17TH STUDENTS SCIENTIFIC CONFERENCE

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"Empowering Dental Research for the New Decade"

ABSTRACT BOOK

Oral Presentation – Basic Sciences

(BS 1) Cytotoxicity and cell adherence evaluation of 3D orbital polyamide composite customised implant

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Introduction: Polymer composites based orbital floor implant namely 3D orbital polyamide customised composite (3D OPACC) has been successfully developed locally. **Objectives:** The objective of this study was to evaluate the cytotoxicity and osteoblast cell adherence on the developed composite. **Methods:** The cytotoxicity of the 3D OPACC was evaluated by incubating the osteoblast cells in five different concentrations (100, 50, 25, 12.5, 6.25 mg/ml) of the composite extract for 72 hours. The cell viability was determined by MTS assay at a wavelength of 492 nm via a microplate reader. The cell adherence was evaluated by seeding the osteoblast cells on the 3D OPACC and incubated for 72 hours. Staining was performed using a live and dead cell imaging kit. The cell adherence was observed under a fluorescence microscope. In both experiments, commercial implants under the trade name of Synpor and MedPor were used as comparison. **Results:** Regardless of the concentration, the viability of the cells treated with 3D OPACC were more than 80%. Besides exhibiting higher cell viability as compared to the commercial implant, the cells also adhered well to the 3D OPACC implant. **Conclusion:** 3D OPACC is not cytotoxic and has been demonstrated to be a favourable host for osteoblast attachment and proliferation.

Keywords: Cytotoxicity, cell adherence, polymer composite, osteoblast, orbital implant.

(BS 2) Evaluation of PMMA/graphene with different surface modifications

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Introduction: Polymethyl methacrylate (PMMA) is a well-known material for removable prostheses, dental implants, bone cement and other orthodontic appliances. It has superior advantages such as excellent toughness, stiffness, rigid and good biocompatibility. However, it suffers from its brittleness, low strength, and fatique resistance. Addition of various fillers could improve the physical and mechanical properties of PMMA. Hence, in this study, graphene was chosen to improve the dispersion and adhesion of polymer matrix through surface modification with silanization method, which could help in enhancing the strength of PMMA. **Objectives**: This study was conducted to improve mechanical properties of PMMA by incorporating modified graphene. **Methods**: PMMA without graphene was prepared as control (n=9). Graphene (Skyspring,USA) was fix to 0.01wt% and silanized with 3-(Trimethoxysilyl)propylmethacrylate. The effect of graphene modification on the flexural strength and morphological were determined using Universal Testing Machine (AGX 2 plus, Shidmadzu, Japan), Fourier transform infra-red spectroscopy (FTIR), and scanning electron microscope (SEM). Statistical analysis of One-Way ANOVA ($p < 0.05$) was employed to assess the differences in the mean of flexural strength between the groups. **Results**: The study showed the flexural strength of pure PMMA was 53.37 MPa meanwhile PMMA/Gr was 62.18 MPa. However, the presence of modified graphene has not significantly improved the strength of PMMA. **Conclusion**: Surface modification of graphene was successfully evaluated. However, the strength of PMMA was not significantly improved.

Keywords: PMMA, graphene, silane, flexural strength.

(BS 3) Evaluation of mutagenicity potential of experimental nanohybrid dental composite reinforced with zirconia using Ames test

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Introduction: Our group has developed an experimental nanohybrid dental composite (NHDC) using silica filler from rice husk, which was biocompatible and nontoxic. In an attempt to improve the properties of the experimental NHDC, a small percentage of zirconia was reinforced to the dental composite. **Objectives:** As part of a more significant project, this study aims to evaluate the mutagenicity potential of the zirconia reinforced NHDC, *in-vitro*. **Methods**: The mutagenicity potential of zirconia reinforced experimental NHDC (0, 3 and 5wt%) was analysed using Ames test. A 5000 µg/ml solution extract of each dental composite group was prepared and serially diluted in sterilised distilled water. Mutagenic effects of the materials were tested on *Salmonella typhimurium* strains TA 98 and TA 1535 using the standard assay and in the presence and absence of S9 fraction from rat liver. The colonies number was determined. The material was considered as a mutagenic agent if the colony ratio of the histidine-revertant to spontaneous revertants of the negative control was $\geq$ 2. **Results**: In all the concentration of all tested dental composites, the Ames test failed to detect their mutagenic effect. **Conclusion:** Under the boundaries of the present study, zirconia reinforced NHDC has no mutagenic effect.

Keywords: Genotoxicity, Ames test, nanohybrid composite, rice husk.

(BS 4) Effect of cytotoxicity on fibroblast cell line treated with aqueous tobacco extract

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Introduction: Habit of chewing betel quid containing is a common in several Asian countries. Tobacco, one of the constituents is known as carcinogenic and was found to be a significant factor of oral cancer with South East Asia region have particularly high prevalence. **Objectives:** The objectives of this study were to assess the cytotoxicity effects of locally produced smokeless tobacco aqueous extract and to investigate the cytotoxicity level of different concentrations of the extract on mouse fibroblast cell line, L929. **Methods:** The tobacco was purchased from local market, Pasar Siti Khadijah and blended with deionized water (1:2;w:v) before freeze-drying. The freeze-dried powder was then dissolved in Dulbecco's Modified Eagle's Medium (DMEM) followed by dilution in seven concentrations of aqueous tobacco extract (0.156, 0.313, 0.625, 1.25, 2.5, 5.0, 10.0 mg/ml). The L929 culture were then incubated with the different concentrations of tobacco aqueous extract. The cytotoxicity of the treated cell line was assessed after 24, 48 and 72 hours incubation using MTT assay and the half maximal inhibitory concentration (IC_{50}) was determined. **Results:** Significant decreases of L929 cell viability were shown after incubation for 24, 48 and 72 hours with 2.5, 5.0, 10.0 mg/ml of aqueous tobacco extract compared to the control. The IC_{50} value of aqueous tobacco extract at 24, 48 and 72 hours were 12.67, 6.494 and 5.813 mg/ml, respectively. **Conclusion:** This study portrayed that tobacco with higher concentration is cytotoxic to L929.

Keywords: Smokeless tobacco, mouse fibroblast cell line, cytotoxicity, MTT assay, oral cancer.

(BS 5) Degradation properties of alginate-agarose hydrogels under influence of citrate for encapsulation of dental stem cells

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Introduction: Hydrogels are widely used in biomedical applications due to their unique characteristics which mimic the extracellular matrix, allowing cells to survive within the hydrogels. Sodium citrate and ethylenediaminetetraacetic acid (EDTA) are believed to be able to dissolve the alginate-agarose hydrogel beads by chelation of calcium ions, and further release the encapsulated stem cells following the transportation process. Optimisation of dissolving agents is essential to maintain the viability of stem cells after being released from the hydrogels for further applications. **Objectives:** To optimise the concentration of dissolving agent to degrade alginate-agarose hydrogel beads while maintaining the viability of the encapsulated dental stem cells. **Methods:** Different concentration of sodium citrate and EDTA were tested to degrade the hydrogel beads and the degradation time was recorded. Two combinations of dissolving agents with the longest and shortest degradation time were selected and tested for hydrogel beads with encapsulated stem cells from human exfoliated deciduous teeth (SHED). The cell viability was calculated. **Results:** An average of 2 minutes was the shortest time recorded to degrade the hydrogels with encapsulated SHED using dissolving agent with a combination of 100mM sodium citrate and 100mM EDTA. Cell viability of SHED released after day 10 of encapsulation was 29.1%. **Conclusion:** The present study demonstrated that SHED can survive in the hydrogels environment for at least 10 days without changing of culture medium. Optimisation of dissolving agent allows proper disintegration of the hydrogels structure, resulting in stem cells release from the Al-Ag beads after the transportation period, while allowing the cells to remain viable.

Keywords: Hydrogel, alginate, agarose, sodium citrate, stem cell.

(BS 6) Potency of *Bombyx mori* L. nanofibroin filler as composite resin restoration

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Introduction: *Bombyx mori* L. nanofibroin has potential as an organic filler composite restoration because it has excellent mechanical and functional strength. One of main requirements of the restoration material is to have good mechanical strength for wear resistance of dental restorations as well as tooth wear or antagonist restorations. The mechanical properties of microhardness are important to study as a preliminary study in the new material. **Objectives:** The objectives of this study were to find out the nanofibroin potency as composite resin filler and to compare the microhardness of nanofibroin and nanofiller composites. **Methods:** Nanofibroin particles were extracted from *Bombyx mori* L. cocoon by degumming, dissolving, dialysis and sonification. Weight of the nanofibroin filler was determined using volume fraction of natural fibers and mixed with an organic matrix. Three of sample groups were divided into nanofibroin composites, nanofiller composites (Z350 XT flowable 3M ESPE) as a positive control and composites without fillers as negative control. Microhardness was measured using a microhardness tester (Shimadzu, Japan). Data were analyzed using Kruskal Wallis test. **Results:** The nanofiller have the highest microhardness (110.40 VHN), while nanofibroin composite has a microhardness of 50.16 VHN, and the composite without filler has the lowest microhardness (31.55 VHN) and the statistical analysis showed $p > 0.05$ level of significance. **Conclusion:** The *Bombyx mori* L. nanofibroin composite has potential for composite filler restoration, however it has lower microhardness than nanofiller composite.

Keywords: *Bombyx mori* L., composite, nanofibroin, nanofiller, microhardness.

(BS 7) Antimicrobial properties of *Cucumis sativus* against oral pathogens involve in dental caries

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Introduction: *Cucumis sativus*, also known as 'timun' in Malaysia is one of the natural products from the family *Cucurbitaceae* that contain a lot of medicinal value such as antidiabetic and antihyperlipidemic, anti-atherosclerotic, anti-inflammatory and antitumor, wound healing and antifungal activities. Currently, there is no known published study that indicates the antimicrobial activities of *Cucumis sativus* against oral pathogens. **Objectives:** This study aimed to assess the antimicrobial properties of *Cucumis sativus* against *Streptococcus mutans* and *Streptococcus sobrinus.* **Methods:** Different concentration of ethanolic extract of *Cucumis sativus* which are 2.5 mg/ml, 5 mg/ml and 10 mg/ml were prepared by two-fold dilutional method and chlorhexidine with 0.5% concentration used as positive control while distilled water act as a negative control. Antimicrobial activities of the plant extract against *Streptococcus mutans* and *Streptococcus sobrinus* were carried out by agar well diffusion assay. The antimicrobial activities were expressed as the mean of inhibition diameters (mm). **Results:** The ethanolic extract of *Cucumis sativus* showed that there was a little zone of inhibition for *Streptococcus mutans.* On the other hand, there was no zone inhibition for *Streptococcus sobrinus.* **Conclusion:** The ethanolic extract of *Cucumis sativus* has no antimicrobial properties against *Streptococcus mutans* and *Streptococcus sobrinus.*

Keywords: Antimicrobial activities, *Cucumis sativus*, *Streptococcus mutans, Streptococcus sobrinus*, agar well diffusion assay.

(BS 8) Cytotoxicity of Malaysian Kelulut honey using MTT assay

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Introduction: Kelulut honey is produced by stingless bees of *Trigona* species. It is one of the valuable bee products and is attributed to have some medicinal properties by ancient people. It has been known as therapeutic honey due to its high antioxidant, antimicrobial, anti-aging, antibacterial and wound healing properties. **Objective:** This study aimed to assess the cytotoxicity of Malaysian Kelulut honey on human gingival fibroblast cell line (HGF-1, ATCC®CRL-2014™, USA) using MTT assay. **Methods:** HGF-1 were cultured using minimal essential medium alpha supplemented with foetal bovine serum and antibiotics in a 6-well plate and treated with different concentrations (200, 100, 50, 25, 12.5, 6.25 and 3.125 mg/ml) of Malaysian Kelulut honey. The cells were incubated in a CO_2 incubator at 37°C. The cell viability was assessed using MTT assay at 3 different time periods (24, 48 and 72 hours). The data were analysed with Kruskal-Wallis test to do a pairwise comparison using SPSS 24.0.0 for windows. Control group represented culturing the cells in medium alone without any treatment. **Results:** The study showed that there was no cytotoxic effect of Malaysian Kelulut honey on HGF-1 using MTT assay at the different concentrations and time points tested as the cell viability was above 70%. However, statistically significant differences were seen between some of the concentrations at various time points. **Conclusion:** Malaysian Kelulut honey is non-cytotoxic on human gingival fibroblasts based on MTT assay under the present test conditions.

Keywords: Kelulut honey, gingival fibroblast, MTT assay, cytotoxicity.

(BS 9) Effects of aqueous areca nut extract on cell morphology and p27 expression of mouse fibroblast cell line

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Introduction: Betel quid chewing habit is popular among Asian populations. One of its constituent, areca nut, is highly associated with oral squamous cell carcinoma (OSCC) and may promote changes in cell morphology and *p27* expression of mouse fibroblast (L929) cells. **Objectives**: To determine the effects of areca nut extract on cell morphology and *p27* expression of L929 cells. **Methods**: Dried areca nut was prepared and suspended in Dulbecco's Modified Eagle's Medium (DMEM), followed by dilution into different concentrations (0.0976, 0.195, 0.39, 0.781 mg/ml). The L929 cells were then treated with each concentration and incubated at 37˚C for 6 hours. The morphological changes were observed under light microscope. The cells were then harvested and subjected to RNA extraction. The RNA was utilised to amplify *p27* using One-Step Reverse-Transcriptase Polymerase Chain Reaction (RT-PCR). *β-actin* was used as a housekeeping gene in this study. The PCR products were electrophoresed on an agarose gel, which were then analysed using Image Analyser. **Results**: Arena nut extract resulted in shrinkage and altered cell shape of L929. The *p27* expression was observed to be slightly increased in sample treated with 0.195 mg/ml of areca nut extract. **Conclusion**: The current study showed that areca nut extract affected the cell morphology and *p27* expression, which is involved in cell cycle regulation.

Keywords: Areca nut, L929, OSCC, cell cycle, *p27*.

(BS 10) Cellular response after treated with distilled liquid smoke from coconut shell on diabetic oral ulcer healing

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Introduction: The healing rate of oral ulcer can be prolonged under diabetic condition by complex molecular mechanism. Benzydamine hydrochloride (BHCl) is a drug-of-choice to treat oral ulcers but has side effects such as urticaria and erythema. Distilled liquid smoke from coconut shell (DLS-CS) is traditionally used for natural preservative and allay burn wounds with its phenolic components. DLS-CS might have the potential to heal diabetic oral ulcer. **Objectives:** To investigate the possible role of DLS-CS in cellular responses during the diabetic oral ulcer healing. **Methods:** The research is a laboratory-based experimental featuring *in vivo* analysis. DLS-CS was produce from pyrolysis and distillation of coconut (*Cocos nucifera*) shell. Twenty-one diabetic male Wistar rats stimulated by alloxan with oral ulcer divided into three groups (n=7), each given DLS-aqueous solution (DLS-AS), DLS-BHCl, and DLS-CS once a day for three days. Histo-analysis was performed to assess the lymphocytes, macrophages, and neutrophils as tissue respond during healing. Subsequently, the data analyzed by ANOVA test continued by LSD (p<0.01). **Results:** Results showed that the DLS-CS simultaneous increased the cellular response. The number of lymphocytes after DLS-CS treatment are higher than the DLS-AS treatment (p=0.000) and the DLS-BHCl treatment (p=0.001). The number of macrophages after treatment by DLS-CS are higher than the DLS-AS treatment (p=0.000) and the DLS-BHCl treatment (p=0.000). The number of neutrophils after DLS-CS treatment are higher than the DLS-AS treatment (p= 0.001). **Conclusion:** The treatment using DLS-CS overall has positive role in cellular response, enabling to hasten the healing of diabetic oral ulcer.

Keywords: Cellular response, coconut shell, diabetic oral ulcer, distilled liquid smoke.

(BS 11) Cytotoxicity of calcium oxide derived from cockle shells using MTT assay

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Introduction: Cockle shells, *Anadara granosa*, locally known as "kerang" in Malaysia are natural sources of calcium oxide (CaO) and readily available as waste. Cockle shells contain 95-99% by weight of $CaCO_3$ which have been used as bone repair material. CaO derived from cockle shells can also find application as a biomaterial in dentistry. **Objective:** This study aimed to assess the cytotoxicity of CaO derived from cockle shells on human gingival fibroblast cells (HGF-1) using MTT assay. **Methods:** Minimal essential medium alpha supplemented with foetal bovine serum and penicillin was used to culture HGF-1 in a 6-well plate and treated with various concentrations (200, 100, 50, 25, 12.5, 6.25 and 3.125 mg/ml) of aqueous extract of CaO derived from cockle shells. The cells were incubated at 37°C in a CO_2 incubator and the cell viability were assessed using MTT assay at 24, 48 and 72 hours. The data were analysed using SPSS 24.0.0 and Kruskal-Wallis test was done to do a pairwise comparison. **Results:** The results showed that the aqueous extract of CaO derived from cockle shells did not exhibit cytotoxic effect on HGF-1 at all concentrations except 200 mg/ml at 24, 48, and 72 hours of treatment. However, statistical significance was observed in the cell viability between different concentrations at 48 and 72 hours. **Conclusion:** CaO derived from cockle shells does not exhibit cytotoxic effect on HGF-1 at a concentration up to 100 mg/ml under the present test conditions.

Keywords: Calcium oxide, cockle shells, human gingival fibroblast, MTT assay, cytotoxicity.

(BS 12) Comparative study on bioactivity of conventional and nano-hydroxyapatite silica glass ionomer cement (Nano-HA-Si GIC)

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Introduction: The addition of Nano-HA-Si into conventional GIC demonstrated an increased in strength and favourable cytotoxicity response. Nevertheless, its bioactivity is yet to be reported. **Objectives:** To determine and compare the pH and calcium ion release of conventional and different percentages of Nano-HA-Si GIC, immersed in artificial saliva at 1, 7 and 14 days. **Methods:** Conventional GIC (cGIC) was mixed according to manufacturer's instruction. Nano-HA-Si powder was weighed and added to cGIC at percentage weight of 5% and 10%, respectively. The mixture was manually mixed and placed into disc-like mould measuring 3mm x 6mm x 12mm in dimension (n=16 per group). The specimens were then immersed in artificial saliva (AS) for 1, 7 and 14 days at 37°C. pH changes and calcium ion (Ca^{2+}) release were measured using pH meter and atomic absorption spectrometer (AAS), respectively. One-way ANOVA followed by Tukey's post hoc test were used to analyze the data. Results with $p<0.05$ was considered significant. **Results:** All materials displayed an equivalent optimum level of pH at day 1, 7 and 14 ($p>0.05$). For cGIC, there was a significant difference in pH value between day 1 and 7 ($p<0.001$). Meanwhile, 10% Nano-HA-Si presented a significant difference in pH value between day 7 and 14 ($p<0.001$). Both Nano-HA-Si GIC showed a comparable Ca^{2+} release in relation to cGIC. All materials have a reducing pattern of release with time. **Conclusion:** Both Nano-HA-Si GIC maintain an optimum pH and release calcium ions which is comparable to cGIC.

Keywords: Glass ionomer cement, nano-hydroxyapatite silica, bioactivity, calcium ion release.

(BS 13) Assessing the pattern of glucose level among diabetes mellitus patients using response surface methodology (RSM)

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Introduction: A chronic and persistently rise in blood glucose level will result in diabetes mellitus (DM). Previous studies showed that BMI, cholesterol, triglyceride and smoking are among the risk factors that can contribute to DM. Response surface methodology (RSM) is a collection of mathematical and statistical techniques for empirical model building, in which a response of interest is influenced by several variables. **Objectives:** This study aimed to obtain a general graphical contour plot for glucose level using RSM. Specifically, it was to assess a pattern of glucose reading between BMI and HDL cholesterol, BMI and triglyceride, BMI and smoking status, triglyceride and smoking, HDL cholesterol and triglyceride. **Methods:** Secondary data of Type 2 diabetic patients was analysed using Minitab version 16 through RSM method. The most important factors contributing to DM were determined based on the factors influencing it. After that, general graphical contour plot and table of estimated regression coefficient for glucose level were obtained. **Results:** Our results showed that there were two variable that contributes to DM among patients which are HDL cholesterol (β = 29.791, p = 0.015) and triglycerides (β = 58.682, p = 0.000). **Conclusion:** Based on contour plot, triglycerides and HDL cholesterol were risk factor that contribute to high glucose level among DM types 2 patients. Plot from RSM is used to understand the relationship between two factors on the response. It is easier to arrange and interpret, also widely applied in many studies.

Keywords: Diabetes mellitus, response surface methodology, contour plot.

(BS 14) The effect of mangrove leaf extract (A*vicennia alba)* concentration of 20% on the number of macrophages in the healing of traumatic ulcers

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Introduction: Traumatic ulcer is an ulcerative lesion of the oral mucosa caused by trauma. The prevalence of traumatic ulcers is greater than the other lesions in the oral mucosa. The healing process of traumatic ulcers consists of several stages, macrophages is one of the cells that involved in the healing process of traumatic ulcers. Mangroves are almost scattered throughout the tropical and subtropical beaches in the world, one of them is *Avicennia alba* mangrove which can be used as medicine because it is non cytotoxic. **Objectives:** To know the effect of mangrove leaf extract (*Avicennia alba*) concentration of 20% on the number of macrophages in healing traumatic ulcers. **Methods:** This is an experimental laboratory study with t*he post-test only control group design.* The research sample using 64 male *Wistar* rats, weight ±150 grams, 2-3 months old, divided by 4 groups, control group with hyaluronic acid 0,2% determination on day 3 (C3) and day 5 (C5), and treatment groups with mangrove leaf extract (*Avicennia alba*) 20% determination on day 3 (T3) and day 5 (T5). This research was analyzed by different test with *Independent sampel t test.* **Results:** Showed the value of *p*<0,05 for all treatment groups day 3 and day 5,showed that the differences between them have a significant difference in the number of macropaghes. **Conclusions:** Mangrove leaf extract (*Avicennia alba*) had the effect on the number of macrophages in healing traumatic ulcers.

Keywords: *Avicennia alba* mangrove, traumatic ulcers, macrophages.

Oral Presentations – Clinical Sciences

(CS 1) Assessment on healing rate for healing radiolucency of root canal treatment done at Hospital Universiti Sains Malaysia Dental Clinic

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Introduction: In cases of root canal treatment (RCT) for a tooth with periapical radiolucency, radiographic resolution of the periapical lesion is often used to evaluate the success of the therapy. **Objectives:** This study was done to evaluate the healing rate of a radiolucency lesion in root canal treated teeth done at Hospital Universiti Sains Malaysia (HUSM) dental clinic. **Methods:** Seventy-eight patient's folder who attended HUSM dental clinic from January 2013 to December 2018 that following inclusion criteria were collected, assessed and compiled. Information was collected related to period of treatment, radiolucency size by measurement through radiograph and technique of cleaning and shaping used. Healing rate of radiolucency lesion treated by student and dentist was calculated and healing rate for 39 teeth treated using crown down technique and another 39 teeth treated using step back technique was compared using independent t-test. **Result:** The result showed that the healing rate for radiolucency lesion of RCT treated by student involving 39 teeth (22 anterior, 3 premolar, 14 molar) was $1.904mm^2$/month and by dentist involving 17 teeth (6 anterior, 2 premolar, 9 Molar) is $0.947 mm^2$/month. In comparison, the healing rate of radiolucency lesion using step back technique was $2.068mm^2$/month which is significant higher than using crown down technique that was $0.954mm^2$/month at $p<.05$. **Conclusion:** Several factors might contribute to healing rate of radiolucency lesion in endodontically treated teeth. Within the limitation of this study, the healing rate of radiolucency lesion is significantly better when using step back technique rather than crown down technique.

Keywords: Crown down technique**,** healing rate, root canal treatment, radiolucency, step-back technique.

(CS 2) Retrospective radiographic analysis and categorisation of impacted third molars in patients attending HUSM

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Introduction: Tooth impaction is a developmental disorder related to either overlying bone or tissue with tooth angulations. Impacted tooth may lead to pericoronitis, periodontitis, root resorption, decreased height of mandible at the angle and also affect the adjacent tooth. There is lack of data related to the pattern of third molar impactions in Malaysian population. **Objectives:** The aim of this study was to assess the prevalence, pattern of impacted third molars and categorization of impacted third molars in Kelantan population. **Methods:** The design of study was retrospective which was performed by evaluation of 490 orthopantomograms (OPG) of the patients in Hospital USM since 2010. Data including the age, gender, number of impactions, patterns of impacted maxillary and mandibular third molars were evaluated. Appropriate descriptive statistics including mean, frequency and standard deviation were performed. **Results:** Among 490 patients, 153 (31.2%) were males and 337 (68.7%) were females. Patients' age ranged from 19-64 years, mean 28.87 years. The number of impacted third molars was 1957 of which 935 (47.7%) were maxillary and 1022 (52.2%) were mandibular. Distoangluar angulation (419) was most found in maxilla. Pattern of impaction of Class II (501), distoangular angulation (359) and position A (353) were most found in mandible. **Conclusion:** The incidence of third molar impaction in the Kelantan population is identified high in the mandible. The most frequent pattern of impaction was level A, class II with distoangular angulation and there was no statistically significant difference between the left and right sides of upper and lower jaws.

Keywords: Impacted, Third molars, Angulation, Hospital USM.

(CS 3) Oral health status and salivary parameter in stroke patients attending Rehabilitation Medicine Unit in Hospital Universiti Sains Malaysia

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Introduction: Dental caries and poor salivary function are common in stroke patients due to impaired manual dexterity and orofacial paralysis. **Objectives:** To evaluate the oral health status and salivary parameters in stroke patients. **Methods:** A cross-sectional study was conducted on 54 stroke and 54 non-stroke patients attending Rehabilitation Medicine Unit in Hospital USM. Clinical oral examination was performed using DMFT index and plaque score. Salivary parameters was determined using the Saliva-Check BUFFER kits and salivary cortisol was measured using Cobas E6000 analyzer. **Results**: Most stroke patients were Malay (72.2%), male (63.0%), with mean age of 48.06(14) years while majority of non-stroke patients were Malay (90.7%) female (57.4%), with mean age of 40.39(16) years. There was significant difference of caries experience between the groups with mean DMFT of 17.57(4) and 15.65(5) respectively ($p=0.04$). Plaque score showed significant differences ($p=0.001$) whereas stroke patients (good (53.7%), fair (42.6%) and poor (3.7%)) and non-stroke patients (good (85.2%) and fair (14.8%)). The median(IQR) salivary flow rate and pH were similar for both groups (0.49(0.4)ml/min) and 6.60(0.4) respectively ($p>0.05$). Salivary cortisol for stroke patients was 5.21(5.1)nmol/L while non-stroke patients was 4.0(3.6)nmol/L with significant difference ($p=0.04$). Saliva buffer capacity showed no significant differences ($p>0.05$) between stroke (6.06 (2.8)) and non-stroke (5.41 (2.4)). There was no correlation between salivary parameters and DMFT. **Conclusion:** Oral hygiene status is compromised in stroke patients. Thus it is important to consider salivary parameter in caries experience among stroke patients and implementation of preventive measure in this population.

Keywords: Stroke, caries, oral hygiene, DMFT, salivary parameters.

(CS 4) Association between the objective and subjective measurements of xerostomia

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Introduction: Xerostomia is a subjective sensation of dry mouth, which can present with or without hyposalivation. It is determined objectively by measuring salivary flow rate and subjectively using questionnaire. **Objectives:** To investigate the salivary flow rate and severity of xerostomia in dental students and determine the association between them. **Methods:** A total of 106 dental students participated in this cross-sectional study. The Shortened Xerostomia Inventory (SXI) was used to evaluate the severity of xerostomia, and non-stimulated saliva was collected for determination of salivary flow rate. The participants were asked to refrain from eating, drinking or using oral hygiene products at least 1 hour prior to saliva collection. First, they rinsed their mouth with water and swallowed the remaining saliva. Then, they let their saliva flow for 5 minutes into a pre-weighed Falcon tube with their head tilted forward. At the end of the 5 minutes, all accumulated saliva in the mouth was spat into the tube and it was weighed again. Differences in weight divided by 5 is the salivary flow rate. **Results:** The mean salivary flow rate between pre-clinical and clinical years students was significantly different. No significant difference was found in mean degree of xerostomia severity. No association was found between the mean salivary flow rate and the mean degree of xerostomia severity ($r=0.101$, $p=0.302$). **Conclusion:** No association was found between the objective and subjective measurements of xerostomia.

Keywords: Dental students, questionnaire, saliva, xerostomia.

(CS 5) Assessment of drug-induced gingival enlargement among hypertensive patients taking calcium channel blockers in Hospital Universiti Sains Malaysia

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Introduction: Drug-induced gingival enlargement or overgrowth (GO) is frequently associated with antihypertensive agents such as calcium channel blockers (CCBs). This unwanted effect may affect patient's chewing function, appearance and difficulties in performing oral hygiene measures. **Objectives:** To assess the occurrence of GO and its associated risk factors among hypertensive patients attending outpatient clinic HUSM. **Methods:** A total of 42 patients participated in this cross-sectional study. Patients who consumed anti-hypertensive agents for at least 6 months were included. Demographic data, oral hygiene status was recorded, and the presence of GO was assessed based on clinical index (CI) for GO. Data were analyzed using SPSS version 24.0 with $p < 0.05$ is considered statistically significant. **Results:** The mean age of the patients was 57.1 (SD 9.3) years old with more than half were females (57.1%). There were 81.0% of patients taking CCBs with amlodipine was the most common (47.6%) antihypertensive prescribed. About 52% had GO and among them 55.9% were in CCBs group with nearly half (44.1%) had CI grade 1 (mild GO). Age, gender, smoking status, duration of taking antihypertensive, gingival status, and oral hygiene were not associated with the occurrence of GO ($p > 0.05$). **Conclusion:** In conclusion, GO is moderately found among patients on CCBs and mainly in the mild form. The occurrence of GO is not associated with oral hygiene status and demographic data. Therefore, dental assessment is recommended among patients on CCBs to prevent this unwanted effect.

Keywords: Gingival overgrowth, drug-induced gingival enlargement, calcium channel blocker, anti-hypertensive agents.

(CS 6) Red blood cells contamination on the residual anesthetic solution inside the cartridge after local anesthetic injection using intraligamental syringe X

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Introduction: Local anesthetic is often used in the dental practice as a pain management to the patient before the surgery procedure. Theories about blood pressure and fluid shows that blood pressure in the vessels can deliver a reverse pressure on the anesthetic solution and it allows blood contamination. Blood as a disease carrier, can deliver blood-borne diseases. **Objective:** The present study was conducted to study red blood cells contamination on the residual anesthetic solution inside the cartridge after local anesthetic injection using X intra-ligament syringe. **Methods:** Cartridge containing lidocaine hydrochloride 2% and epinephrine 1:80.000 is the material used in this research. Ten cartridges were given to the dentists. The residual anesthetic solution that have been used were observed using Urinalysis Reagent Strips. This observational analytic research use a cross sectional design and the sampling methods was accidental sampling. Point-biserial correlation were used for data analyse. **Results:** 33 samples had been obtained from the dentists. The results was 23 samples revealed red blood cells contamination and ten samples didn't reveal red blood cells contamination. There was a close relationship between red blood cells contamination on the residual anesthetic solution (r= - 0.572) and a significant relationship between red blood cells contamination on the residual anesthetic solution with P-value 0.001 (P< 0.01). **Conclusion:** There was red blood cells contamination on the residual anesthetic solution in the cartridge using X intra-ligament syringe.

Key word: Red blood cells contamination, residual anesthetic solution, X intra-ligament syringe.

(CS 7) Quality of the coronal seal of four different types of restorative materials on endodontically treated tooth under dye penetration and scanning electron microscope: an *in-vitro* study

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Introduction: Coronal microleakage is one of the major causes for the root canal treatment failure. Therefore, it is crucial to use the restoration material with a tight and adequate seal onto the coronal area in order to prevent reinfection. **Objective:** To compare the quality of the coronal seal of four different types of restorative material on endodontically treated tooth. **Methods:** 112 extracted permanent lower premolars were endodontically prepared where all the cavity access were standardised in 2mm x 2mm x 6mm measurement. The teeth were divided into four groups (n=28) according to the type of coronal restoration, Group1: Fuji IX GIC, Group2: Nano-hydroxyapatite-silica GIC, Group3: SDR composite and Group4: Z-mack universal composite. The samples were further divided into two groups of 13 samples and one control, each. One group was immersed in the 2% Methylene Blue for 7 days, while another group immersed for 30 days. The samples were vertically sectioned, and the dye penetration depth was measured under Leica Microscope at 20x magnification. Whereas, the gap width was observed under Scanning Electron Microscope (SEM) at 2000x. **Results:** A significant difference in sealing ability was observed (p<0.05) with Group4 demonstrating the best sealing ability. The gap width between dentin wall and restorative material in Group3 and Group4 was minimal compared to Group1 and Group2. **Conclusions:** Z-mack universal composite and SDR demonstrated better coronal seal compared to silicate glass powder-based restorative materials.

Keywords: Coronal seal, SDR composite, Z-mack universal composite, Nano-hydroxyapatite-silica GIC.

(CS 8) Assessment of gingival status and gingival overgrowth among immunosuppresive patients in Hospital Universiti Sains Malaysia

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Introduction: Immunosuppressive drugs such as cyclosporine, methotrexate, and glucocorticoids are used for prevention of transplant rejection and management of autoimmune disease. Drug-induced gingival overgrowth (GO) is abnormal growth of the gingiva due to adverse effect of drugs which includes anticonvulsants, calcium channel blockers, and immunosuppressive drugs. It is influenced by several risk factors such as demographic variables, drug combination, duration and dose of drugs, periodontal variables, and genetic. **Objectives**: The study was conducted to assess gingival status, prevalence of GO and factors associated with gingival overgrowth among immunosuppressive patients attending Hospital Universiti Sains Malaysia. **Methods**: A total of 33 patients participated in this cross-sectional study. Patients' data such as age, race, gender, type of medication, and dosage were retrieved from patients' medical record. Clinical oral examination was performed to assess the periodontal parameters. Oral hygiene index, bleeding index and clinical gingival overgrowth index were recorded. Data were analysed using SPSS version 24.0 and $p<0.05$ is considered statistically significant. **Results**: The prevalence of gingival overgrowth among immunosuppressive patients are 57.6% (19) at 95% confidence interval (40%,75%). Clinical index of gingival overgrowth shows 45.5% in grade 1 and 15.2% in grade 2 .Oral hygiene status are significantly associated with GO based on plaque score (p= 0.026) and bleeding index score (p=0.05). **Conclusion**: The prevalence of gingival overgrowth among immunosuppressive patients is 57.6% which could be contributed by poor oral hygiene. Thus, taking care of oral hygiene should be reinforced in such patients.

Keywords: Gingival status, gingival overgrowth, immunosuppressive patients.

(CS 9) Effect of instrumental music intervention on dental anxiety during dental treatment: A randomised controlled trial (RCT)

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Introduction: There were studies done indicating instrumental music's effectiveness in reducing dental anxiety. **Objectives**: To determine dental anxiety level and effectiveness of instrumental music intervention on patients' dental anxiety during dental treatment at Hospital USM. **Methods:** This was a single centre, single blind and parallel-group RCT on 60 conservative dental patients. Patients were randomly assigned into music group (N=30) and control group (N=30). Pre-treatment and post-treatment scoring in questionnaire based on Corah's Dental Anxiety Scale (CDAS), systolic blood pressure (SBP), diastolic blood pressure(DBP) and pulse rate were taken among the music and control groups. **Results:** Results of CDAS from music group in pre-treatment to post-treatment showed significant changes [Mean(SD) pre-treatment=10.87(3.739), Mean(SD) post-treatment=7.6(2.686)] from "moderate anxiety" to "no anxiety" level with reduction of -3.267, *p*-value=0.000. Whereas control group remained at "moderate anxiety" level for both pre-treatment and post-treatment scoring [Mean(SD) pre-treatment=11.17(4.435), Mean(SD) post-treatment=8.63(3.828)] but with significant reduction of 2.533, *p*-value=0.000. For pulse rate, music group [Mean(SD) pre-treatment=81.50(11.310), Mean(SD) post-treatment=78.53(10.371)] depicted significant reduction of 2.97, p-value=0.000 while control group [Mean(SD) pre-treatment=81.33(13.560), Mean(SD) post-treatment=80.60 (13.276)] depicted no significant changes with value of 0.733, *p*-value=0.477. Regarding SBP changes, in music group [Mean(SD) pre-treatment=120.17(11.879), Mean(SD) post-treatment=118.37(11.868), demonstrated mean difference -0.133 with p-value=0.193. Control group [Mean(SD) pre-treatment SBP=123.00(15.389), Mean(SD) post-treatment SBP=123.13(14.943)] depicted mean difference 0.100, p-value=0.904. For DBP changes, music group [Mean(SD) pre-treatment DBP=79.67(6.625), Mean(SD) post-treatment DBP=78.87(6.290)] demonstrated mean difference 0.800, p-value-0.193. In control group [Mean(SD) pre-treatment DBP=84.23(12.011), Mean(SD) post-treatment DBP=84.33(11.457)], mean difference -0.100, p-value=0 was shown. Both music and control groups showed no significant changes in SBP and DBP. **Conclusions:** Instrumental music can significantly reduce patient's dental anxiety and pulse rate during dental treatment.

Keywords: Dental anxiety, music.

(CS 10) Assessments of periodontal status in obese, overweight with chronic periodontitis patients

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Introduction: Obesity is considered one of the hazards of life and is characterized by excessive accumulation of fat in the body. According to WHO, patients with body mass index (BMI) >30 are considered obese. Obesity is an important risk factor for any complex disease, such as chronic periodontitis (CP). Chronic periodontitis is an inflammation of the soft and hard connective tissue of the tooth leading to tooth loss. **Objectives:** To assess and compare periodontal parameters in obese and overweight with chronic periodontitis patients. **Methods:** 10 obese with CP patients, 10 overweight with CP patients 10 CP patients were collected and written consent were obtained. Background information and history taking were collected and the periodontal parameters include probing pocket depth (PPD), clinical attachment level (CAL), plaque index (PI) and gingival bleeding index (GBI) and body mass index (BMI) according to WHO criteria were recorded. **Results:** This study demonstrated that higher severity of periodontal disease as measured by the average of probing pocket depth (PPD) and clinical attachment loss (CAL) in obese as compared to CP patients. **Conclusion:** Obese with chronic periodontitis patients had a significantly higher periodontal disease as compared to CP patients.

Keywords: Chronic Periodontitis, obese, overweight.

Oral Presentations – Public Health

(PH 1) Prevalence of pre-eruptive intracoronal resorption in Hospital USM Paediatric Dentistry Clinic

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Introduction: Pre-eruptive intracoronal resorption (PEIR) is the term used to describe resorptive loss of tooth structure within the crown of an unerupted tooth. Radiographically, it appears radiolucent in the dentine which resembles caries. In Malaysia, the only data of pre-eruptive intracoronal dentine defects is more than 15 years ago. Due to the scarcity of large scale prevalence studies of PEIR in Malaysia, the aims of the study are to determine the prevalence of PEIR and to evaluate the characteristics of PEIR in paediatric patients attending the Paediatric Dentistry Clinic at a teaching hospital, Hospital Universiti Sains Malaysia. **Objectives:** The objectives of the study were to determine the prevalence of PEIR and identify the characteristics of PEIR in paediatric patients. **Methods:** This cross-sectional study involved the folder review of 320 paediatric patients who have had orthopantomogram (OPG) taken at Paediatric Dentistry Clinic, Hospital USM from the year 2000 until 2019. The age of the patients was less than or equal to 18 years old. **Results:** The prevalence of PEIR in paediatric patients was 0.0375 %. PEIR lesion was higher in male (66.7%), higher in patients more than 12 years old (58.3%) and commonly in patients with no medical illness (75 %). Moreover, this defect commonly affected only one tooth in each individual. **Conclusion:** The prevalence of PEIR lesion in paediatric patients is low and no significant association with any medical illness.

Keywords: Prevalence, pre-eruptive intracoronal resorption, paediatric patient, unerupted teeth, orthopantomogram (OPG).

(PH 2) Oral health care awareness of parents with cleft lip with/without cleft palate children in HUSM, Kubang Kerian, Kelantan

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Introduction: Oral health is an essential part of general health and well-being which plays an important factor that impacts an individual's quality of life. Although many studies have been carried out from time to time to assess the awareness, knowledge and behavior of people about oral health, there is still a lack of education among parents especially with cleft lip with/without cleft palate children. **Objective:** The objective of this study was to assess the oral health care awareness of parents with NSCLP children and its association with sociodemographic background. **Methods:** A cross-sectional study was conducted on randomly selected parents with NSCLP children aged from 3 months to 18 years old in HUSM, Kubang Kerian, Kelantan. A face-to-face and telephonic interview using a close-ended questionnaire on oral health KAP was done. Data were analysed by using IBM SPSS version 24.0 with $p<0.05$ is considered statistically significant. **Results:** Sixty-six parents with NSCLP children were recruited. Majority of the parents have a good oral health knowledge and oral health attitude with 71% and 68% of them able to answer the questionnaire with correct answer respectively. More than half of the parents which is 51% have moderate practice. There were no association between sociodemographic and knowledge, attitude and practice of the parents ($p>0.05$). **Conclusion:** Overall, parents with NSCLP children had a good knowledge, attitude and appropriate practice.

Keywords: Knowledge, attitude, practice, parents, NSCLP children.

(PH 3) Confidence of undergraduate dental students in performing root canal treatment and their perception of endodontic education quality

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Introduction: Endodontics is deemed to be one of the most challenging procedures in dental office. It is important to assess one's confidence levels because under-confidence will lead to slow development of undergraduates while over-confidence may cause undergraduates to attempt expertise that is beyond their capabilities. The confidence of undergraduate dental students in performing root canal treatment is also associated with their perception of the quality of their endodontic education. **Objectives:** To evaluate the confidence of undergraduate dental clinical students in performing endodontic treatment and their perception of endodontic education quality at a university in Malaysia. **Methods:** A questionnaire was distributed to all the 4th and 5th year undergraduate dental students at School of Dental Sciences, Universiti Sains Malaysia. The questionnaire utilised both Likert-scaled response and open questions to gain an insight into undergraduate students' opinion. The results were analysed using the SPSS software. **Results:** There was 100% (n=99) response rate. It was found that Year 5 students have more endodontic experience of completing root canal treatment (RCT) and have higher overall confidence in completing RCT in a clinical setting as compared to Year 4 undergraduate dental students. In terms of the perception of the quality of endodontic education, Year 5 students have higher satisfaction as compared to Year 4 students. **Conclusion:** Majority of the students have confidence in completing endodontic treatment in a clinical setting and perceive that the quality of endodontic education given was adequate.

Keywords: Confidence; endodontic education; root canal treatment; undergraduate dental students.

(PH 4) Radiographic assessment of ectopic canine in paediatric patients attending Hospital Universiti Sains Malaysia

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Introduction: Ectopic tooth is a malposition of a tooth bud which would resulting in the tooth erupting in the wrong place. Any permanent tooth can be ectopic, and the cause may be both genetic and environmental. Maxillary canine is the second most commonly impacted teeth after third molars. While, mandibular canines are the fourth most commonly impacted teeth. **Objectives:** The objectives of this study were to determine the prevalence and to categorise the ectopic canine found in paediatric patients attending Hospital Universiti Sains Malaysia using Yamamoto classification system. **Methods:** This retrospective study was carried out involving 1900 panoramic radiographs of paediatric patients age 10-18 years old attending the School of Dental Sciences, Universiti Sains Malaysia from 2009-2018. All images were evaluated to determine the prevalence and classification of ectopic canines. A customised data entry was made to record and analyse the ectopic canines. **Results:** Among 1900 panoramic radiographs examined, 5.9% (115) patients had ectopic canine. Our study showed the ectopic canines in male is significantly higher than female (p value<0.001). Forty eight percent (48%) are Class I classification, followed by Class II (36.6%). Our study showed that the prevalence is significantly higher in maxilla compared to mandible (p value < 0.001). **Conclusion:** The prevalence of ectopic canine in this study was 5.9%. Although there are many variations, the majority of impacted canines fall into Class I classification and is frequently found in males.

Keywords: Ectopic, tooth, panoramic, canine, radiographic.

(PH 5) Oral care management of head and neck cancer patients in HUSM: A 7-year retrospective study

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Introduction: A standard protocol of pre-radiotherapy and/or chemotherapy oral assessment for oncology patients may help to reduce the oral complications during and post treatment. The management of oral health is especially important because while some of the effects are inevitable, others are still preventable. **Objectives:** To determine the association between oral health management and oral complications following cancer treatment. **Methods:** Folders of oncology patients who had completed cancer therapy at the Nuclear Medicine, Radiotherapy and Oncology Department of Hospital Universiti Sains Malaysia (HUSM) from 2011 to 2017 and fulfilled the inclusion criteria were reviewed to complete the checklists prepared. Data was analysed with SPSS version 25 and Pearson chi square test was used. **Results:** A total of 194 records were obtained and only 13.2% (n=24) patients were referred for pretreatment oral assessment. Scaling and prophylaxis (65.6%) and tooth extraction (53.1%) were the most prevalent management done. There was no significant correlation between oral health management and oral complications that arise following cancer therapy ($p=0.134$). **Conclusion:** The oral complications following cancer therapy is not dependent on oral health management but a standard operating procedure that includes oral assessment and prophylactic management should be taken to prevent debilitating oral complications.

Keywords: Head and neck cancer, oral care management, oral complication, oncology patients, radiotherapy, chemotherapy.

(PH 6) Evaluation on knowledge in endodontics decision making among undergraduate dental students in Universiti Sains Malaysia (USM)

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Introduction: Knowledge in endodontics decision making is important to propose the best treatment plan for patients. In USM, endodontic modules consisting of lectures, practical sessions and competency assessments are conducted in year 4 while endodontics decision making seminar is held in year 5. **Objectives:** This study was aimed to compare the knowledge in endodontics decision making among students in different batch. **Methods:** A total of 66 students from year 4 and year 5 were randomly selected. They needed to answer a test which consist of 15-images based multiple choice question that include endodontics related patient scenario, before and after the endodontics decision making seminar. The data was analysed using IBM SPSS Statistics 25. Independent samples t-test was used to compare the mean difference score of pre- and post-test of year 4 and year 5. Correlation test was performed to see if race, gender and educational background of students had any correlation with the scores. **Results:** There was a significant difference between pre- and post-test scores of year 4 ($p=0.00$) and year 5 ($p=0.001$) but no significant difference between the mean difference score of pre- and post-test of year 4 and year 5 ($p=0.56$). Race, gender and educational background of students did not affect the scores. **Conclusion:** The endodontics decision making seminar had positive effect on the post-test scores of both year 4 and year 5. However, there is no significant difference of knowledge in decision making between year 4 and year 5.

Keywords: Decision making, dental students, endodontics decision making.

(PH 7) Validation of a self-reported oral health instrument for endodontic treatment and periapical disease

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Introduction: A self-reported health instrument is widely used in large scale epidemiological surveys. However, a validated oral health instrument for pulpal and periapical disease is lacking despite the existence of other oral health literacy instruments for various diseases. **Objectives:** To evaluate the effectiveness of a self-reported oral health instrument (SROHI) in determining the presence of endodontic treatment (ET) and/or periapical disease (AP). **Methods:** Patients (N=106) who were clinically indicated for panaromic (OPG) radiographic examination from dental clinics, Hospital Universiti Sains Malaysia were invited to complete the SROHI. A calibrated examiner determined the presence of ET and AP from the OPG. The diagnostic accuracy of SROHI was calculated separately for ET and AP using Pearson's correlation. Accuracy, sensitivity, specificity, positive and negative predictive values, efficiency, and positive and negative likelihood ratios were estimated for correlations that were significant ($P<0.05$). **Results:** SROHI demonstrated high specificity for ET & AP for questions regarding the need of root canal treatment (RCT) (0.848 & 0.889), history of RCT (0.935 & 0.889), history of swollen face (0.837& 0.914), history of fistula (0.880 & 0.963), history of intense pain (0.728 & 0.763), and history of RCT due to toothache (0.935 & 0.925), respectively. Question regarding history of RCT had a high sensitivity for ET (0.786) but, low sensitivity for AP (0.320). **Conclusion:** SROHI was found to be a good predictor to rule out both ET and AP, and question regarding history of RCT was found to be a good predictor for presence of ET.

Keywords: Endodontic treated tooth; periapical disease; oral health instrument; validation.

(PH 8) Knowledge of removable denture wearers on denture hygiene among patients attending Hospital Universiti Sains Malaysia Dental Clinic

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Introduction: Removable denture hygiene has been considered as an important issue as the available scientific evidence showed the possibility of development of both oral and systemic infections if ignored. **Objectives:** To assess the knowledge on denture hygiene and its association with denture hygiene status, and to compare the effectiveness of information on denture hygiene care given by different groups of dental personnel. **Methods:** This was a cross-sectional study in which a self-administered and structured questionnaire were given to patients attending HUSM dental clinic from August to December 2019 after consented. Researcher assessed the denture hygiene during the interview session. Data was analyzed using IBM SPSS version 24. **Results:** A total of 100 individuals participated in this study. 22% of the respondents reported that they did not remove the denture during sleep and clean their denture only once daily. 63% of the respondents reported that they never visited dentist for a regular dental check-up. Examination of the denture hygiene showed that 6% had poor oral hygiene whilst 26% had moderate denture hygiene. The rest were found to have a good denture hygiene status. There was a positive association between knowledge and denture hygiene status. Undergraduate students were found to deliver the most effective instructions to the respondents (78.6%). **Conclusion:** Majority of our respondents had good knowledge and practice on denture hygiene. Dental students were found to deliver the most effective instruction to the denture wearers.

Keywords: Denture hygiene, removable denture, denture care.

(PH 9) Evaluation of quality of life in patients with maxillofacial prostheses

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Introduction: In 1953, Ackerman defined maxillofacial prostheses as the phase of dentistry that repairs and artificially replaces parts of the face after injuries or surgical intervention. Prosthetic rehabilitation was known as a solution when the conventional reconstructive surgery is not applicable. Maxillofacial prostheses have an important impact on the patient's quality of life, as they can immediately correct the defects that occur after surgical procedures. **Objective:** To assess the quality of life of patients with maxillofacial prostheses after head and neck surgery. **Methods:** A cross sectional study was conducted. Sixty-four patients who received extraoral or facial prosthesis for the past 5 years and had been using it for at least 6 months after the treatment were interviewed through phone call. A validated questionnaire from University of Washington Quality of Life Questionnaire version 4, (UoW- QOL v4) was used and their sociodemographic profiles were obtained. Data were analysed using SPSS ver. 22. **Result:** A total 64 patients with the mean age of 38.13 were included, 43 of whom were male and 23 females. The most significant problems encountered by the patients was appearance (14.1%), mood (11%) and recreation (9.7%). The majority (81.3%) quoted their quality of life as fair or good (81.3%). Pain (90.6%), activity (87.5%) and appearance (78.1%) were the most affected issues reported by patients. **Conclusion:** The score of quality of life as assessed using the (UoW-QOL v4) scale were fair or good in patients with maxillofacial prostheses. Pain, activity and appearance were regarded as the most important issues affecting their quality of life.

Keywords: Maxillofacial prosthesis, quality of life, head and neck cancer.

(PH 10) Common chief complaint among children seeking dental treatment at hospital USM dental clinic

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Introduction: Dental health among children in Malaysia is emphasised under the primary health program known as the incremental dental care program. However, there is still a high number of children seeking dental care throughout Malaysia. **Objectives**: The study was conducted to assess the main common chief complaint among the children who attended Hospital USM Dental Clinic, and to study the factor associated with the chief complaint. **Methods**: This cross-sectional study has evaluated 106 dental records of children who attended the HUSM Dental Clinic from 1st January 2018 to 30th December 2018. Data were obtained from the treatment records of each child collected from the Unit Rekod Perubatan HUSM. Children aged 4 to 16 years old were identified and their sociodemographic data, dental chief complaint, and medical history were recorded into a form. Data were analysed using Statistical Package for the Social Sciences (SPSS) version 24. **Result**: The most common chief complaint of children in this study is tooth pain (42.1%), for a regular check-up (29.4%) and mobile tooth (12.7%). There is no significant factor in this study, associated with the present chief complaint.

Keywords: Chief complaint, children, tooth pain.

(PH 11) Identification of sexual behaviour in community at risk of oral Human Papillomavirus (HPV) infection

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Introduction: Human Papillomavirus (HPV) is a virus that commonly associated with malignancy in the oral cavity. Most deaths from head and neck cancer are caused by HPV. The virus can infect the oral cavity due to the sexual behavior of homosexuals. **Objective:** To identify sexual behaviour in communities at risk for HPV infection in oral cavity based on age, sex, education level, occupation, HIV status, marital status, and social support. **Methods:** This was an observational cross-sectional analytic study conducted in Surabaya with sample criteria of individuals who are homosexuals. Data collection was carried out through questionnaires and patient medical records to see HIV status. **Results:** There were 70 samples, 53 people having sexual intercourse with same gender and 17 people having sex with the same gender and the opposite gender. Individuals in this study tended to have good sexual knowledge, supportive attitudes for risky sexual intercourse and high-risk actions when having sexual intercourse, such as changing partners, not using contraception, doing sex more than once a day and doing oral and anal sex when having sex. Gender, marital status, HIV status, occupational status, education level, and individual social support have significant role to form sexual behaviour (p-value<0.05). **Conclusion:** There are factors that have a great contribution to form sexual behavior. In this study, occupational status is a one of contributing factor which can form the sexual behavior because, in this study, most of the respondents were sex workers so they had high-risk sexual behaviour.

Keywords: Sexual behavior, homosexuality, HPV infection.

(PH 12) Sleep disorder among dental students with relationship to their daily performances in terms of excessive daytime sleepiness

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Introduction: Dental specialty is often associated with hectic schedule and demands a great number of efforts and practices. This will exert a huge amount of stress among students. Dental students' performances are most likely affected by their mental, psychological and physical status. Sleep contributes to the person's quality of life and ability to function during the day. Studies regarding sleeping problems among dental students and its association with their academic performance and daily performance are still lack. Thus, this study is carried out to investigate the sleeping pattern and disorders among dental students with its association to their daily performances. **Objectives**: The present study was conducted to determine the prevalence of sleep disorder and its association with daily performance in terms of daytime sleepiness among dental students from year one to year three in USM. **Methods**: Each student is given questionnaires involving questionnaire regarding sociodemographic profile, Pittsburgh Sleep Quality Index and Epworth Sleepiness Scale questionnaire through a google form. **Results**: Our results showed that there is a low percentage (7%) of poor sleep quality and low percentage (36.4%) of excessive daytime sleepiness among dental students in USM. The p-value is 0.355 which is greater than 0.05. This shows no association between sleep disorder and daily performance in terms of excessive daytime sleepiness. **Conclusion**: There is low prevalence of sleep disorder and it is not associated with daily performance in terms of daytime sleepiness among dental students from year one to year three in USM.

Keywords: Dental student, questionnaire, sleep disorder, daily performance, excessive daytime sleepiness.

(PH 13) An analysis of oral and maxillofacial trauma according to time in the period of 5 years

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Introduction: Oral and maxillofacial injuries can be defined as injuries involving soft and hard tissue structures of face, jaw and oral cavity, including the teeth and vital structures of the head and neck area as a caused by external force, foreign objects or burns. **Objectives:** To find out the prevalence of oral and maxillofacial trauma according to time from July 2013 to June 2018. **Methods:** This study involves the retrieval of data from patient's record from Hospital Universiti Sains Malaysia using a data collection forms. Patients' name, age, gender, aetiolgy, type of facial injury, date and time of trauma happened were taken out from the patients' folder and results were being analysed. **Results** Our results showed that the prevalence of oral and maxillofacial trauma is highest in August (11.9%) and during early night (36.1%). The prevalence of Zygomatic Complex fracture is highest in April (18.2%) and during early night (34.5%). The prevalence of Le Fort I fracture is highest in April and August (21.7%) and during early night (52.2%). The prevalence of Alveolar Bone fracture is highest in August (11.9%) and during early night (37.2%). The prevalence of Motorcycle Accident (Motorcycle vs others) is highest in March (13.0%) and during afternoon (37.7%). The prevalence of Fall is highest in March (21.4%) and during morning (42.9%). **Conclusion:** The prevalence of oral and maxillofacial trauma, type of oral and maxillofacial injuries and aetiology of them are not constant throughout every month in a year and every 6 hours in a day.

Keywords: Oral and maxillofacial trauma, time, aetiology.

(PH 14) The pattern of oral and maxillofacial trauma and its management in the period of 5 years of Hospital USM

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Introduction: The maxillofacial area is one of the most vulnerable area of the head and neck region as of its strategic position together with slightly protection of its zone. The incidence and epidemiological of maxillofacial trauma showed the susceptibility of it to the injury. **Objectives**: The study was undertaken to determine the pattern and different managements for maxillofacial trauma for the period of 5 years of Hospital USM. **Methods**: It was a retrospective study of maxillofacial trauma cases presented to Accident and Emergency Department, Oral Maxillofacial Clinic, and Oral Maxillofacial ward of Hospital USM from July 2013 to June 2018. A total of 294 maxillofacial trauma cases were included. Details of trauma were collected from patients' record such as demographic data, causes and types of injury. **Results**: There were 228 male (77.6%) and 66 (22.4%) female patients registered and involved in the maxillofacial trauma consisted of Malay ethnic (97.3%) followed by Chinese (0.7%). The most common causes of maxillofacial injury studied was motor vehicle accident (MVA) which was 88.8%. The site of injuries was primarily maxillary bone injuries (42.5%). The main treatments provided for the injuries was surgical treatment (53.4%). **Conclusion**: This study reveals the pattern of maxillofacial injury of Hospital USM which will aided to the knowledge and proper treatment of maxillofacial surgery.

Keywords: Maxillofacial injury, maxillofacial trauma, Hospital USM, management maxillofacial injury.

ePoster Presentation

(POS 1) Characterisation of alginate-agarose hydrogel properties for stem cell transportation

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Introduction: Hydrogels are network polymeric materials with three-dimensional (3D) structures, capable of retaining water where their properties are highly beneficial in stem cell transportation. Synthetically produced hydrogels can be modified to alter its ability to respond to changes in external environment. Alginates are able to transport low molecular weight substances while agarose is beneficial in cell growth, differentiation and proliferation. Characterisation of the alginate-agarose (Al-Ag) hydrogels is essential to assess the suitability of components to support cells viability during transportation period. **Objectives:** This study aims to characterise the properties of alginate-agarose (Al-Ag) hydrogels for encapsulation of stem cells. **Methods:** Al-Ag hydrogel beads were formed by mixing the different composition of alginate and agarose, dropped into 0.3M calcium chloride solution. The beads were characterised using Scanning Electron Microscopy (SEM) and Fourier Transform Infrared (FTIR) spectrometry. **Results:** An optimised combination of 1.5% alginate and 2.0% agarose, as well as 1.5% alginate and 0.1% agarose were selected for characterisation, based on the result of swelling test and degradation test. Observation made using SEM showed both the samples were porous with different diametes and wrinkled, paper-like rough surface structure. Further analysis made using FTIR spectrometry revealed O-H, C-O, C-C and O=C-NHR functional groups based on absorption peaks. **Conclusion**: The present study described the properties of Al-Ag hydrogels, prepared as stem cells transportation medium. The pore size and molecular interconnections are essential in determining the solute absorption and diffusion. This ensures viability of cells encapsulated and potential application for stem cells transportation.

Keywords: Hydrogels, alginate, agarose, characterisation, scanning electron microscopy (SEM), Fourier transform infrared (FTIR) spectrometer.

(POS 2) *In-vitro* cytotoxicity evaluation of the experimental nanohybrid dental composite reinforced with zirconia using the MTT assay

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Introduction: Our group has developed an experimental nanohybrid dental composite (NHDC) using silica filler from rice husk, which was biocompatible and nontoxic. In an attempt to improve the properties of the experimental NHDC, a small percentage of zirconia was reinforced to the dental composite. **Objectives:** As part of a more significant project, this study aims to evaluate the cytotoxic effect of the zirconia reinforced NHDC, *in-vitro*. **Methods:** A 100mg/ml solution extract of zirconia reinforced experimental NHDC (0, 3, 5 and 10wt%) were prepared and serially diluted. The solution extract was then added into 96-well-plates seeded with the L929 mouse fibroblast cells and incubated for 24, 48 and 72h. The cell viability was verified using MTT assay at time intervals. Statistical analysis was carried out using the Kruskal-Wallis test. **Results:** The result showed that the cell viability of an extract solution of all samples at all concentration and incubation time was above 50%. In the majority of the group, cell viability was above 70%, which is considered to be acceptable clinically and hence can be regarded as being non-cytotoxic. **Conclusion:** The study concludes that zirconia reinforced experimental NHDC (3, 5 and 10wt%) has no cytotoxicity potential.

Keywords: Cytotoxicity, MTT Assay, nanohybrid dental composite, zirconia.

(POS 3) *In vitro* **antimicrobial activity of cell-free supernatant of probiotic** *lactobacillus casei* **and** *lactobacillus salivarius* **against oral pathogen**

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Introduction: Existence of probiotics in the indigenous oral microflora warrants exploration because these bacteria offer the advantage of being adapted to the human oral ecosystem. **Objectives:** The antimicrobial activity of two probiotic strains, *Lactobacillus casei* and *Lactobacillus salivarius* and its combination (1:1) were evaluated against *Streptococcus mutans*, *Streptococcus sobrinus, Candida albicans, Candida glabrata and Candida tropicalis*. **Methods:** Antimicrobial activities of Lactobacillus *spp.* were assessed using agar-well diffusion, auto-aggregation and coaggregation methods. **Results:** *L. salivarius* exhibited greater inhibitory zone against *S. mutans* (24.50 mm) and *S. sobrinus* (17.67 mm) compared to *L. casei* against *S. mutans* (12.50 mm) and *S. sobrinus* (13.67 mm). The combination of the *Lactobacillus* spp. exhibited inhibitory zone of 22.50 mm and 15.33 mm against *S. mutans* and *S. sobrinus,* respectively. However, no inhibition was observed for *Candidal* spp. *L. salivarius* alone exhibited significantly stronger auto-aggregation (80.41%±0.19) than *L. casei* alone (28.14%) (p ≤ 0.05). However, the combination of *L. salivarius* and *L. casei* exhibited lower auto-aggregation percentage (68.37%±1.09). *L. casei* exhibited coaggregation with *S. mutans* (17.32%±1.35) and *S. sobrinus* (14.28%±1.75). *L. salivarius* exhibited significantly stronger coaggregation with *S. mutans* (26.55%±1.18), *S. sobrinus* (21.00%±1.73), *C. albicans* (28.13%±1.12), *C. glabrata* (30.63%±1.62) and *C. tropicalis* (33.48%±0.63) (p ≤ 0.05). However, the combination of *L. salivarius* and *L. casei* showed no coaggregation with *Streptococci spp* and *Candida spp.* **Conclusion:** *L. salivarius* alone exhibited greater antagonistic effect against tested organisms compared to *L. casei* alone or its combination.

Keywords: *Lactobacillus* spp., agar diffusion, auto-aggregation, coaggregation, oral pathogens.

(POS 4) The increase of macrophage numbers in wound healing process of post-tooth extraction in Wistar rats (*Rattus norvegicus)* **by mahogany seeds extract (***Swietenia mahagoni)*

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Introduction: The process of wound healing after tooth extraction becomes a major concern because of its complications and the pain patient suffered. The prevalence of tooth extraction complications is including crown fracture (31.82%), root fracture (13.6%), dry socket (4%), swelling (2.27%), and bleeding (1.6%). Among various alternative materials used to help the wound healing process, mahogany is included. Mahogany seeds contain flavonoid which regulate cell function by stimulating PDGF, VEGF, and pro-inflammatory cytokines production, activating monocytes, and increasing the macrophage numbers that play role in wound healing process. **Objectives:** This study was conducted to prove the increase of macrophage numbers in wound healing process of post-tooth extraction in Wistar rat by mahogany seed extract. **Methods:** Twenty Wistar rats were divided into 4 groups, consisted of 1 control group (K) performed tooth extraction without treatment, and 3 treatment groups (P1, P2, P3) performed tooth extraction, and topically induced with different doses of mahogany seeds extract (50 mg/200 grBW, 100 mg/200 grBW, 200 mg/200 grBW) in the post-extraction socket. Observations were done by hematoxylin eosin histologic examination with 400x magnification of light microscope. **Results:** There were differences of macrophage numbers between 4 groups (p = 0.003), namely between K1 and P1 (p = 0.008), P1 and P3 (p = 0.001), P2 and P3 (p = 0.006). **Conclusion:** There was an increase of macrophage numbers in wound healing process by mahogany seeds extract with an optimal dose of 50 mg/200 grBW.

Keywords: Tooth extraction, wound healing, macrophage, mahogany seeds extract.

(POS 5) Computed tomography evaluation of palatal thickness of unilateral cleft lip and palate (UCLP) of early adolescence patients in Hospital Universiti Sains Malaysia

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Introduction: Unilateral cleft lip and palate (UCLP) patients often need long-term orthodontic management. In such cases, miniscrews are frequently used as orthodontic anchorage. However, palatal bone thickness in UCLP patients may be inadequate for miniscrews placement. There is still insufficient study regarding palatal thickness of UCLP patients in Malaysia. **Objectives:** This study aims to determine and compare palatal thickness of UCLP adolescence patients between non-cleft and cleft sides using computed tomography (CT). **Methods:** Fifteen high resolution CTs of subjects aged 8-10 years were obtained from Picture Archiving and Communication System (PACS), Hospital Universiti Sains Malaysia. Images were taken using GE Light Speed Plus (General Electric, USA) and Siemens Somatom Definition AS+ (Siemens, Germany) CT scanners. Measurements were performed using built-in measurement tools of PACS at various points in sagittal and coronal view. Friedman's Two-Way Analysis of Variance by Ranks and Wilcoxon Signed Rank Test were used for analyses. **Results:** In sagittal view, both non-cleft and cleft sides have palatal bone thickness of >10mm at anterior region and was thicker than middle and posterior regions. In anterior region, non-cleft side is thicker than cleft side. In coronal view, lateral region of palatal bone was thicker than central regions except for posterior part of the cleft side (p>0.05). However, only central and lateral regions of anterior non-cleft side showed thickness of >10mm. **Conclusion:** Palatal thickness of non-cleft side is greater than cleft side particularly in anterior region. These findings may give reference and ease orthodontists in decision making of suitable site for miniscrews placement in UCLP patients.

Keywords: Unilateral cleft lip and palate, palatal thickness, miniscrews, CT.

(POS 6) The uniqueness of shape of dental restorations in x-ray images

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Introduction: One of the assumed unique features that being used in comparative identification process is the shape of dental restoration in the x-ray image. Positive identification decision was made frequently based on concordance in the shape of dental restoration as seen in the x-ray image. These comparisons utilize ante-mortem and post-mortem x-ray images. **Objectives:** This study was aimed to study the shape of dental restorations and to determine their uniqueness in a sample of panoramic radiographs by using comparative analysis. **Methods:** 100 orthopantomogram (OPG) of tooth 25 with disto-occlusal restoration which met the inclusion criteria were selected from x-ray archive (Hospital USM archive). The x-ray images were downloaded in JPG format, burnt into CD and were imported into Hirox KH 7700 Digital Stereomicroscope. These images were duplicated. All original and duplicated samples were randomly recoded and paired. The candidate was blinded of the match pair information. Each pair was being compared by superimposing both images using Hirox's embedded software. The outcome can be either false positive or false negative identification and correct match. **Results:** Our results showed that there were 100% correct match, 0% false positive and 0% false negative. **Conclusion:** The shape of the dental restorations is unique and can be used for identification.

Keywords: Dental restoration, x-ray, uniqueness, shape.

(POS 7) Ameloblastoma at Hospital Universiti Sains Malaysia (HUSM): A ten-year retrospective analysis

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Introduction: Ameloblastoma is a locally invasive benign tumour which is persistent and slow-growing. It makes no gender distinction and have a peak incidence in the second to third decades of life. Radiographically, it usually occurs as unilocular or multilocular radiolucency in the posterior mandible, with a "soap bubble-like" appearance. **Objectives:** To measure and compare the tumour volume of patients with ameloblastoma based on computed tomography (CT) and cone beam CT (CBCT) images using MITK 3M3 software and ABC/2 estimation technique. **Methods:** Medical records of patient with histologically benign ameloblastoma were retrieved from January 2008 to January 2018. Radiographic images and tumour volume of patients with ameloblastoma were analysed using open-source MITK 3M3 software and ABC/2 estimation technique. **Results:** Twenty-nine patients with ameloblastoma were selected, including eighteen males and eleven females, with a mean age of 28.10 years (range: six to fifty-two years). The most occurred age group is in the second decades of life. 100% of ameloblastoma occurred in the mandible compared to maxilla. In ten patients with available radiographic images, the occurrence of multilocular and unilocular ameloblastoma appears to be the same. Wilcoxon Sign Rank Test analysis showed no significant difference in the volume measurement between MITK 3M3 software and ABC/2 estimation technique (p=0.575,z=-0.561). **Conclusion:** ABC/2 estimation technique provides a fast and accurate result for regular shape ameloblastoma volume but not for complex and irregular shape tumour. MITK 3M3 software provides accurate result regardless of the tumour shape but it is time consuming.

Keywords: Ameloblastoma, volume measurement, craniofacial imaging.

(POS 8) Relationship between maxillary anterior teeth width and facial dimension among three ethnicities of Malaysian population

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Introduction: Permanent tooth loss may occur due to trauma or diseases like dental caries or periodontal disease. This may affect a person's appearance and lead to psychological trauma. Therefore, it is critical that teeth being replaced should be aesthetically pleasing and functionally acceptable. In edentulous or partially dentate patients without pre-extraction records, the selection of anterior teeth of appropriate size becomes more inconsistent. Therefore, information derived from facial anatomical landmarks has been proposed in aiding the selection of the anterior teeth of the appropriate size. **Objectives**: To establish guidelines for predicting the anterior tooth dimensions based on facial proportions among individuals of Malay, Chinese and Indian ethnicities of Malaysian population. **Methods**: Subjects' from three ethnicities photographs were taken in a frontal view for their full-face image. The photographs were then labelled with reference points in the analyses of the frontal facial proportions using the measurement software. Dental impressions of the maxillary arch were taken and poured to form dental casts which were used to measure the width of the maxillary anteriors. After completion of data collection, statistical analysis was done to find the correlation between the facial and tooth parameters. **Results**: No consistent correlations were found among facial dimensions and the width of the 6 maxillary anterior teeth among the 3 ethnicities, except for the intercommisural width-to-canine-canine distance. **Conclusion**: No facial proportions by which the exact width of maxillary anterior teeth could be predicted among the three ethnicities in the Malaysian population.

Keywords: Maxillary anterior teeth width, facial dimensions, correlation.

(POS 9) Oral health related quality of life and its determinants among diabetic patients in the diabetes centre of Hospital Universiti Sains Malaysia

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Introduction: Diabetes is a concern in the oral health department as the disease itself manifest many local behaviour, it is possible to encounter patients with poor oral hygiene, caries, periodontal disease, infections, tendency to postsurgical bleeding, and poor healing response among other infectious or inflammatory diseases. Their oral health related quality of life (OHRQL) might affect their management and treatment modalities. **Objectives:** The present study was conducted to assess oral health quality of life and its determinants among diabetic patients in Diabetes Centre of Hospital Universiti Sains Malaysia. **Methods:** In this study one hundred and seventy-two patients were recruited from the Diabetes Centre of Hospital Universiti Sains Malaysia. OHRQL was assessed using Oral Health Impact Profile Questionnaire (OHIP-14). Also, another questionnaire contained questions regarding participants' knowledge and practice of oral health. OHRQL was categorized as low and good. Data were analyzed using chi-square test at p = 0.05. **Results:** Of the diabetic patients assessed, 76.2% were in good and 23.8% were in low categories of OHRQL. This quality was significantly associated with age (p=0.000), smoking status (p=0.012), history of toothache (p=0.000), cavitated teeth (p=0.000), oral ulcers (p=0.000), swollen gums (p=0.012), bleeding gums (p=0.000), and loose teeth (p=0.001), bad breath (p=0.001), perception of oral health (p=0.000), history of lung disease (p=0.000), HIV (0.011) and breast cancer (p=0.011). **Conclusion**: Oral health related quality of life was not negatively affected by diabetes mellitus in the assessed sample.

Key words: Diabetes, diabetics, oral health related quality of life.

(POS 10) The relationship between knowledge, awareness, and attitude relating to periodontal diseases and oral hygiene maintenance

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Introduction: Periodontal disease is inflammatory disorders that mainly caused by dental plaque. The amount of dental plaque on tooth surface determine the level of oral hygiene of the individual, and therefore the level of oral hygiene is positively correlated with the prevalence of periodontal disease. It is not clear whether the understanding about periodontal disease in patients with periodontal disease is comparable to those with healthy periodontium. **Objective:** The present study was conducted to compare the knowledge, awareness and attitude, relating to periodontal disease and oral hygiene maintenance between people with healthy periodontium and those with periodontal disease. **Methods:** The study was conducted by using case-control study design and selected participants with good periodontal health (BPE=0) as case group and periodontal disease patients (BPE≥1) as control group during screening at KRK Dental Clinic HUSM. Consented participants completed a set of self-administered questionnaires. The information collected were knowledge, about periodontal disease and awareness and attitude towards oral hygiene maintenance. **Result:** Results showed that the case group has significantly greater knowledge on periodontal disease (mean difference/Odd ratio = 0.833/0.630) and self-efficacy in oral hygiene maintenance (mean difference/Odd ratio = 8.708/0.912) than the control group. **Conclusion:** It is plausible to lower the prevalence and risk of periodontal disease by improving the understanding about periodontal disease and enhance the belief in the capacity to prevent the disease by maintaining oral hygiene.

Keywords: Periodontal diseases, oral hygiene maintenance, knowledge, self-efficacy.

(POS 11) A review of paediatric dental treatment under general anaesthesia in Hospital Universiti Sains Malaysia (HUSM)

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Introduction: Paediatric dentistry is an age-defined specialty that provides both primary and comprehensive preventive and therapeutic oral health care for infants and children through adolescence. The dental treatment under general anaesthesia (GA) is one of the treatment choices for many paediatric dentists for managing uncooperative patients, patients with underlying medical problems or with complex and comprehensive treatment. **Objectives:** The present study was conducted to review the cases of paediatric dental treatment under GA in Hospital USM, Kubang Kerian, Kelantan. **Methods:** A retrospective review study cases of dental treatment under GA among paediatric patients from year 2015 to 2018. **Results:** The results showed that the highest reason of referral is due to complex and comprehensive treatment (44.3%), followed by behaviour problems (33.6%) and medical problems (18.8%). The highest diagnosis made pre-operatively is early childhood caries (63.1%). Mean of waiting time for operation was 133 days. While, patients were deemed to be unfit for dental treatment under GA (12.4%) was the uppermost reason of cancellation, which ordered by paediatric dentist specialists. **Conclusion:** Most patients was referred for dental treatment under GA due to early childhood caries, behavior problem and medical complexity. Cancellation of cases was mostly due to medically unfit condition, and approved by paediatric dentist specialists. Perhaps with the clear statistical report produced in this study, the appropriate audit can be conducted to determine the best solution to overcome this cancellation problem.

Keywords: Paediatric dentistry, general anaesthesia, waiting time, reason of cancellation.

(POS 12) The usage and perception of e-learning among undergraduate students in Universiti Sains Malaysia Health Campus

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Introduction: E-learning is one of the teaching and learning system utilising electronic technologies which has been deployed in many countries nowadays. This system aims to improve traditional ways of learning experiences among students in this digital era. **Objectives:** The aim of the study was to determine the usage and perception on e-learning (Moodle) among year two undergraduate students from three schools in health campus Universiti Sains Malaysia (USM). **Methods:** This was a cross sectional study using a self-administered questionnaire. The questionnaire has been developed and validated by Park, 2009. The participants were selected by simple random sampling with replacement. **Results:** A total of 99 students were participated in this study yielding a 100% response rate. Majority of participants were female (76%) and Malay race (71%). The mean perception score were 90.2 (SD12.20), 85.1 (SD11.56) and 83.38 (SD9.27) for School of Dental Sciences (SDS), School of Health Sciences (SHS) and School of Medical Sciences (SMS) respectively. There was a significant difference in the perception score between schools ($p < 0.05$). The frequent users using e-learning for various activities from 3 different schools were 88.2%(SDS), 77.4% (SHS) and 29.4% (SMS). **Conclusions:** The school with frequent users had better perception toward e-learning system. We should encourage students and educators to participate and use the e-learning as an alternative medium in delivery of knowledge.

Keywords: E-learning, technology-enhanced, Moodle, Health sciences, Medical education.

(POS 13) Awareness and attitude of patients towards retaining teeth and their options for teeth replacement

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Introduction: Root canal treatment (RCT) and tooth extraction are the most common treatments to relieve pain. It is essential to retain natural teeth as prostheses only help to replace the missing teeth with inferior physical, biomechanical and sensory properties. Retaining natural teeth and replacing missing teeth preserve the oral function, aesthetic and prevent occlusal disharmony. **Objective:** To determine the knowledge, attitude and practice of patients towards retaining teeth, options for teeth replacement and their associated factors. **Methods:** A cross-sectional study was carried out on 222 patients attending Dental Clinic, Hospital Universiti Sains Malaysia. Sociodemographic profiles were obtained and the awareness and attitude were assessed using validated questionnaires. Data were analysed using IBM SPSS Statistics Version 24.0. **Results:** Most of the patients were Malay (94.1%) and female (64.4%). Most of them had knowledge regarding RCT (55.4%). Among all the patients, for the attitude, 17.6% had undergone RCT, while for the practice, 64.0% preferred RCT than extraction. A total of 50.9% of the patients chose fixed prosthesis to replace missing teeth. RCT was significantly associated with level of education (p=0.011) and monthly income group (p=0.023). In addition, previous experience of RCT was associated with occupation (p=0.008), practice of RCT was associated with race (p=0.036) and options for tooth replacement was associated with level of education (p=0.013). **Conclusion:** The findings from this study indicated a moderate level of awareness and positive attitude and practice on RCT. Thus, a more comprehensive awareness activity is needed to ensure that more teeth can be retained and those that are missing being replaced in our community.

Keywords: Awareness, attitude, retaining teeth, tooth replacement, endodontic treatment.

(POS 14) An orthopanthomographic study of prevalence of supernumerary teeth in paediatric patients

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Introduction: A supernumerary tooth is one that is additional to the normal series of dentition resulting from the formation of teeth in excess of the normal number (Khandelwal, Rai et al. 2018). In our study, we interested to know the prevalence of Supernumerary teeth in pediatric patient in Eastern Malaysia population and distribution of supernumerary according to its characteristics which will help in future development and research of advanced treatment. **Objectives:** The aim of the study is to investigate the prevalence of supernumerary teeth, commonly affected teeth, demographic profile and its characteristics, among children visiting Hospital Universiti Sains. **Methods:** A total of 429 Orthopanthomograph images from patients' age below 18 years old who was visiting Hospital Universiti Sains Malaysia since 2010 to 2018 was observed. Number of supernumerary teeth, t shape, position and state of eruption was determined and analysed IBM SPSS Statistics 24 version 12.0 (descriptive analysis – frequency and percentage). **Results:** Prevalence of supernumerary teeth in the study was 6.3%. This study included 37 supernumeraries found in 27 patients. Males were more affected than females (1.79:1). Most cases were located at anterior maxilla (45.9%) and morphology of conical (45.9%) was noted the most common. The most common eruption status was permanent (81.1%), erupted (64.9%) and straight position of eruption (75.5%). **Conclusion:** By conducting study through Orthopanthomograph images, supernumerary teeth characteristics was able to be identify and will be useful to provide additional epidemiological information.

Keywords: Supernumerary teeth, conical shape, frequency.

(POS 15) Mother's knowledge and behaviour regarding dental caries among children in kindergarten, Sukoharjo

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Introduction: Caries is a biofilm (plaque)-induced acid demineralization of enamel or dentin, mediated by saliva. The disease of early childhood caries (ECC) is the presence of decayed, missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger. Based on a preliminary survey, 90% of children suffering from caries, and 75% of mothers did not know how to maintain oral health of children. Dental and oral health of children under 5 years old still depends on the behavior and knowledge of his mother. Mother's knowledge, attitude and practices regarding child's oral health are very important. **Objectives:** The present study was conducted to determine knowledge and behaviour of mother regarding dental caries on children in the Kindergarten. **Methods:** A cross sectional study was conducted. A total 105 sample were selected by using purposive sampling technique. Data were collected using Likert questionnaire and observation. Data analysis using chi-square analysis. **Result:** Mother's Knowledge with high category 66.7%, Mother's behavior with medium category 97.1%, and dental caries in very low category that is 27.6%. Chi-square test on mother's knowledge with dental caries showed p value = 0,010 (p <0.05) mother's behavior with dental caries showed p value = 0.010 (p> 0.05). **Conclusion:** This study concluded that a significant correlation between mother knowledge level with dental caries on children. No significant correlation between mother's behaviors with dental caries on children.

Keywords: Mother, knowledge, behaviour, dental caries.

(POS 16) Relationship of nutritional status and persistent primary teeth in children aged 7-10 years

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Introduction: Primary teeth that remain in the dental arch beyond the normal period of time called as persistent primary teeth. Persistent primary teeth can be caused by various factors. One of which is nutrition deficiency that can be seen through the nutritional status of children. **Objective:** To determine the relationship of nutritional status with persistent primary tooth in children aged 7-10 years. **Methods:** This is analytic observational study with observation design of cross sectional study. The population of the study are all students in grades 1-4 in 2 elementary schools. The research sampling technique used purposive sampling so the research subjects were 107 students. Data collection techniques used dental persistent observation sheets. Data analysis used chi-square correlation analysis. **Results:** Out of 107 research subjects, gained 71 students (66.4%) from the population have persistent primary teeth and the 36 students (50.7%) are girls. The highest incidence of tooth persistent occurred in children aged 10 years with 32 students (45.0%) and occurred in the lower jaw with 46 students (43%) of the entire study subjects. Nutritional status obtained in this study 68 students (63.6%) have good nutritional status. Correlation test results between nutritional status and tooth persistent p = 0,899 (p $\geq$ 0.05), which shows no significant relationship. **Conclusion:** There is no significant correlation between nutritional status with persistent primary teeth in children age of 7-10 years.

Keywords: Nutritional status, teeth persistent, malnutrition.