the retainer as instructed which will lead to relapse or retreatment. Retreatment will add to treatment cost, time and manpower. The purpose of this study is to prospectively evaluate the speech distortion among patient wearing Hawley retainer through acoustic approach by using PRAAT Software. Sixteen orthodontic patients (aged 15 to 31 years) who were in debonding phase were included in this study. The spectrogram analysis was carried out to determine the duration value of selected phonemes based on the recording of patients with and without the wearing of appliances. The analysis were performed before (T0), within 24h (T1), after 1 week (T2), after 2 week (T3), after 1 month (T4), after 2 month (T5) and after 3 month (T6) of wearing the retainer. A subjective evaluation by the patients was done using standardized questionnaire and were completed by patients at three points (after 1 week, 1 month and 3 months) of wearing the retainer. Statistical analysis was done using one-way repeated measures ANOVA and paired samples t test for the experimental part and Friedman two ways ANOVA and Wilcoxon Signed rank test for the questionnaire part. The results showed significant ($p<0.05$) speech distortion was recorded with /t/, /d/, /k/ and /n/ consonant sounds. All those sounds were significantly distorted during the first 24 hours of wearing retainer ($p<0.008$). Patients also reported the alphabet starting on a word /s/ as the most difficult to pronounce during early part of wearing retainer. Speech distortion reduces as the duration of wearing retainer increases. The findings would be helpful for the clinician to understand and educate patient during orthodontic retention phase hence, improve the patient’s compliance.

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Poster presentation at 10th Asia Pacific Orthodontic Conference and 11th Indonesian Association of Orthodontists Annual Meeting on 1-3 September 2016

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The application of temporary anchorage devices such as mini-implants or mini-screws and mini-plates are gradually accepted in orthodontics as methods to reinforce anchorage. Although titanium alloy (TiA) mini-implants are well-known for their biocompatible behaviour in comparison to stainless steel (SS) mini-implants, only several studies are found to be investigating the clinical aspects of SS mini-implants. This research aims; 1) to measure and compare the rate of anchorage loss between SS and TiA mini-implants, 2) to measure and compare the rate of upper labial retraction between SS and TiA mini-implants, 3) to compare the discomfort experience between SS and TiA mini-implants. This research is comprised of twenty-seven patients (12 males: 15 females; mean age 23.7 ± 5.25 years) obtained from Universiti Teknologi MARA postgraduate clinic. All subjects underwent extraction of upper first premolars and had maximum reinforcement of anchorage. The subjects were randomized into two groups, TiA group and SS group. Following alignment and levelling, with a working archwire of 0.019 x 0.025” – inch stainless steel, 1.6 mm in diameter and 8 mm in length of mini-implants were placed between the first molar and the second premolar in the maxilla. Four weeks after placement, the mini-implants were loaded with 150 gm retraction force with Nickel-Titanium closed coil spring. Oral health-related quality of life (OHRQoL) questionnaires were completed and study casts were collected prior to retraction (T0), at month 1 (T1), month 3 (T2) and month 6 (T3). The casts were digitized using Viewbox version 4.0. The data were analysed using ANOVA, SPSS version 22. There was no statistically significant difference of anchorage loss of maxillary molar, 0.63 mm with SS mini-implants, 0.54 mm with TiA mini-implants (p= 0.360) and retraction of labial segment; 4.49 mm with SS mini-implants and 4.91 mm with TiA mini-implants (p= 0.114). Nevertheless, the total mean score of OHIP-14 gradually reduced over time, there is significant difference between SS and TiA group at T1. The results of the study suggested that there was no statistically significant difference of anchorage loss between stainless steel mini-implants and titanium alloy mini-implant clinically. Both mini-implants are equally comparable in term of clinical performance in upper labial segment. Patient experience discomfort at level of occasionally then gradually reduce the discomfort level in both groups.
The debonding characteristics of the brackets can be determined from Adhesive Remnant Index (ARI) score. To date, there is a lack of clinical studies to evaluate the debonding characteristics between metal and ceramic brackets. **Objective:** To compare the ARI scores between metal and ceramic brackets and to compare the mean percentage of the adhesive remnant on the bracket case. **Methods:** The data were obtained from patients who required debonding of fixed orthodontic appliances. The patients were allocated into conventional metal brackets, self-ligating metal brackets, and self-ligating ceramic brackets. All brackets were mechanically debonded using recommended pliers. After debonding, ARI score was recorded based on the image analysis measurement of the photograph. All debonded brackets were evaluated under a stereomicroscope, and the percentage of the adhesive remnant on the bracket base was calculated using image analysis. The data were analysed using SPSS version 24.0 and the level of statistical significance was set at $p < 0.05$. 64 brackets in each group were evaluated in this study. **Results:** There was a statistically significant difference between the three types of brackets in the ARI assessment on the smooth surface. The result showed a statistically significant difference between self-ligating metal brackets and other types of brackets. **Conclusions:** The self-ligating metal brackets had the most tooth surface adhesive remnant and the least adhesive remnant on the bracket base.
The aim of this study was to investigate the putative relationship between hypodontia and different types of malocclusion among orthodontic patients in Klinik Pergigian Jalan Sultan Mahmud, Kuala Terengganu. A retrospective study of 351 orthodontic patients’ records were conducted, consist of 104 males and 247 females. The Chi-square and Fisher’s Exact Tests were carried out for statistical analysis. Thirty-eight patients exhibited congenital absence of one or more teeth which yield prevalence of hypodontia at 10.8%. 10.2% hypodontia patients had single missing tooth but rarely more than 3 missing teeth. A significant difference was found between males and females ($p = 0.048$). Female was 2.4 times more likely to have hypodontia. No significant difference was found among races ($p = 0.829$). Hypodontia patients had different types of malocclusion as 15.8% having Class I malocclusion, 34.2% with Class II division 1 malocclusion, 7.9% with Class II division 2 malocclusion and 42.1% hypodontia patients exhibit Class III malocclusion, however no significant difference was found ($p = 0.428$). Therefore, no relationship was found between hypodontia and type of malocclusion which was in line with what has been reported in previous studies (Chung et al, 2008; Oslu et al, 2009). Higher frequency of missing teeth was seen in Class III malocclusion which indicates a great need for orthodontic treatment as it has a psychosocial impact on the quality of life. Early detection and accurate diagnosis are essential in dealing with hypodontia cases so that alternative treatment modalities can be well planned.

Presented at 25th Malaysia Dental Association Scientific Convention & Trade Exhibition, PWTC on 26 – 28 January 2018

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Introduction: Orthognathic surgery prediction planning involves correcting the skeletal position and predicting the overlying soft tissue response based on historical ratios. Objective: The aim was to evaluate the ratio of upper lip soft tissue movement to simulated maxillary advancements in a group of patients with maxillary hypoplasia, using conformed 3D soft tissue meshes. Methods: 25 Class III patients were randomly selected. For each patient, 3D facial images were taken, using stereophotogrammetry, at rest and with 3mm, 6mm and 9mm pre-fabricated spacers beneath the upper lip. Following superimposition of each image on the rest image, the movement of the complete upper lip surface in response to each spacer was determined. Based on a pre-treatment cephalogram, upper lip thickness was also measured. Results: Across all three spacers the mean ratio of upper lip movement to simulated maxillary advancements was 0.83: 1 (95% CI 0.80 to 0.86). However there was a wide response, ranging from 0.5 to 1.0. There was no correlation between lip thickness and upper lip displacement. Conclusion: Upper lip response to known simulated surgical maxillary advancements varies greatly between individuals. The current practice of using a single ratio during prediction planning may not be valid and “patient-specific” ratios are required.

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Objective of investigation: To evaluate the presence of respiratory pathogens on clear overlay retainers CORs. Method used: A pilot, cross sectional study was undertaken at Glasgow Dental Hospital and a private practice in Glasgow between June and August 2016. 20 COR sonicates, each containing a mixture of surface plaque biofilm from upper and lower CORs were collected from 20 orthodontic patients, aged 14 to 21 years old who had completed at least six months of COR wear on a night only basis following the cessation of active orthodontic treatment. Microbial DNA was extracted from the samples and was assessed for the presence of respiratory pathogens by quantitative polymerase chain reaction (qPCR). Gingival health was recorded clinically using the modified gingival index (MGI). Results: Six tested respiratory pathogens were identified in all samples although the quantity and proportion varied. In terms of average Colony Forming Equivalent (CFE), Staphylococcus aureus was the most abundant species followed by Pseudomonas aeruginosa, Moraxella catarrhalis, Candida albicans, Streptococcus pneumonia and Streptococcus pyogenes. The quantity (CFE) of respiratory pathogens had no significant correlation with age, COR’s age or gingival health. Conclusions: CORs could potentially harbour respiratory pathogens. Reasonable precautions and comprehensive hygiene instructions are imperative when prescribing this retainer especially to high-risk patients. Extra care while handling CORs is also important to prevent cross contamination.


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Fixed functional appliances are non-compliance dependent devices, which can assist the correction of Class II malocclusion. The mechanics of the fixed functional appliances may vary depending on the type of device used. We report the observed biomechanical effects of using the Forsus Fatigue Resistant Device (FRD) fixed functional appliance. The patient was a 14-year-old female presented with a Class II division I malocclusion on a Class II skeletal base. The malocclusion was complicated by a 10mm overjet and increased traumatic overbite. She was treated with the Forsus FRD appliance worn for 5 months after the alignment with fixed appliances (0.022” X0.028” MBT prescriptions) and finished on a non-extraction base. Dento-alveolar changes were the main contribution to the correction of the malocclusion, followed by anticlockwise rotation of the mandible, which simultaneously improved the patient’s profile in the end of treatment. In conclusion, Forsus FRD appliance can effectively correct Class II malocclusion.


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The position of upper and lower incisors is one of the fundamental parameters in formulating an orthodontic treatment plan. **Aim:** The purpose of this cross-sectional study is to identify the dentoalveolar morphology features in relation to different inclination of the upper incisors in Class II skeletal pattern patient using a dental cone-beam computer tomography (CBCT). **Methods:** A total of 180 CBCT records were collected from subjects aged between 17 to 35 years old. The subjects were then classified into its incisor inclination (procline and upright) according to the cephalometrics norms. Proclined group consists of 120 subjects, whereas the upright group has 80 subjects. The buccolingual thickness and alveolar bone height of the upper incisors were measured using iCATVision Software Interface. Statistical analysis was done using T-Test and Anova. **Results:** The result shows that the upright group had significantly greater alveolar bone height compared to the proclined group (p<0.05). In the proclined group, buccal alveolar bone height was greater at the upper lateral incisors than central incisors. However, in both proclined and upright group the alveolar bone thickness at A point was thicker at the upper central incisors compared to the lateral incisors. **Conclusion:** There is association between the incisor inclination and the alveolar bone height and thickness. Hence it is important to assess the inclination of incisors within its surrounding bony support prior to orthodontic treatment to prevent possible damage to oral tissue.

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**Aim:** To explore the knowledge, factors, utilization and awareness of illegal orthodontic service (fake braces) among teenagers in Manjung district.

**Material and Methods:** This cross sectional study was done at five secondary schools in Manjung District. A total of 431 Form 6 students, aged 18 years old and above, with or without orthodontic experience were included in this study. Self-reported questionnaires were used to capture: (i) Demographics, (ii) Knowledge on orthodontic service in Malaysia (iii) Factors influencing teenager's decision in seeking orthodontic treatment, (iv) Utilization of fake braces and (v) Awareness of fake braces. Descriptive analysis was performed using SPSS version 20.0.

**Results:** Knowledge on orthodontic service was fair with more than 85% participants answering 5 out of 9 questions correctly in that section. Aesthetics (94.8%) is the major factor that influences teenagers to seek orthodontic treatment. Utilization of fake braces were prompted by cheaper costs (63.8%), shorter wear (63.8%), and convenience (68.1%). 45% of participants were aware about fake braces, 90% receiving the information online, 24.2% admitting that they or someone they knew utilized the service.

**Conclusions:** Despite adequate orthodontic service knowledge, level of awareness regarding fake braces is still low, with utilization driven mainly by aesthetic need among the teenagers.

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The demand to receive orthodontic treatment is shooting up globally, similarly at the government clinics of Seberang Perai, Pulau Pinang. Due to financial constraint, the orthodontic intervention should be prioritized to the public according to the need for treatment. The general dental practitioners (GDPs) need to act as the ‘gatekeeper’ to recognise and refer the appropriate cases by using the Index of orthodontic treatment need (IOTN). However, there’s no information to assess whether the referring dentists are able to use the IOTN accurately when making a referral. **Objective:** To 1) report the use and knowledge of the IOTN and 2) explore the factors which may enhance them among the government GDPs working within Seberang Perai, Penang. **Methodology:** Questionnaires were distributed to all the government GDPs in Seberang Perai, Penang (n=70) for self-completion and return. The questionnaire was designed and consisted 4 sections to measure the use and knowledge of IOTN. All the data were analysed with SPSS software. Kappa statistics evaluated agreement to a gold standard. **Results:** The overall response rate was 85.7% (n=60). 96.7% did use IOTN for orthodontic treatment referral. The most common reported reason for using the index was to assess treatment eligibility (65.5%). Knowledge of IOTN was found to be low to moderate- the mean level of agreement was k=0.54. Only 48.33% of respondents had a substantial agreement (k=0.61 and above). **Discussion & Conclusions:** Overall use of IOTN was high among the government GDPs compared to the similar previous studies, but the knowledge of IOTN among them appeared still to be low, which reflects the GDPs failed to play the role as the gate keeper appropriately. Relevant trainings on IOTN are advocated to improve the competence skills in orthodontic assessment before referral.

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Orthodontic treatment has a significant role in improving the esthetics, function and self-esteem of a person. However, one of the main concerns in orthodontics today is the potential risks involved in the various long-term and comprehensive treatment strategies employed. The term minimal intervention in operative dentistry means treatment with preservation of as much of the natural tooth structure as possible. Using the same principles, minimal intervention in orthodontics involves correction of malocclusions with minimum complications to dental health. Minimal intervention strategies in orthodontics may be employed to correct a variety of malocclusions in order to achieve an acceptable aesthetic and functional outcome; but with minimal risk to dental hard and soft tissues. The strategies used often involve simple mechanics using light, intermittent or physiological forces instead of constant or heavy forces. Simple early orthodontic intervention in the mixed dentition has proven to be beneficial in restoring normal occlusion and eliminating the need for complex orthodontic treatment. Adjunctive orthodontic treatment using minimal intervention can also enhance prosthodontic and periodontal treatment outcomes in patients. This paper aims to highlight some cases in which the malocclusion was treated using minimal intervention strategies in orthodontics to achieve an acceptable aesthetic and functional result with due consideration given to the perceived needs of the patients.

Invited speaker (FDI CE Programme) for 11th Vietnam International Dental Exhibition & Congress (VIDEC), Hanoi, Vietnam: 22 – 24 August, 2018

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This is a case report of an obstructive sleep apnea case managed by an Oral and Maxillofacial Surgeon and Orthodontist. A 36-year-old overweight (BMI 27.6) male, known case of obstructive sleep apnea with apnea - hypopnea index (AHI) 14.5. Clinically, he presented with Class II skeletal base with Class II division 1 malocclusion. Upper arch was well aligned but moderate crowding in the lower arch and the dentition was complicated by 7.0mm overjet. The pre-surgical orthodontic was to align the upper and lower arch, decompensated the occlusion and achieved an increased overjet. The orthognathic surgical procedure was performed to advance the mandible under general anaesthesia. There was a significant improvement of the patient’s condition and AHI was reduced to 1.1.

Sent for Publication in Malaysian Journal Oral and Maxillofacial Surgery and under second review
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**Introduction:** Pain and discomfort are the most common complaints of patients undergoing fixed appliance treatment. This often affects patients’ compliance for the treatment. The aims of this study were to assess the pain and discomfort experience during fixed appliance treatment and to evaluate the difference between genders in the perception of pain after initial archwire insertion. **Methodology:** This cohort longitudinal study was conducted on 50 patients (7 males, 43 females; age range: 14-19 years; mean (SD) age: 17.20 (1.591) years who underwent fixed orthodontic treatment. Data was collected by means of self-administered questionnaire. The pain experience was measured during their subsequent visits after the insertion of separator, band and initial archwire. The discomfort experience was assessed on their first follow up visit after the insertion of initial archwire. The data were analyzed using descriptive statistics and independent t-test for the statistical significance. **Results:** Approximately 72% of the patients scored moderate type of pain within 12 hours upon insertion of separator, band and initial archwire. It was observed that pain peaks in 24 hours for all the three components with highest mean scored for initial archwire (mean 1.96, SD=0.81) followed by separator (mean 1.94, SD=0.87) and band (mean 1.78, SD=0.95). Pain intensity reduced in 36 hours and to preplacement level within 1 week for all the 3 components. It was observed that, there were no significant difference in pain experience between sex after the insertion of initial archwire (p>0.05).The highest level of discomfort experienced in 1 day were disturbances in mastication (mean 2.6, SD=0.67), speech (mean 2.3, SD=0.87), swallowing (mean 2.28, SD=0.88) and soft tissue injury (mean 2.24, SD=0.94). **Conclusion:** Patients complained of moderate pain within 12 hours upon insertion of fixed appliance which peaked at 24 hours and gradually reduced to preplacement level in 1 week. The highest levels of discomfort experienced in 1 day were disturbances in mastication, speech, swallowing and soft tissue injury. Generally, it showed a decreasing pattern in discomfort experience within a month. There was no significant difference in pain experience between sexes after the insertion of initial archwire. These results can be used to inform patients about possible type of pain and discomfort to be expected during the initial phases of fixed appliance treatment. This can increase their compliances to the treatment.

**Keywords:** perception, pain, discomfort, fixed orthodontic appliance, separator, band, archwire


Submission for publication in June 2018 in Journal of Health management (JoHM) IPK

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Objective: To develop and test a predictive model for fixed appliance orthodontic treatment outcomes. Design: Two-part study: An initial retrospective cohort followed by a retrospective-prospective cohort study. Setting and sample: Two patient cohorts were used; a retrospective cohort of 603 patients from 9 different units (cohort A) to try to develop a predictive outcome model and a retrospective-prospective cohort of 106 patients attending for fixed appliance debond at Bristol Dental Hospital/Royal United Hospitals Bath (cohort B) to test any predictive model. Methods: Ethical approval was obtained. The principal orthodontic treatment outcome measures chosen were treatment time and percentage PAR reduction. Data were extracted from the clinical records for each visit from appliance placement to debond and factors considered to be associated with treatment outcome were explored using density plots, scatterplots, binned scatterplots, linear regression, predictive margins, means and their 95% confidence interval. Cox regression was carried out for treatment time while fractional regression was carried out for percentage PAR reduction. Results: Due to the large scatter in the results for all factors no predictive model was evident. Factors that had a statistical effect, leading to increased treatment time were a) initial PAR (p=0.015) for cohort A, b) age (p=0.035) for cohort A, c) overjet (p=0.034) for the combined cohorts, d) extractions (p=0.001) for cohorts A and B and combined, and e) incisor relationship (p=0.039) for the combined cohorts. Factors that had a statistical effect on percentage PAR reduction for the combined cohorts were a) initial PAR (p=0.001) and b) overbite (p=0.010). The IOTN DHC had no statistically significant effect on either measure of treatment outcome. Conclusion: There was no predictive model for treatment time or percentage PAR reduction, although gender, initial PAR, age, overjet, overbite, extractions and incisor relationship did significantly affect treatment outcomes.
Introduction: Three-dimensional (3D) digital models can be generated from Rexcan CS+ scanner and has potential to replace the conventional plaster models, but their reliability and validity is still not proven. Furthermore, no studies had been conducted on the used of study models of Down Syndrome (DS) in the reliability and validity test of 3D measurements. The aims of this study were to determine the reliability and validity of tooth size-arch length analysis measurements of 3D digital models and to compare to the manual measurement of the plaster models of DS subject. Methods: One hundred and eleven (111) 3D digital models of DS subject were generated from Rexcan CS+ scanner. Manual and digital measurements of the mesio-distal tooth width, transverse dimension and arch length were performed using Digital Caliper (Tuten, Germany) on plaster models and Geomagic Software on digital models. Significances between manual and digital measurements were determined by the Independent t-test. Pearson’s correlation was used to analyze the correlation between manual and digital measurements. Results: No statistically significant differences (p > 0.05) were found in comparisons of all tooth size-arch length measurement with the manual and digital methods. All parameters showed a significant correlation coefficient between both measurements; mesio-distal tooth width of maxilla (r ≥ 0.945: p < 0.01) and mandible (r ≥ 0.834: p < 0.01), intercanine width (r ≥ 0.997: p < 0.01), inter first premolar width (r ≥ 0.997: p < 0.01), inter second premolar width (r = 1.00: p < 0.01), inter first molar width (r ≥ 0.996: p < 0.01), arch length (r ≥ 0.972: p < 0.01) and space analysis (r ≥ 0.978: p < 0.01). Conclusion: In conclusion, the measurements of tooth size-arch length of 3D models of DS subjects are reliable and valid.

Keywords: Manual measurement, Digital measurement, Blue light 3D scanner, Down syndrome.


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Aim: To investigate the response of the muscle extracellular matrix to different stretch regimes. **Materials and methods:** This study investigated the same muscle constructs used in the previous study who looked into production of Insulin-like growth factor-I (IGF-I) in the muscles subjected to different stretch regimes. These muscle constructs were subjected to different types of strain using a custom made strain apparatus. The control group was held passively between two fixed ends (C), one group was exposed to a constant strain of 10% (FS) and another group was strained intermittently every 12 hours (IS). As a continuation, this study has investigated the production of Matrix metalloproteinase 2 (MMP-2), Matrix metalloproteinase 9, Tissue inhibitor of matrix metalloproteinase 1 (TIMP-1) and Tissue inhibitor of matrix metalloproteinase 2 (TIMP-2) produced by the same muscle constructs using the Enzyme-Linked Immunosorbent Assay (ELISA). **Results:** (i) MMP-2 level was the highest in all groups (C, FS, IS). TIMP-2 level was about one third of MMP-2 level however MMP-9 and TIMP-1 levels were very low compared to MMP-2 and TIMP-2; (ii) The cumulative MMP-2 levels in the FS group and IS group were comparable but the cumulative MMP-9 levels in the FS group was higher than in the IS group; and (iii) TIMP-1 and TIMP-2 protein production were higher in unstrained muscles compared to stretched muscles. **Conclusion:** When the muscle constructs were subjected to either continuous or intermittent stretch, there was an increase in MMP and TIMP production. However, there was a relative imbalance with MMP-2 activity being produced in the greatest amounts and the level of its main inhibitor, TIMP-2, was far lower indicating insufficient levels to inhibit the action of MMP-2 suggesting an increase in the rate of matrix turnover and possibly muscle adaptation and orientation to the new functional length.

Poster presentation. MDA Scientific Conference & Trade Exhibition PWTC 2018

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Purpose of study: Enamel demineralization is highly prevalent during orthodontic treatment and *S. mutans* is the main bacteria implicated. Novel Zn-PBGs are controlled zinc delivery agents that may be an effective anti-bacteria agent thus promoting a reduction in demineralization. Methods: Zn-PBGs (C11, C12 and C13) and zinc free control glasses (C-PBG) were produced. Glass characteristics were assessed through degradation studies, pH analyses and ion release kinetics. Anti-bacterial effects were assessed through disc diffusion assays, liquid broth analysis and CDFF model. Disc diffusion assays were conducted on isosentitest (IST) agar with cultures of *S. mutans* NCTC 10449. The zones of inhibition around the glasses were measured. Liquid broth assay using *S. mutans* suspensions exposed to C11, C12, C13, 0.2% chlorhexidine and C-PBG was assessed by viable colony forming units (CFU). Biofilm was grown in the CDFF model on bovine enamel discs exposed to C11, 0.2% chlorhexidine, 0.05% sodium fluoride or water on day 5 and day 12. Transverse micro-radiography (TMR) was used to quantify mineral loss (ΔZ) from bovine enamel. All tests were conducted in triplicate. ANOVA, Tukey Kramer, Pearson Correlation and paired T-tests were used. p values <0.05 were considered statistically significant. Results: pH analyses showed significant difference for C12, C13 compared with C-PBG. Degradation rates of Zn-PBGs were significantly different from C-PBG. Zinc ion release was decreased as calcium concentration increased in the glasses. Zones of inhibition were significantly increases for Zn-PBGs compared with C-PBG. Viable CFU in the untreated group and C-PBG were significantly increased compared with Zn-PBGs. Bovine enamel exposed to C-PBG, NaF, chlorhexidine and enamel discs (ED) at day 12 showed significant mineral loss whilst bovine enamel exposed to C11 between day 5 and day 12 in the CDFF model showed no significant mineral loss. Conclusion: Controlled delivery of zinc from Zn-PBGs may have potential in oral applications due to anti-bacterial effect.
**Introduction:** Agreement between the dental officers and orthodontist on the IOTN score was important to ensure proper referral as it is an objective, fair and reliable way to select those patients who will benefit most from orthodontic treatment. **Objectives:** This study aims to determine whether dental officers can use the Dental Health Components of IOTN scoring accurately. **Methods:** Retrospective data were obtained from two hundred and sixty of orthodontic referral cases in the four government orthodontic units in Kelantan. The four government orthodontic unit was located at Kota Bharu, Pasir Mas, Pasir Puteh and Kuala Krai. The data were collected from patients’ referral letters and treatment cards which was registered as a new case from 1st January 2015 to 31st December 2015. All data were entered and analysed using SPSS version 18. **Results indicated:** Result indicates that the overall agreement of the IOTN score between the general dental practitioener and orthodontist was 53.5 %. The highest disagreement between dental officers and orthodontist was from Kuala Krai (55.6%), followed by Pasir Mas (49.1%), Pasir Puteh (46.4%) and Kota Bharu (33.3%). The IOTN score was further divided into 2 groups, DHC score 1-3 as non or slight treatment needed and score 4-5 as treatment needed. The sensitivity for dental officers was 79% and the specificity was 78.5%.The Kappa score for this study was 0.51 which represents moderate agreement between dental officers and orthodontist. The moderate agreement between dental officers and orthodontist may reduce the effectiveness and efficiency of orthodontic case referral as there may be missed out of cases that need treatment and referral of case that no need or slight need of treatment. Thus, wasting the limited resources provided in government services. **Conclusion:** In conclusion, there is still a lot of differences between the IOTN score rated by Dental officers and Orthodontist, thus affecting the efficiency of referring patients with real need. Hence, we suggest that all dental officers need to be calibrated for IOTN scoring every 2 years. **Keywords:** IOTN score, Orthodontic, Kelantan, agreement

Poster Presentation at the Kelantan Research Day 2016, on 19 October 2016 at ACC Auditorium Hospital Raja Perempuan Zainab II, Kelantan.

Dr. Cheng Mei Ling  
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Dr. Ong Siang Cing  
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Introduction: Failure of patients to attend their scheduled appointments and to reschedule in advance have a negative impact on the loss of time, economic, productivity and patient care. Objectives: To investigate the frequency of missed appointment and the outcome of current orthodontic treatment in Kuala Krai orthodontic clinic. Methods: This is a Retrospective descriptive study by surveying the treatment card of the patients in Kuala Krai Orthodontic clinic. 270 samples that fulfill the inclusion criteria were randomly selected by the computer, and data was collected. Data were entered and analyzed using SPSS version 18. Simple descriptive statistics (percentage and frequency) of different variables of missed appointments were assessed. Statistically significant difference was evaluated using the mann-whitney U test at 95% confidence (P < 0.05). Results and discussion: A higher percentage of females (70.6%) had to cancel or missed their appointment compare to their male counterparts (29.4%). 28.3% of patients never missed their appointment and 11.1% of patients missed appointment more than four times. Only 40.4% will reschedule and attend the appointments within one month, and 3.3% of patient missed appointment for more than one year. Majority of patients (60.2%) still undergoing treatments, 86.1% of them had treatment less than three years, 11.9% had treatment for four to five years, and 2% been treated for six to seven years. There was no significant difference in the standardized failure rate of completed treatment group and discontinued treatment group. The increase of duration of missed appointment will directly increase the time taken to complete the orthodontic treatment. Future studies should focus on the methods that can help reduce or eliminate missed and cancelled appointment, to enhance the treatment outcome and to improve the quality and efficiency of orthodontic practice. Conclusion: High frequency of missed appointment can limit the practice efficiency, increase the duration of treatment, the cost of treatment, and also increase the waiting time for orthodontic treatment thus render others people chances for orthodontic treatment.

Keywords: Missed appointment, outcome of treatment, Orthodontic, Kelantan.

Oral Presentation at the Kelantan Research Day 2018, on 16 October 2018 at Crown Garden Hotel, Kelantan.

Dr. Cheng Mei Ling
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Kelantan
Introduction: Three-dimensional (3D) imaging has enabled the acquisition of highly accurate data for evaluation, diagnosis and treatment planning of orthodontic patients. Objectives: To determine soft tissue lip changes in patients with Class II division 1 malocclusion during orthodontic treatment, to evaluate patients’ perception of their lips during orthodontic treatment and to determine the association between 3D lip changes and patients’ perception of their lips during orthodontic treatment. Methods: Thirty-five subjects with class II division 1 malocclusion, incompetent lips and extraction of first premolars were evaluated. 3D lip scans were obtained before treatment (T1), immediately after bonding (T2), 3 months (T3), 6 months (T4) and 12 months (T5) after bonding. Eight landmarks were identified and six measurements were evaluated using a one-way repeated measures ANOVA test. A questionnaire was given to all subjects before bonding (Q0), 6 months (Q1) and 12 months after bonding (Q3). Friedman and Wilcoxon signed ranked test were used to evaluate patient satisfaction. Spearman’s correlation test was used to associate between 3D lip changes and patients’ satisfaction after 12 months of treatment. Results: After 12 months of orthodontic treatment, vertically, there was a downward movement of the upper lip \((p>0.05)\) and a significant upward movement of the lower lip \((p<0.05)\). This resulted in a reduced distance between the upper and lower lips \((p<0.05)\). Transversely, a significant increase was observed in the distance between the lip commissures \((p<0.01)\). Antero-posteriorly, there were no significant changes to the upper and lower lip \((p>0.05)\). There was a significant increase in patients’ satisfaction towards their lips after 12 months of treatment \((p<0.05)\). A correlation was only found between lip changes and patients’ awareness towards their lip position. Conclusion: After 12 months of orthodontic treatment, more vertical and transverse changes of the lips and minimal antero-posterior changes were observed in patients’ with Class II division 1 malocclusion. Patients’ satisfaction towards their lip changes increased after 12 months of treatment.

Keywords: 3D, lip changes, Class II div 1 malocclusion

Introduction: 3D motion data analysis involves accurate facial landmarking as an important step for image registration and comparison. Automated landmarking methods have the potential to make 3D motion analysis a readily available procedure. Aim: To validate an automated landmark tracking software package using 3D dynamic facial surface scans. Methods: 3dMDFace™ Dynamic System was used to capture 3D dynamic sequences of 36 participants performing five facial expressions. Twenty-one facial landmarks were manually digitised on the first frame (T¹) of each sequence. 3dMDtempus surface tracking software generated coordinate map of the landmarks throughout each sequence. The second frame (T²), frame with maximal expression (T³) and frame back to neutral face (T⁴) were selected from each sequence for manual and automatic landmarking comparison. Fifty-four frames were randomly selected for intra-operator reliability assessment. Results: Intra-operator reliability assessment showed 88.9% of landmarks accurate to within 1.0mm. In T², the accuracy of automatic landmark tracking performance was within 2.5mm for all landmarks. The accuracy reduced from T² to T³, with only 63.5% of landmarks accurately tracked to within 2.5mm, and 17.5% with error beyond 3mm. The tracking performance improved from T³ to T⁴, with 69.8% of landmarks accurately tracked to within 2.5mm, and 15.9% with error beyond 3mm. Conclusion: The automatic landmark tracking software provides acceptable accuracy as an alternative to manual landmarking if used with caution for clinical applications. Selective landmarks and facial expressions may be used with confidence.

Keywords: 3D motion analysis, automated landmark tracking


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Professor Dr Stephen Richmond
Professor David Marshall
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This report aimed to describe an effective biomechanics to control the upper incisors inclination during the correction of gummy smile with bimaxillary proclinations. A 14-year-old female presented with a Class II division I incisor relationship complicated with bimaxillary proclination on a Class 2 skeletal base. The lips were incompetent, showing 7 mm of upper incisors at rest and 5mm maxillary gingival display on smiling with normal upper lip length. Treatment involved extraction of all first permanent premolars followed by upper and lower fixed appliances. Intrusion of the upper incisors with controlled labial crown torque was accomplished with mini-implant anchorage placed bilaterally on the infrazygomatic crests with the retraction forces above the centre of resistance using 0.019x0.025-in stainless steel archwire in 0.022-in slot. The 0.019x0.025-in stainless steel archwire in 0.022-in slot provided the vertical play to favour lingual crown tipping despite having forces above the centre of resistance for concurrent anterior segment intrusion.

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Introduction: Patients receiving orthodontics treatment need to be reviewed at 6-8 week interval. However, patients need an earlier emergency orthodontics appointment when they encountered problems related to the appliance. It might cause discomfort to the patients and affect the treatment progression time if leave untreated. Besides that, increased number of emergency orthodontics appointment further reduced the number of routine review appointments that can be arranged for other patients within a day. Objective: To determine the number and the amount of time spent on emergency orthodontics appointments. Methods: A retrospective audit of emergency appointment at Keningau Orthodontics Specialist Clinic over a period of three months from September till November 2016. Data of patient’s initial, registration number, gender, date of emergency appointment and time spent for each appointment were collected. After a period of three months, the data was analyzed by a single operator (KWL). The total number of emergency appointment should not exceed 5% of total follow-up outpatient appointment. Results: The total number of emergency appointments over the three-month period was 39 cases (23%). 67% of the appointments were due to bracket and tubes debonded cases. Total time spent was 6 hours. Conclusion: The number of emergency appointment has decreased within this three months period but did not meet the required standard.

Keywords: audit, emergency orthodontics appointment

Digital Poster Presentation at the 23rd Malaysian Association of Orthodontists International Scientific Conference & Trade Exhibition on 22-24 April 2017 at Renaissance Hotel, Kuala Lumpur

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Objective: This audit was undertaken to ensure the quality of OPG images acquired are of excellent quality, and to identify any errors contributing to diagnostically inadequate images. Materials and Methods: OPG films obtained from new patients attended KP Alor Gajah Orthodontic Unit in 2016 and 2017 were assessed. The OPGs were evaluated twice, T1 and T2, by at least 3 auditors per session. The quality of the images was graded as either ‘excellent’, ‘diagnostically acceptable’ or ‘unacceptable’. Any errors found were then further appraised. Discrepancies between readings were resolved by group consensus. Results: Out of 157 OPGs, 2 were graded ‘excellent’, 9 were ‘diagnostically acceptable’ and 146, or 92.99%, were deemed ‘unacceptable’. 430 errors were detected; 10 OPGs had processing errors, 51 experienced exposure issues and 369 endured erroneous patient preparation and positioning. 127 patients did not position their tongue against the palate, contributing to the highest patient preparation error, at 34.42%. This was followed by slumping at 28.18%. 42 patients tipped their chins too high, 28 patients bit too far back, 22 patients turned to one side, 15 patients had their chins tipped too low, 13 patients tilted their heads and 11 patients moved during exposure. 7 patients were bit top forward. Conclusions: The diagnostic quality of the OPGs taken was overwhelming, with an affinity for arrangement errors. Proper patient preparation and placement, however, could rectify this situation.

Keywords: Radiography, OPG, Quality

Poster presentation at Malaysia International Dental Exhibition and Convention (MIDEC) 2016, on 20-22 July 2018, Kuala Lumpur Convention Center

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Dr. Lee Chea Hong
Dr. Gursimran Kaur Grewal
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Objective: The purpose of this audit was to assess the quality of information provided on referral letters received by our unit, and to identify any areas for improvement. Methods: A retrospective assessment was carried out from January 2017 to April 2018, on all Melaka orthodontic referral forms, the M-BKPNM-BK 33, dated between 2011 and April 2018. A data collection form was used to record nine information fields required in the pro forma. These were then analysed using a quality scale based on the number of fields occupied. The gold standard for this audit was that 100% of the referral letters would contain the required information. Results: Of the 231 pro forma examined, 115 referrals (49.8%) included all the essential data needed. 7 letters were of inferior quality, as 2 letters only furnished 3 areas, whereas 5 forms filled 5 fields. Past dental history was mentioned in 71.9% referrals, and oral hygiene status in 76.2%. Past medical history and IOTN fared better, as they were cited in 199 and 200 letters, respectively. Chief complaint, teeth present, diagnosis, referrer’s signature and referrer’s name were included in more than 95% of the forms. Conclusion: Despite using a pro forma, the gold standard we set out was not achieved, as 51.1% incomplete documents were received. To address this situation, we need to reassess the letter itself, prior to disseminating guidelines on furnishing them.
Medical treatment can end up in the courts, normally after an adverse outcome which aggravates the patient. The judicial authorities will have to decide on what standard to apply when assessing a Negligence claim. What is this Legal Standard? There has been some confusion since the case of Foo Fio Na. The Federal Court of Malaysia has recently issued a judgement in the case of Zulhasnimar that is hoped will provide clarity. The judgement stated that there will be two legal standards to medical care. One standard will be for Informed Consent which will follow principles laid down in Foo Fio Na/Rogers. The other standard, for diagnosis and treatment, should be according the reasons outlined in the case of Bolam. This talk will outline the cases mentioned above and discuss the issues related to the Legal Standard of Medical care.

Oral Presentation at the 24th Malaysian Association of Orthodontists International Scientific Conference and Scientific Exhibition 2018 on 21-13 April 2018 at Parkroyal Hotel, Penang

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RESEARCH
IN PERIODONTOLOGY
Objective: This study aimed to explore the relationship between chronic periodontitis (CP) and erectile dysfunction (ED). Methods: This study was conducted in Universiti Kebangsaan Malaysia Medical Centre. Forty-one subjects served as participants (22 cases and 19 controls). Erectile Dysfunction status was diagnosed using the International Index of Erectile Function (IIEF-5). Full periodontal examination was performed for assessment of periodontal health status by a calibrated examiner. The examiner was blinded to the ED status. A questionnaire form consisting of basic questions of general health, dental knowledge and behavior were distributed and answered. Results: Mean age for ED and non-ED groups were 45.6±12.1 and 35.1±7.6 (p=0.278) respectively. All ED subjects except one had CP (N=11). The mean values of clinical attachment loss (CAL), bleeding on probing (BOP) and plaque index (PI) were significantly higher in ED subjects than non-ED subjects (p<0.05). Chronic periodontitis was positively associated with ED and ED severity was found to be significantly related to CP. No significant differences in oral hygiene practices between the ED and non ED group were noted (p>0.5). Conclusion: The results suggest that CP has a positive relationship with ED. However, it might be masked by several confounding factors such as oral hygiene status, age, diabetic status and smoking that were not excluded.

Keywords: chronic periodontitis, erectile dysfunction, case control study

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131. COMPARISON BETWEEN PERIODONTAL SELF-EXAMINATION AND SELF-REPORTED PERIODONTAL DISEASE AMONG SELECTED ADULTS IN KUALA LUMPUR

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Introduction: Ability to carry out self-examination and involvement of the patients in the periodontal self-examination was the main focus of earlier study, while self-reported periodontal disease was mainly based on patients’ perceived and previous history of periodontal disease. Objective: Proven by previous positive results, the aim of this research was to compare the agreement between periodontal self-examination and self-reported periodontal disease among adult patients with the clinical examination as the gold standard. Methods: This comparative cross-sectional study involved one hundred and seventy two patients who attended Dental Polyclinic, The National University of Malaysia, Kuala Lumpur. All eligible patients were randomly assigned into two groups following the Basic Periodontal Examination. Group one (SE) performed and answered the periodontal self-examination according to illustrated written instruction manual and group two (SR) received similar content of self-reported periodontal disease questionnaire. Clinical evaluation was performed by single trained examiner in both groups and findings was compared. Data were analyzed using SPSS software version 22.0. Results: In both groups, equally demonstrate for demographic data was seen for mild, moderate and severe periodontitis which constitute within the age group. Majority in both groups showed low knowledge of periodontal disease. Mean clinical attachment level was 3.55 ± 0.91 (SE) and 3.51 ± 0.94 in SR group. Generally, poor agreement was observed in both groups with Kappa value less than 0.20. Item number of teeth showed very strong correlation in both groups. Good validity seen for item bleeding from gums which showed higher in sensitivity for SR compared to SE group. Gingival colour had a similar specificity in both groups with poor sensitivity seen in SE. Conclusion: Selected item in self-reported showed more promising results and good validity although low agreement seen.

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132. EVALUATION OF ROOT RESECTED MOLARS

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Introduction: Root resection is indicated in management of multi-rooted teeth for the following conditions: severe furcal bone loss or vertical bone loss affecting one root which is cannot be managed surgically, endodontic complication or failure and root caries, root fracture or resorption that involves only one root. **Objective:** To assess the 5-year survival rate of root-resected molars and determine the factors influencing the loss of root resected molars and reason for extraction. **Methods:** All patients previously treated with root resection surgery (on molars only) in Jelapang Periodontal Specialist Clinic from year 2004 to 2016 were recalled for clinical examination to determine the current status of the tooth. Medical history of the participants and clinical/periodontal status of the tooth at the time of surgery were obtained from the previous dental records. **Results:** 68 out of 88 (77.2%) root resected molars were examined. The majority of the root resections were performed in the maxilla (76.5%) and the most frequent type of resection involved removal of distobuccal root (29.4%). The 5-year survival rate of all root resected molars was 79.4% with a mean survival time of 9.1 years (95% CI: 8.1, 10.1). Fourteen teeth (12 upper and 2 lower molars) were extracted due to various reasons. The most common reason for failure was combination of increased mobility and pain (9 teeth). No statistically significant association was found between the patient- or tooth-related factors and tooth loss. **Conclusions:** The study showed a good 5-year survival rate (nearly 80%) for molar teeth with furcation involvement following root resection surgery. However, the study failed to show any patient or tooth-related factors that could have lead to loss of root resected molar.

**Keywords:** Root resection, molars, survival rate

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Objectives: To identify and quantify subgingival periodontal pathogens in obese subjects with chronic periodontitis (CP) and to correlate their presence with clinical parameters. Materials & methods: This cross-sectional comparative study involved 230 Malaysian adults aged >30 years old with mild, moderate and severe CP (Centre for Disease Control and Prevention in conjunction with American Academy of Periodontology (CDC-AAP)). They were assigned into test (obese, n=116) and control group (non-obese, n=114). Obese was defined as individuals with body mass index >30kg/m² (WHO 1998). Visible plaque index (VPI), Gingival bleeding index (GBI), Probing pocket depth (PPD) and Clinical attachment loss (CAL) were recorded. Subgingival plaque were sampled from the deepest probing depths which showed bleeding on probing to quantify P. gingivalis, T. forsythia, P. intermedia and A. actinomycetemcomitans using qPCR technique. Results: Obese subjects displayed higher VPI and GBI than non-obese group, while non-obese subjects displayed higher PPD and CAL than obese group (p<0.05). P. gingivalis was detected 100% in both groups but higher level in non-obese subjects (23.80x10⁵ cells/µl). Similarly, T. forsythia level was found to be higher in non-obese subjects (98.2%, 8.61x10⁵ cells/µl). P. intermedia showed higher prevalence in obese subjects (91.4%) but equal level distribution. A. actinomycetemcomitans was the least detected but significantly higher level in obese subjects (30.2%, 22.92x10⁵ cells/µl). A negligible correlation (r<0.30) existed between P. gingivalis with all clinical parameters in non-obese subjects, but only with CAL and PPD in obese subjects. While low positive correlation (r<0.50) presence between T. forsythia with PPD and CAL in obese subjects. Conclusions: Obese subjects with CP showed significantly higher VPI and GBI, also higher A. actinomycetemcomitans level than non-obese group. While non-obese subjects with CP showed significantly higher PPD and CAL, also higher P. gingivalis and T. forsythia level than obese group. Only low positive correlation existed between PPD and CAL with T. forsythia level in obese subjects with CP.

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Epidemiologic and longitudinal studies have shown that pregnancy is associated with increase in gingival inflammation and worsening of periodontal status. It also reported that 30-100% pregnant women have periodontal disease during pregnancy. Prospective studies suggested that periodontal therapy during pregnancy may reduce the risk of adverse pregnancy outcomes and significant improvement in periodontal status. **Aim:** This study aimed to evaluate the prevalence of periodontal disease among pregnant women and to compare periodontal condition before and after non-surgical periodontal therapy. **Materials and methods:** This was an interventional study of pregnant women referred from Maternity Child Health (MCH) Jalan P.Ramlee Clinic, Kuching. All subjects were examined based on Periodontal parameters (Plaque score, Bleeding score, Periodontal Pocket Depth). They underwent non-surgical periodontal therapy: Oral hygiene education, scaling and root debridement (only for diseased periodontium) and were evaluated after 2 months. The data were analysed using SPSS; T-test and paired T-test. **Results:** 60 subjects were included in the study. About half of the subjects (53%) were diagnosed having diseased periodontium. At baseline diseased, all periodontal parameters in diseased periodontium group were significantly higher (Bleeding score 50.5%, Plaque score 52.1%) compared to healthy periodontium group (Bleeding score 16.5%, Plaque score 42.1%). After 2 months, both groups showed improvement in all periodontal parameters; diseased periodontium (Bleeding score 19.9%, Plaque score 20.8%) and healthy periodontium group (Bleeding score 9.3%, Plaque score 17.9%). **Conclusions:** This study showed periodontal diseases is higher in pregnant women with periodontal diseases. The non-surgical periodontal therapy improved the periodontal status of subjects in both groups.

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135. PERIODONTAL STATUS AND DRY MOUTH CONDITIONS IN CONTROLLED TYPE 2 DIABETES PATIENTS

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Introduction: Diabetes and periodontal disease are chronic diseases with an established bidirectional relationship. Other symptom associated with diabetes is xerostomia, or dry mouth sensation. Alteration in salivary flow can affect the periodontal tissues in diabetes patient. Objective: This study aimed to determine the prevalence and severity of chronic periodontitis and the relationship between periodontal status and HbA1c level among patients with controlled type 2 diabetes mellitus (T2DM). Dry mouth condition and its correlation with periodontal status and HbA1c level were also evaluated. Methods: A cross-sectional study was conducted on 66 controlled T2DM attending Hospital University Sains Malaysia Dental Clinic (HbA1c <9%). Plaque index, gingival index, periodontal pocket depth, clinical attachment loss, and alveolar bone loss were recorded. Subjects were given questionnaire for self-evaluation of dry mouth followed by collection of stimulated saliva for assessment of salivary flow rate. The data were analysed using SPSS version 22.0. Non-parametric test were used for association where appropriate. The significant level was set as p<0.05 at 95% confidence interval (CI). Results: The prevalence of chronic periodontitis was 93.9% at 95% CI (0.88, 1.0), with severity ranging between mild (41.9%), moderate (30.6%), and severe (27.9%). Most of the subjects (74.2%) had normal stimulated salivary flow rate (≥ 1.0ml/min) although 15.9% of the subjects had reported having less saliva in the mouth. There was no significant association between periodontal parameters and the salivary flow rate (p > 0.05). Conclusion: This study shows high prevalence of chronic periodontitis T2DM patients. Dry mouth condition was not associated with controlled T2DM patients. Therefore, early screening by the dental team or referral from medical counterparts for periodontal assessment is crucial to prevent and control disease progression. Early intervention may also improve patient’s quality of life.

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136. TREATING DRUG-INDUCED GINGIVAL HYPERPLASIA – A CASE REPORT

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Introduction: Drug induced gingival hyperplasia is a side effect of drugs like anticonvulsants, calcium channel blockers and immunosuppressants. Untreated gingival hyperplasia can present with swelling, bleeding, unaesthetic appearance, difficulty in eating and talking. Maintaining good oral hygiene will be a challenge and this will further aggravate the condition. Objectives: To highlight the side effects of calcium channel blockers on oral health and the importance of good oral hygiene care. Summary: A 46-year-old Malay female presented with generalized fibrous like gingival overgrowth covering more than 2/3 of her upper and lower front teeth which bleeds upon brushing. Patient was diagnosed with hypertension and has been taking Amlodipine 10mg and Perindopril 4mg OD for the past 3 years. We suggested gingivectomy after few visits of non-surgical treatment showed very little reduction of the gingival overgrowth. Surgical gingivectomy first performed on lower jaw and tissue collected was sent for biopsy which gave a diagnosis of drug induced gingival hyperplasia. She was advised to stop Amlodipine and was prescribed with 8mg of Perindopril after discussing with medical practitioner to prevent risk of recurrence. We then noted significant reduction of gingival overgrowth on her upper jaw without any surgical intervention. Her blood pressure was also well controlled. Conclusion: Patient should be made aware about the risk of developing drug induced gingival hyperplasia if not performing optimal plaque control. Patient should be advised by medical practitioner to seek dental checkup and treatment prior to or when on calcium channel blockers to help reduce its side effects.

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Background: Studies have proposed an association between obesity and chronic periodontitis (CP), which could be linked together due to their similar modulation of pro-inflammatory cytokines. Non-surgical periodontal therapy (NSPT) has been shown to improve the periodontal clinical parameters and to decrease the circulating serum inflammatory biomarkers in individuals with CP. However, the role of obesity as an influencing factor on the changes in systemic parameters remains unclear. Objective: To investigate the effect of obesity on the clinical parameters and serum cytokines levels following NSPT in participants with CP. Methods: A total of 27 obese (test) participants and 30 non-obese (control) participants; diagnosed with CP were enrolled in this prospective, clinical trial. Convenience sampling method was used. Obese is defined as individuals with body mass index (BMI) ≥ 27.5 kg/m² (WHO, 2004). Questionnaires were filled by participants and measurements of clinical parameters consisted of visible plaque index (VPI), gingival bleeding index (GBI), probing pocket depth (PPD) and clinical attachment loss (CAL) were recorded at baseline and 12 weeks post-NSPT. Serum levels of resistin, interleukin-17 (IL-17), interleukin-6 (IL-6) and tumour necrosis factor-alpha (TNF-α) were analysed using ELISA technique. Data analyses were carried out using SPSS version 16. Results: A total of 57 obese and non-obese participants with mean age around 46 to 47 years participated in this study. Following NSPT, VPI and GBI showed significant differences (VPI; 95% CI [56.516, 79.232, 9.260, 20.738], GBI; 95% CI [42.774, 63.574; 9.164, 20.860]) between obese and non-obese groups. VPI and GBI remained significant (p<0.001) after adjusted for gender, ethnicity and smoking habit, with obesity as a potential influencing factor. Following NSPT, serum levels of IL-6 and TNF-α showed significant differences (IL-6; 95% CI [-20.904, -9.933; -4.672, 25.739], TNF-α; 95% CI [47.149, 139.216; -68.959, -12.234]) between both groups. IL-6 and TNF-α were significant (p<0.001) after adjusted for gender, ethnicity, smoking habit, changes of VPI and changes of GBI; with obesity as a potential influencing factor. However, IL-6 could also be influenced by VPI (p<0.05). Participants who were obese exhibited higher changes in serum IL-6 and TNF-α at 12 weeks post-NSPT compared to those who were non-obese. Fair, inverse correlations were observed between GBI and IL-17 (r=-0.381, p<0.05), as well as between CAL and IL-6 (r=-0.401, p<0.05). Conclusion: Among CP participants, changes in VPI, GBI and serum levels of IL-6 and TNF-α were higher in obese group compared to non-obese group following NSPT. Obesity plays a role as a potential influencing factor for CP in the study population. Fair, inverse correlations were observed between serum levels of IL-17 and IL-6 with the clinical parameters.
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**Introduction:** The quality of removable dental prosthesis or dentures in terms of achieving patient’s satisfaction and acceptance in government dental clinics is a very challenging task due to technical, manpower and time frame factors. **Objective:** This study explored the outcomes in terms of patient’s satisfaction and acceptance of removable dental prosthesis on delivery appointment day and 1-week review visit. **Materials and Methods:** Data were collected retrospectively from clinical records of denture patients attending 6 Government Dental Clinics from January 2014 to December 2015. **Results:** A total of 1390 denture patient records were evaluated. About 98.3% (1367) patients were satisfied and accepted their dentures during delivery appointment day. Only 37.1% (515) patients attended the 1-week review visit, with 50.7% (261) patients having complaints attributed by their dentures. Main complaints include pain during function (76.6%) and loose (11.1%). Reasons for patients not attending the 1-week review visit were not known. A total of 16 (1.2%) dentures were re-fabricated (redo) and 393 (28.3%) dentures were modified (trimmed) accordingly. **Conclusion:** Majority of patients were satisfied and accepted the dentures provided on delivery appointment day. Low turnout for the 1-week review visit limits the evaluation of actual patient’s satisfaction and acceptance of their dentures.

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RESEARCH IN RESTORATIVE DENTISTRY
Introduction: Lately the media is rife with reports of illegal “dentists” offering unprofessional and dangerous cosmetic dental services such as “fixed” dentures. **Background:** The importance of realizing, tackling and resolving this issue is of paramount importance as aside from causing pain and being a source of infection, the affected individuals also run the risk of contracting diseases such as HIV and Hepatitis due to the use of unsterilised tools. This report highlights the means employed to remove this ‘fixed partial denture’ as well as its sequelae. **Case Report:** Mrs.Z presented in the clinic complaining of bad breath and bleeding gums for three months. Brief examination exposed a pair of acrylic dentures replacing upper right premolars and an upper left first premolar. The dentures were “fixed” onto her existing dentition with wires. She revealed the dentures were fabricated at home by an illegal “dentist”. The surrounding gingiva aside from being erythematous, was a point of food-trap causing the malodour. The dentures were removed under local anaesthesia revealing abutment teeth with Grade 2 mobility and chronic gingivitis. Patient was discharged with prescription for analgesics and antibacterial mouthwash. At recall visit, her bad breath had resolved and teeth had reduced mobility. Future plans include periodontal examination and radiographs of existing dentition to exclude periodontal disease prior to constructing new dentures. **Conclusion:** This case highlights the complications resulting from dentures fabricated by illegal dentists. Emphasis on complications from these dentures need to be made to the public to curb such practices.

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Introduction: Angular cheilitis is a fungal infection which occurs on corner of lips. It is commonly seen in prolonged denture wearing patients. It can be due to reduced vertical dimension of dentures or poor denture hygiene. This can be managed by the general dentist. Objective: Managing angular cheilitis in prolonged denture wearing patients. Case Report: A 79 year-old, Indian Muslim female patient came with a complain of pain on corner of lips. Patient complained that there was pain whenever she wore her dentures and pain was relieved on removing the dentures. On examination, the dentures were observed to have undergone attrition leading to reduced vertical dimension and pooling of saliva on corner of her lips. For management, patient was told not to wear the old denture and anti-fungal cream was prescribed for 14 days. A new denture was fabricated and issued. Oral hygiene instructions with emphasis on denture hygiene care was given. Patient was also advised to use denture cleanser on daily basis. After 14 days of issuance of new dentures, the patient came for review and the angular cheilitis had subsided. Conclusion: Routine oral examination is recommended for denture wearing patients. This will enable the dentist to assess the denture condition and oral condition, thus preventing any-related lesions.
Objectives: To determine whether the different disinfection methods such as immersion and microwave irradiation could significantly affect the linear dimensional changes of the selected impression materials; vinyl siloxanether (VSE) and polyvinyl siloxane (PVS). Statement of problem: Microwave irradiation and immersion in solutions have been recommended for denture disinfection. However, the effect of microwave irradiation on the impression materials such as VSE and PVS has not been completely evaluated. Material and methods: The tests were performed in accordance with the ANSI/ADA Specification No. 19. Under standardized conditions, 120 impressions were made of a test die with VSE and PVS impression materials. The samples were prepared and divided into three groups; 1. Immersed into Silosept® for 10 min; 2. Microwave irradiation for 3 min, and 3. No treatment which served as control. The impressions were examined for linear dimensional changes before and after disinfection. Comparisons of linear dimensional change were analysed with one-way ANOVA with the Tukey post hoc comparisons (α=.05). Results: All the elastomeric impression material samples showed some degree of dimensional changes when subjected to microwave and irradiation disinfection methods. Considering the absolute values for the mean percentage dimensional change, the result for VSE and PVS samples were below the ADA’s acceptable limit of 1.5% (P<.000). VSE impression materials demonstrated significantly better results than PVS in all disinfection methods tested. The result shown that the mean percentage of dimensional changes of the impression materials disinfected via immersion was higher than those of microwave irradiation and no treatment methods. Conclusions: VSE impression material demonstrated excellent dimensional stability when subjected to immersion and microwave irradiation disinfection method when compared to the PVS impression materials. Microwave irradiation can be used as a useful disinfection method without adversely affecting the dimensional stability of dental impression materials.

Poster presentation at the 111th Dental Congregation 2016 University Of Malaya on 13 August 2017 at The Royale Chulan Hotel Damansara, Kuala Lumpur.

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Introduction: Calcium hydroxide [Ca(OH)$_2$] is the most commonly used as intracanal dressing material because of its high pH and favourable effects such as antibacterial and hard tissue stimulation. Changes in dentin fracture strength and hardness has been reported to be associated with Ca(OH)$_2$. Any changes in the dentine structure can affect the quality of bonding to root canal. Endodontically treated teeth often have inadequate remaining crown structure left and post is usually required to retain the restorative material. Nowadays, fibre post is commonly used because the modulus of elasticity is almost similar to that of dentine. Objectives: This study aimed to evaluate the effect of Ca(OH)$_2$ intracanal medicament on the push-out bond strength of fibre post cemented with self-adhesive resin cement. The comparison of the bond strength among the root thirds were also evaluated. In addition, the post adaptation to the cement-dentine interface were observed using scanning electron microscopy (SEM). Methodology: A total of 50 extracted human incisor teeth were decoronated and prepared using a protaper hand files. The teeth were randomly divided into a control group (without Ca(OH)$_2$ intracanal dressing) and experimental group with Ca(OH)$_2$ intracanal dressing (n=25 for each group). For control group, root canal treatment is completed in one session followed by immediate post space preparation and cemented with RelyX Unicem. Experimental group received Ca(OH)$_2$ intracanal dressing. After 1 week, Ca(OH)$_2$ was cleaned from the canal followed by root filling, post space preparation and cementation with RelyX Unicem. 1 week following that, each root was cut horizontally and three slices were subjected to push-out test for bond strength measurement. Before push-out test, one slice of each region (coronal, middle and apical) from both groups were prepared for SEM analysis. The data were analysed using SPSS version 22.0. Independent t-test was used to compare the bond strength in between both group. The difference and comparison of bond strength between root thirds were analysed using one-way ANOVA and pairwise comparison test. The significant level was set as $p < 0.05$. Results: The mean of the push-out bond strength values were significantly reduced by Ca(OH)$_2$ ($p < 0.05$). For control group, coronal third had significantly higher bond strength values than middle and apical third ($p < 0.05$). Nevertheless, no statistically significant difference was observed in the bond strength values between middle and apical third. For experimental group, statistically significant different in bond strength values were observed between the coronal and apical third ($p < 0.05$). The bond strength value of middle third was not significant when compared to the coronal and apical third ($p > 0.05$). When the bond strength values were compared among root thirds for both groups, all the root thirds, except the middle third demonstrated a significant difference in the push-out bond strength value between...
the two groups ($p > 0.05$). SEM observation revealed a gap between dentine-cement interface especially in the coronal, middle and apical third of both groups. **Conclusion:** Ca(OH)$_2$ adversely affected the bond strength of fibre post cemented with self-adhesive resin cement. There were significant differences in bond strength values for both groups among the root thirds, with a reduction in values from coronal to the apical third. SEM analysis revealed a gap between the dentine-cement inter-face for both groups.

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Objective: To evaluate the effect of non-thermal plasma (NTP) treatment on micro-shear bond strength of Yttrium-Stabilize Tetragonal Zirconia Polycrystal (Y-TZP) bonded with Panavia™ V5 resin cement and the bond durability after simulated ageing. Method: 90 Y-TZP (IPS Emax ZirCAD for Inlab) blocks were divided into 3 groups of 30 specimens each and were subjected to different surface treatments: (1) sandblast, then primer; (2) sandblast, NTP, then primer; (3) sandblast, primer, then NTP. They were then bonded with Panavia™ V5 resin cement. Subgroups of 15 bonded specimens were stored in distilled water at 37°C for either 48 hours (short term) or for 30 days with additional thermocycling for 5000 cycles (long term), before micro-shear bond strength was tested. The failed specimens were examined for failure mode using stereomicroscope. The data was analysed using Weibull statistics. Results: No statistical difference were observed between the groups in terms of short term or long term micro-shear bond strength (p<0.05). For all groups, the long term bond strength was significantly higher than the short term bond strength. Predominant failure modes in each group were mixed failures, followed by cohesive and adhesive failures. Conclusions: NTP application did not result in increased micro-shear bond strength of resin cement to Y-TZP relative to standard surface treatment methods.
**Objectives:** i) To systematically search for, collate and review the qualitative evidence on the impact of tooth loss on experience of eating in older people; ii) to conduct a synthesis of the evidence found in the primary qualitative studies.

**Methods:** A qualitative evidence synthesis of primary research using “best fit” framework synthesis to explore older people’s views and experiences on the impact of tooth loss upon issues surrounding eating. **Results:** The themes derived from the ESIRE (emotional and social issues related to eating) questionnaire were used as the basis for the a priori framework. A comprehensive literature search retrieved 127 unique citations for the review. Nine qualitative primary research studies were found to satisfy the inclusion criteria. The synthesis required a combination of framework analysis and secondary thematic analysis to produce a revised framework which comprised of the pre-existing and new themes relating to the impact of tooth loss on eating. **Conclusions:** The synthesis identified ten themes relating to functional, emotional, psychosocial effects and practical problems surrounding eating. **Clinical Significance:** The framework may offer a guide for better prosthodontics care from the patients’ perspective in order to prepare and support patients throughout their journey for readjustment following tooth loss to improve their eating experiences.

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Objectives: To evaluate the shear bond strength (SBS) and hybrid layer properties of different adhesive groups. To identify the failure mode at resin-dentine bonded interface of SBS test. To identify adaptation failure type in dentine-adhesive bonded interface of hybrid layer properties. Methods: A total of 75 sound premolar teeth were selected and randomly assigned into five different groups (n=15); OptiBond Solo (OBS, total-etch), Optibond Versa (OBV, two-bottles, self-etch), Adhe SE Ivoclar (ADHE, two bottles, self-etch), G-Bond (GB, one-bottle, self-etch), and OptiBond All in One (OBO, one-bottle, self-etch). The occlusal surfaces of the crowns are abraded to expose flat dentine surface teeth and were mounted in epoxy resin. Composite resin cylinder (4 mm diameter and 2 mm high) was built up on the occlusal surface of the tooth using a custom made mould. The specimens were subjected to 500 thermal cycles between 5 °C and 55 °C and dwell time of 10 s. The SBS was tested using a universal testing machine at a crosshead speed of 0.5 mm/min. After that twenty five selected specimens from SBS test were prepared for hybrid layer properties. Class V cavity was made at buccal surface in measurement of 2 mm x 4 mm. Then specimens were cut to produce flat surface, decalcified (6N HCL), deproteinized (12% NaOCL) and dehydrated (different percentages of ethanol) as preparation for scanning electron microscope (SEM) evaluation. Data for SBS and hybrid layer thickness were statistically analyzed by one-way ANOVA and Post Hoc Test (Dunnett T3) multiple comparison test at 95% confidence level. Failure mode of SBS was determined as adhesive, cohesive or a combination of both using stereomicroscope and the data were analysed using Fisher’s exact test. Failure mode of adaptation failure of dentin-adhesive bonded interfaces were determined and were analysed using Fisher’s exact test. Results: The total-etch adhesive system, OBS, had significantly higher values of SBS than the two self-etch adhesive sysatems (ADHE and GB). Within the self-etch systems, OBV showed significantly higher values of SBS than ADHE and GB. There was no significant difference in thickness of hybrid layer among five different adhesive groups. There were no statistically significant difference between types of failure mode in SBS and failure of adaptation in hybrid layer SEM images with different adhesive groups. Conclusion: The average SBS of total-etch system (OBS) was higher compared to self-etch (GB) and (ADHE). Among the self-etch groups, OBV showed the highest SBS. The different compositions in the self-etch adhesive materials may contribute to the bond strength value. There was no correlation between failure types of SBS with different adhesive groups. The highest mean hybrid layer thickness was observed in the OBS group. There was no correlation between adaptation types with different adhesive groups.
Introduction: The issue of disinfecting the prosthesis has become more important in recent years as there is evidence to show that denture biofilms can serve as a reservoir for dissemination of infections. Dentures are well-known to harbour many microorganisms, most commonly Candida species and some pathogens including Methicillin Resistant Staphylococcous Aureus. With the complexity of denture biofilms and the negative effect towards the general health, it is essential to find an effective way to disinfect these prostheses. Objective: To evaluate the effectiveness of five denture cleaners in combination with sonication in the disinfection of heat-cured acrylic and cobalt chrome specimens, contaminated in vitro by Epidemic Methicillin-Resistance Staphylococcus aureus (EMRSA-16) and Candida albicans. Methods: Single biofilms of EMRSA-16 and Candida albicans were grown on heat-cured acrylic and cobalt chrome discs in artificial saliva at 37°C in O2 for 48 hours. The discs were subsequently exposed to five denture cleaners (0.2% commercial chlorhexidine, 0.2% pure chlorhexidine, 1.5% alkaline peroxide, 0.075% cetylpyridinium chloride, 0.012% sodium hypochlorite) in combination with 60 seconds of sonication. The effect was determined by counting the colony forming units (CFU) of remaining viable microorganism on the disc after exposure to the treatments. Results: All the denture cleaners reduced the number of cultivable Candida albicans and EMRSA-16 on the discs in the combination with sonication. 0.2% commercial chlorhexidine and 0.012% sodium hypochlorite were the most effective denture cleaners whereas 0.2% pure chlorhexidine was the least effective. Conclusion: One-minute sonication with 0.2% commercial chlorhexidine was the most effective denture cleaner in treating a mature biofilm of Candida albicans and EMRSA16 on heat-cured acrylic and cobalt chrome discs. 0.012% sodium hypochlorite was also very effective on heat-cured acrylic disc. Sonication alone had significant effect in eliminating denture’s biofilms in both specimens.

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RESEARCH IN SPECIAL NEEDS DENTISTRY
**Aim:** This pilot study is to determine the perception of dentists in the primary-care setting in Selangor about Behavioural Guidance in Special Needs Dentistry (SND). Behavioural Guidance is important to establish communication, alleviate dental fear, building a trusting relationship, and promote a positive attitude towards oral health. **Methodology:** A convenience sampling method (N=30) was chosen to conduct the survey consisting of all primary care dentists who attended a course entitled ‘Behavioural Guidance in Dentistry’ at the state level in Selangor. The survey instrument was adapted from Moriarty, S. C. (2015). Descriptive analysis was performed using SPSS (22.0). **Findings:** Although majority of the subjects were aware of the term SND (100%) and Behaviour Guidance (70%), only half of them were able to describe the terms. Most of them obtained the related information via continuing education classes during work (46.7%) rather than during undergraduate studies (33.3%). Fifty percent claimed to practise ‘Behavioural Guidance’ in adults with Special Needs (SN), the other half had given the reasons for not practising; lack of experience, time consuming and too difficult to manage them. The behavioural guidance practised by the subjects were mainly patient education, tell-show-do and reward system, which claimed as successful. Majority admitted that their ‘neutral’ perception about behavioural guidance had turned to ‘very positive’ post-course. **Conclusion:** This pilot study provides as a reference in order to conduct a similar course at a national level in the near future to train the young primary care dentists to manage adults with SN with behavioural issues.

**Keywords:** Behavioural guidance, behavioural modifications in dentistry, communication in dentistry

A study done as a requirement for gazettement in Special Needs Dentistry.

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Objectives: To review the current care setting for conscious sedation for dentistry in the primary and secondary care sectors in the United Kingdom (UK) and to recommend a plan for setting up a service for the provision of conscious sedation in Malaysia based on the UK models. Methods: An electronic search using various databases and web-based search engines were conducted during the period from January to March 2016. Various combinations of keywords were used to help the literature search including dental care settings, conscious sedation, equipment for conscious sedation, referral pathway for sedation and training in sedation. Results: The findings have shown that, although there are specific requirements for the facilities practising sedation, the majority of the requirements are common to all dental practices, such as health and safety, infection control, emergency drugs etc. Discussion: The good integration between primary and secondary care in providing conscious sedation relies on the compliance with the referral pathway. Ensuring safety, effectiveness and appropriateness of the sedation techniques used are the major aims when delivering care to fit individual needs. Conclusion: It is recommended that the practice of conscious sedation in the dental setting in Malaysia begins at Special Needs Dentistry (SND) Units whereby the facilities have been partly equipped for conscious sedation and specialists in charge have received appropriate training in conscious sedation at least in one way or another. It is highly recommended to look into the country in which the service has been well established such as United Kingdom as a reference for future development of the conscious sedation service in Malaysia.

Keywords: Dental care settings, conscious sedation, equipment for conscious sedation, referral pathway for sedation and training in sedation.

Oral presentation at the 24th International Association of Diversity and Oral Health Congress on 31 August - 2 September 2018 at Intercontinental Dubai Festival City, Dubai

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Aim: To create awareness about Mercy Malaysia and Klinik Derma Sivasanta that are actively serving underprivileged community in Sri Lanka and Penang Island respectively and to share personal experience of being a part of the team and hence encourage volunteerism among dentists in Malaysia.

Brief Description of activities: Internationally, not only Medical volunteerism but also Oral Health/ Dental volunteerism raised in the aftermath of tsunami. By joining Mercy Malaysia, I have visited several camps and schools in Sri Lanka which was affected by tsunami. With the advantage of having similar mother tongue, language was not a barrier, hence we have managed to cover large number of affected population for the period of two weeks; performing oral health promotion and dental screening. Closer to home in Penang, Klinik Derma Sivasanta a welfare wing of Temple of Fine Arts determined to bring free multidisciplinary team of specialists care under one roof for the sick and needy. The clinic is open between 7.30pm and 9.00pm every Tuesday and Thursday and handles 70 to 80 cases on each of those nights in general and about 15 dental cases. It currently has more than 50 volunteer medical and dental specialists (I have been serving since 10 years ago). In the field of dentistry, activities such as oral health education, dental examination, simple restorations and extractions are provided by the scheduled dental specialist. Complicated cases are referred to Penang General Hospital.

Conclusions: Dental volunteerism together with their NGOs may have the potential to make a significant growth to global oral health amongst the underprivileged, sick and poor population.
Objectives: To determine the Candida species and colonisation level of the oral mucosa in people taking antipsychotic drugs relative to healthy individuals and other xerostomic patients. To investigate fluconazole resistance to other antipsychotics, as fluphenazine is known to cause resistance. Methods: Consented participants aged between 20 to 70 years, who currently on antipsychotic drugs were enrolled. Xerostomia symptoms were determined from the Xerostomia Inventory (XI) and clinical examinations. Saliva rinses are collected. Smears were taken from the buccal mucosae and tongue, and other suspicious mucosa and sent to Medlab for candida hyphae and yeast identification. Saliva samples were titrated and plated onto Chromagar, then kept at 37°C for 48 hours. The colony-forming units (CFU) and species (from the colony colour) were recorded. The susceptibility of the colonies towards fluconazole measured using the E-test by making lawns of candida species with the optical density (OD) of 0.25 on the HDMI and MOPS agar. Plates were incubated at 37°C for 48 hours. Results: Current findings show that although 75% of participants have evidence of dry mouth clinically, they may not have symptoms (only a third scored high XIs). More than 60% were positive oral candida hyphae and candida colonies. Susceptibility testing of Candida albicans with fluconazole and fluphenazine is currently undertaken in the study. Conclusions: Many antipsychotic drugs are known to cause xerostomia and increased candida infections. Investigating candidal infection and their resistance to fluconazole will address and potentially lead to more appropriate treatment.

Keywords: Fungi, Infection, Pharmacology, Psychiatric and Saliva

Poster presentation at International Association of Dental Research Australia and New Zealand Section 54th Meeting, Brisbane, Australia on 29 September 2014

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Introduction: Antipsychotic medications may reduce salivary gland function. Individuals with xerostomia are prone to oral fungal infections, especially by Candida species. Fluphenazine (antipsychotic medication) is reported to induce expression of efflux pumps in Candida albicans that cause resistance to azole antifungal medications. Objectives: To determine level of Candida colonization of oral mucosa in antipsychotic medications users relative to healthy controls and to xerostomic individuals; to determine the Candida species present; to measure the azole resistance of these isolates; and to determine whether fluphenazine affected azole resistance of C. albicans isolates. Methods: Nine participants aged between 20 and 70, taking antipsychotic medications were recruited with informed consent. Xerostomia Inventory (XI) and clinical examinations were performed to determine xerostomia symptoms. Saliva rinses were collected. Smears were taken from the buccal mucosa, tongue, and mucosal tissues with signs of infection to identify Candida hyphae and yeast. Saliva samples were cultured on CHROMagarCandida™ plates. The colony-forming units (CFU) and species (presumptively assigned from the colony colour) were recorded. C. albicans isolates’ susceptibility to fluconazole was measured using the E-test and liquid microdilution assay. Fluconazole and fluphenazine interaction was investigated using disc diffusion assay and checkerboard liquid microdilution assay. Results: Majority of the participants (78%) reported mild feeling of dry mouth. Four participants (44%) were diagnosed with oral candidosis. Seven participants were colonised with Candida spp. The CFU number of yeast was higher in the participants than control. The Candida species mostly identified was C. albicans. Fluphenazine demonstrated antagonistic effects towards fluconazole. Conclusion: Patients taking antipsychotics are more susceptible to candidosis and may not respond to azole therapy. Fluphenazine and fluconazole antagonistic interaction indicates that careful consideration is necessary when prescribing fluconazole to patients taking fluphenazine or medication of similar class.

Poster presentation at International Association of Dental Research Malaysia Section 16th Scientific Meeting and 18th Annual General Meeting, Armada Hotel, Petaling Jaya on 18 March 2017
Objective: In Australia, Dental Therapists (DTs), Dental Hygienists (DHs) and Oral Health Therapists (OHTs) encounter Special Needs (SN) patients in their clinical practice. This cross-sectional study investigated their perception, training and working experience, as well as referral patterns within Special Needs Dentistry (SND). Methods: A paper-based questionnaire was distributed to a systematically selected sample of 1000 registered DHs, DTs and OHTs. Participants were included irrespective of age, gender, length of working experience and country of graduation. If they were still studying or not practicing in Australia, they were excluded from the study. Data analysis consisted of Chi-squared regression analysis (P<0.05) using IBM SPSS for Windows Version 22.0. Results: A response rate of 49.8% (215 DTs, 107 DHs and 163 OHTs) was obtained. A larger proportion of OHTs (59.5%) were aware of SND as specialty compared to DHs (45%) and DTs (41.9%) (P=0.003) and hence OHTs referred to SND specialists more often than other groups. In addition, 73.6% of OHTs, 63.6% of DHs and 40% of DTs had both didactic and clinical training in SND (P<0.001). All the categories stated lack of training and continuing professional development (CPD) in SND as the main reasons for not treating SN patients. They therefore expressed interest in attending SND related CPD training (OHTs 90.2%, DHs 88.8%, and DTs 88.3%). They remained neutral regarding their perception of working primarily with SN patients in the future with 45% of OHTs responded positively to the calling (P=0.005). Conclusion: Perception and experience in SND was varied amongst these allied dental professionals in Australia.

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153. PROVISION OF DOMICILIARY ORAL HEALTHCARE FOR THE VULNERABLE GROUP BY SPECIAL NEEDS DENTISTRY TEAM OF KAJANG HOSPITAL IN THE YEAR 2017

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Objective: To describe the categories of patients involved and types of dental care which was undertaken on a domiciliary basis in the Klang valley by Special Needs Dentistry team of Kajang Hospital in the year 2017 and to list the barriers and recommendation to the provision of such care. Method: A retrospective study, involving all home visits (17 home visits) which was performed by SND team in the year 2017 were obtained using patient’s treatment card (LP8). Descriptive analysis performed on categories of patients whom received the domiciliary dental care, types of treatment received, challenges faced and recommendations written for future domiciliary dental service by SND team of Kajang Hospital. Results: At least one SND specialist and one Dental Officer performed each domiciliary visit (n=17). The patients consist of one quadriplegic patient with intellectual disability category, four patients whom fall in the category of physically disabled and medically compromised and five patients with intellectual disability and psychiatric/behavioural issues. Preventive treatment (oral cleaning, scaling and polishing, fluoride therapy) was the most common procedure undertaken, followed by restorative and prosthetic treatment. Barriers as listed by the dental officers were related to time constraint, concerns about infection control, emergency drugs and lack of suitable equipment. All staff involved in the provision of domiciliary oral healthcare should be trained to provide the care to the vulnerable individuals in a safe and beneficial manner. Conclusion: The vulnerable population such as the elderly and functionally dependent patients, homebound or confined to bed and unable to leave home due to behavioural issue or agoraphobia have benefitted from domiciliary dental care. Staff training, portable dental equipment and Standard Operating Procedure (SOP) for the delivery of domiciliary care are required.

Keywords: Domiciliary Oral Healthcare, SND, Vulnerable group

Oral Presentation at 20th Islamic Medical Association of Malaysia (IMAM) Annual Scientific Conference on 28 - 30 September 2018 at Grand Blue Wave Hotel Shah Alam, Selangor

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Objective: People living in areas of Baram, Ulu Limbang, Ulu Lawas and Ba’kelalan of Sarawak have extreme difficulties in accessing basic medical and dental care. The regions’ remoteness traversed by treacherous terrains and the vast distances, hampers accessibility to existing rural health clinics. Moreover, as the local population consists of subsistence farmers and hunter-gatherers with low cash income, the high cost of travel to the nearest healthcare center comes at a premium. REACH SARAWAK aims to improve equity of access to basic medical and dental care to these communities. Brief description of activities: The REACH SARAWAK Rural Health Project is a nonprofit community effort by local volunteers funded through private donations. Volunteers of medical and dental specialists and officers, pharmacists, allied healthcare and dental auxiliary professionals visit these remote villages and provide free medical and dental care. Many patients with serious previously undiagnosed conditions including heart disease, infections, cancer, pregnancy-related illnesses, children’s growth disorders and dental diseases have benefitted from the team’s visits. Patients with severe illnesses, such as pneumonia and life-threatening injuries have been provided with transport to urban hospitals for further treatment. In addition, the absence of local dental care in the region accords popularity to our volunteer dental team who provides much needed relief of dental pain. Currently, more than 20,000 people have benefited from the care provided by REACH SARAWAK, which has conducted over 60 trips to the region, with more than 200 volunteers, since 2003. Conclusions: Health inequalities exist in rural Sarawak. Volunteers of REACH SARAWAK strives to remove barriers and bridge the gap.
Special Needs Dentistry (SND) Unit, Kuala Lumpur Hospital has been established since January 2012. The SND service was initiated with a Specialist in SND and a dental surgery assistant. Since then, there has been increasing numbers of patients’ attendance with referral from government and private clinics and hospitals. **Aim:** To share our experience, information and knowledge in setting-up SND Unit as a learning opportunity to build the foundation for such clinic elsewhere. **Methods:** In February 2011, SND clinical service was initiated at the Department of Paediatric Dentistry, Institute of Paediatrics, Kuala Lumpur Hospital with sharing of staff and facilities. At the early stage, all the referrals were within the department with transition of patients when they reached 16 years old. SND clinical service moved to the existing facility in 2012. The SND Unit was set-up with allocation for asset and operational budgets from the Oral Health Division, Ministry of Health Malaysia. **Results:** Since 2012, the SND Unit has grown with increased numbers of staff from none to one Specialist, two dental officers and three dental surgery assistants. Currently, the unit has two dental surgery rooms and allocation of general anaesthesia slots at both the Main OT and Daycare OT. In addition, SND team is part of the multidisciplinary team with Geriatric service, training of dental officers with interest in SND (four dental officers) and gazettement training for new Specialist in SND (three clinical Specialist in SND). **Conclusions:** Setting up the SND Unit revolves around improving the quality of patient care and services by learning from experience and sharing best practice for best outcomes.