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Career Expectations and Satisfaction among Malaysian Dentists with Expanded Roles at Government Dental Specialist Clinic



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Abstract

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ABSTRACT

Introduction: Public dentists in Malaysia undergoing attachment at the Ministry of Health (MOH) Dental Specialist Clinic (DSC) hold enhanced skills that enable them to treat cases of intermediate complexity. Public dentists interested in pursuing post-graduate studies for career advancement were required to complete a period of clinical attachment at selected MOH DSCs. **Objectives:** This cross-sectional study aimed to explore dentists' expanded roles, career expectations and satisfactions at the MOH DSC. **Methods:** A total of 208 dentists from DSC nationwide completed an online questionnaire in June 2022. Demographic data and information on dentists' expanded roles were retrieved. Responses on dentists' career expectations and satisfaction were collected using a 5-point ordinal scale. Associations between sociodemographic and other variables were determined using the chi-square, independent t-test and ANOVA ($p < 0.05$). **Results:** The mean age of the respondents was 32.68 ± 2.48 . Almost half (49%) of the respondents were attached to a non-hospital-based clinic. 71% of the dentist was permanently attached at the DSC, while 21% were attached temporarily at the DSC. Permanently-attached dentists had significantly higher career expectations mean scores of 24.5 ± 5 compared to partially-attached dentists (27.2 ± 7) ($p = 0.004$). Dentists attached at a non-hospital-based clinic ($p = 0.046$), working with more than 15 years of experience ($p = 0.013$) and 12-18 months of attachment ($p = 0.014$), had higher career satisfaction. Multiple logistics regression analysis revealed that non-Malay (OR=1.54; $p = 0.035$) and those who applied for scholarships more than three times (OR=1.85; $p = 0.050$) had a higher satisfaction level. In contrast, the duration of attachment at DSC of more than 19 months contributed to a lower career satisfaction level (OR=0.44; $p = 0.029$). **Conclusions:** Dentists at DSC, MOH demonstrated diverse career expectations and satisfaction levels despite working under a similar organizational structure. Dentists' ethnicity, duration of attachment, workplace and frequency of applying for scholarships influenced their career expectations and satisfaction.

Keywords: expanded roles, career expectations, satisfaction

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I Introduction

- As of 2019, the dentist to population ratio was 1:3085 (Website: OHP, 2021).
- The workload of the dental specialists is reflected in the proportion of a specialist to patients, which is one dental specialist to 15120 of the population (Oral Health Programme, 2019), with the total number of specialists served within the government sector being 381.

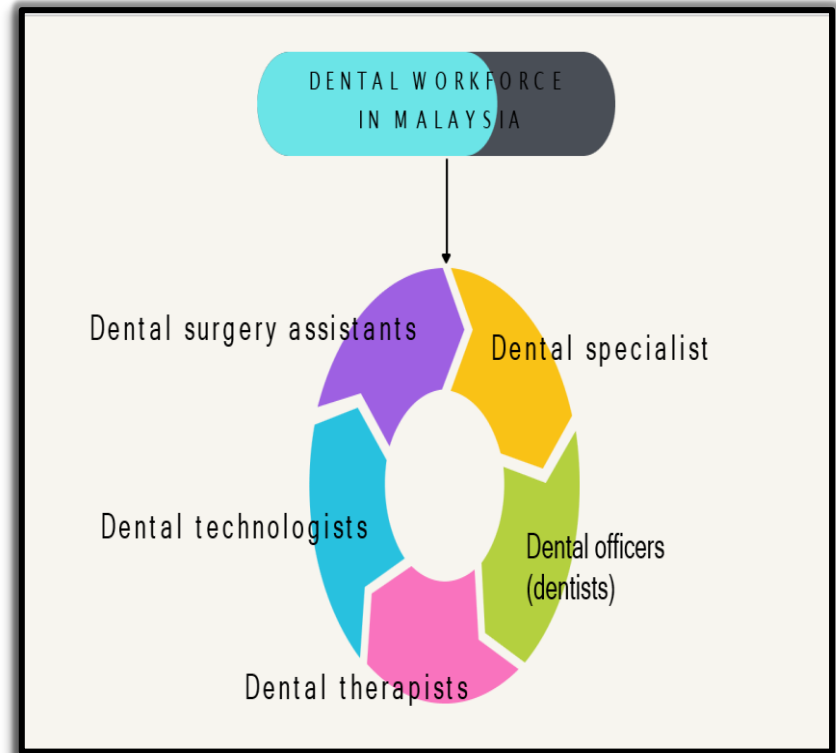


Figure 1: The dental workforce in government sector in Malaysia consists of dental specialists, dental officers (dentists) and dental auxiliaries (Website: OHP, 2021).

Specialist Dental Services in MOH

Introduction

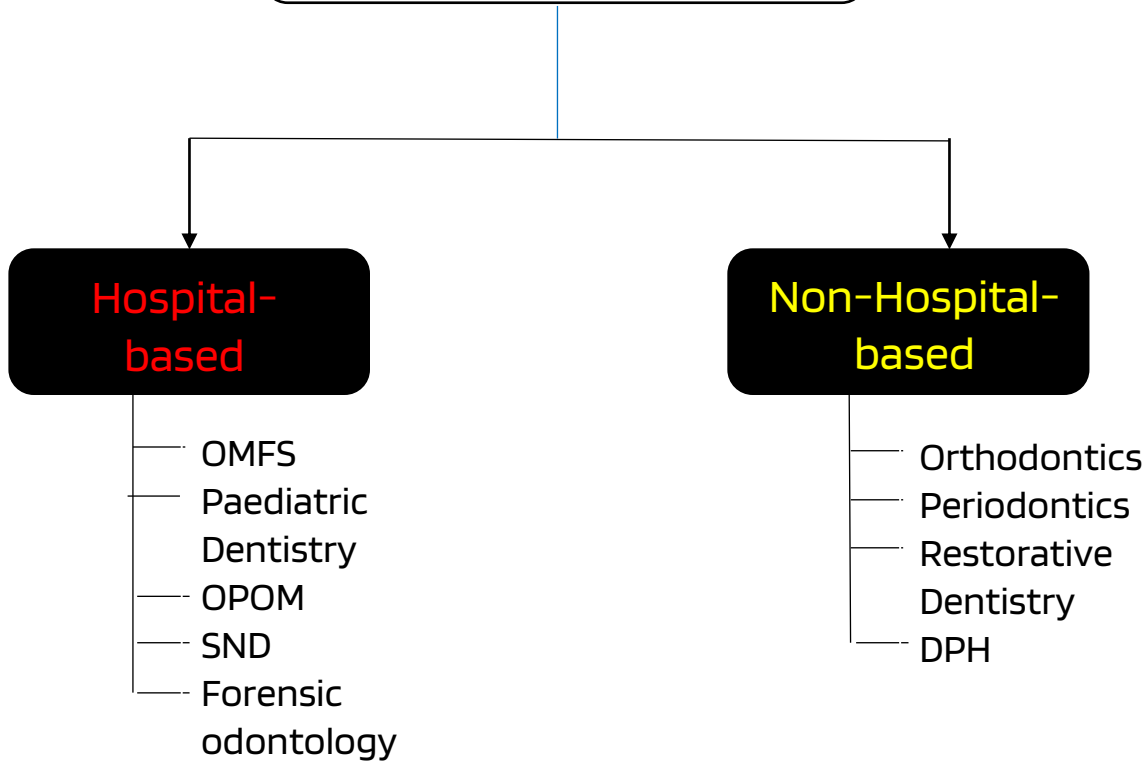
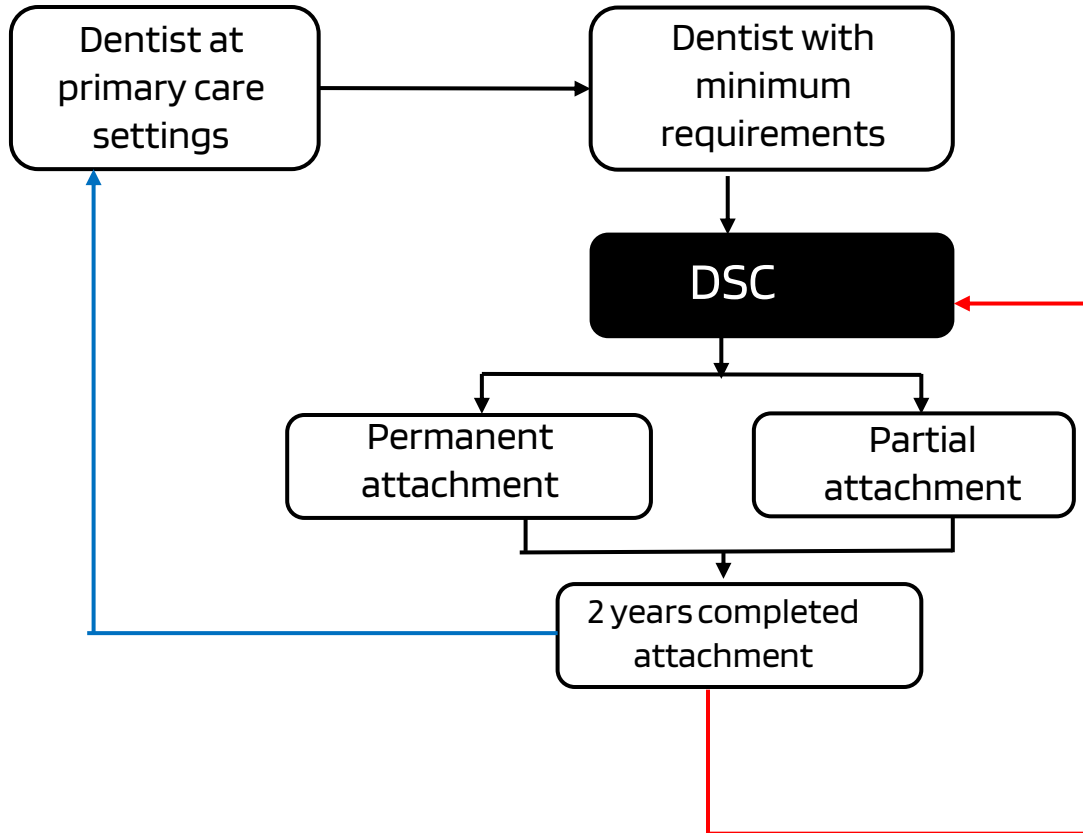


Figure 2: Specialist Dental Services

Introduction



In 2016, the MOH introduced an in-house officer's on-call system policy where dentists who meet minimum requirements are eligible to apply and be considered in posted at Dental Specialist Clinic (DSC) to enhance and expand their roles (Milestone OHP, 2021).

Figure 3: The Dentists in MOH Malaysia

The concept of an expanded role for the general dentist was introduced as a Dentist with a Special Interest (DwSI), in the UK

allowed to provide specialist treatment to the patients

recognised and allocated some remuneration by the NHS

However, dental practice needs to be accredited by an external body before being contracted to provide the NHS treatment that was considered to be outside of the General Dental Services contract

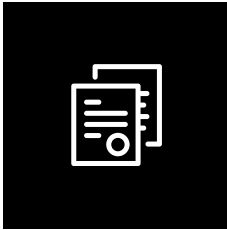


–Dentist with a Special Interest (DwSI) – in the UK

| **Aim & objectives**

This cross-sectional study aimed to explore the expanded roles, career expectations and satisfaction of dental officers (dentists) at Dental Specialist Clinic (DSC) Ministry of Health (MOH) Malaysia.

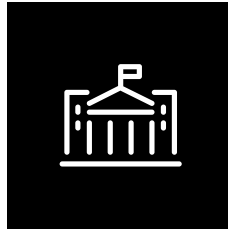
Aim & objectives



Objective 1



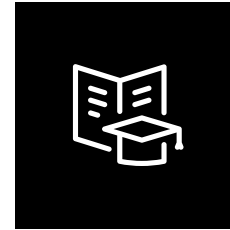
To assess the expanded roles of dentists at DSC MOH Malaysia



Objective 2



To identify the dentists' career expectations and their influential factors



Objective 3



To assess career satisfaction among those dentists, specifically on their professional development

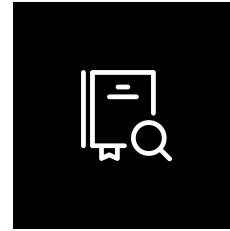
I Rationale & Significance



In Malaysia, no studies have been conducted to elucidate the expanded roles of the dentists at DSC MOH and their career satisfaction in performing their roles.



Further research is required to provide current information regarding the expanded roles of this group of dentists, the barriers being faced to achieve their career satisfaction



The findings can be used to identify strategies and implementations to address the obstacles affecting their career expectations and satisfaction.



Recommendations upon completing data collection will vary according to research findings. However, it can be projected from previous studies in other countries that providing the officers with suitable short clinical courses and financial reimbursement might be appropriate.

I Methodology



Study Population

- Dentists stationed in the DSCs MOH Malaysia
- Fulfil at least one year of attachment
- Permanent or partial attachment officers



Sampling

- EpiinfoTM sample size calculator was used, α value = 0.05, power of 80% and 95% CI.
- Stratified random sampling was used to select participants by speciality.



Study Instruments

A set of validated and pre-tested Online Self-administered Questionnaire



Ethical Approval

From the Research Ethics Committee (UiTM), the Oral Health Program (MOH), NMRR and MREC



Inclusion criteria

Dentists who were doing their attachment in second year onwards at the DSCs MOH in 2022



Exclusion criteria

Dentists with less than one-year attachment at DSCs MOH Malaysia in 2022

I Data collection & analysis

The data collection was performed in June 2022

- A total of 273 dentists from DSC nationwide were invited to participate in June 2022.
- Demographic data and information on dentists' expanded roles were retrieved.
- Responses on dentists' career expectations and satisfaction were collected using a 5-point ordinal scale.
- Associations between sociodemographic and other variables were determined using the chi-square, independent t-test and ANOVA ($p < 0.05$)

Results (socio-demographic)

Response Rate

208 dentists participated in the survey (76% response rate)

Socio-demographic

- The mean age of the respondents was 32.7 ± 2.5 .
- They were almost **evenly split** between **hospital-based (51.0%)** and **non-hospital-based (49.04%)** clinics.
- The majority (72.0%) of them were **permanently attached** to the **DSC**.
- **Female (78.4%)**, **Malay ethnicity (56.7%)**, and **married (60.1%)** were predominant among the respondents.
- Most respondents had served for six to 10 years (65.9%), had UG48-52 of current grades (77.9%) and had an attachment for more than 24 months (57.7%).
- As for scholarship applications, **21.6% had applied for three and more**.

Discussion

- The mean age of the respondents was 32.7 ± 2.5 ; suggesting the majority of respondents had already **served almost 8 eight years** as dentists should they graduate at the **age of 24**.
- The respondent characteristic relatively reflects the country proportion of dentist in regards to the ethnicity and gender distribution (MDC, 2021).
- Most respondents (65.9%) had served for six to ten years, suggesting that they had **wide exposure to working experience** in the MOH setting.

I Results Objective 1 (expanded roles)

i) Association between Clinical Roles and DSC's Position

- The majority of the clinical functions were performed by the **permanently-attached dentists**, amounting to 14 clinical roles ($p=0.036$).

(Pearson Chi-Square test)

(ii) Association between Clinical Roles and DSC's Duration of Attachment

- 93.3% dentists with a period of attachment at DSC for **more than 24 months** had performed specialist treatment under supervision ($p=0.002$)
- 90.0% of them had performed other instructed clinical works ($p=0.005$)

(Pearson Chi-Square test)

Results Objective 1 (expanded roles)

iii) Association between Administrative Roles and DSC's Position

There were significant differences between the position of dentists with the:

- monitoring the **implementation of CPD courses** (theory & practical) for all staff ($p=0.001$),
- monitoring the **submission of treatment records** (reten) following the schedule ($p<0.001$)
- monitoring the **preparation of KPI reports** for the clinic ($p<0.001$)
- ensuring clinical and management-related **schedules are updated** ($p=0.001$)

(Pearson Chi-Square test)

iv) Association between Research Activities and DSC's Position

- A higher proportion (64.9%) of the **permanently attached dentists** were involved in research activities ($p=0.021$)

(Pearson Chi-Square test)

Results Objective 2 (expectations)

Table 4.3 (a)
Description of Career Progress Expectations among Dentists at Dental Specialist Clinics (n=208)

Career		Very Important		Important		Uncertain		Not Important		Not Very Important		Mean (SD)
		n	%	n	%	n	%	n	%	n	%	
1.	Expose to practical skills at respective Dental Specialist Clinic	180	86.54	27	12.98	-	-	1	0.48	-	-	1.14 (0.39)
2.	Acquire additional theoretical knowledge relevant to the job scope of the Dental Specialist Clinic	175	84.13	32	15.38	-	-	1	0.48	-	-	1.17 (0.41)
3.	Able to practice the acquisition of expanded skills of interest at the Dental Specialist Clinic.	163	78.37	43	20.67	1	0.48	1	0.48	-	-	1.23 (0.47)
4.	Expose to new and expanded clinical skills at the respective Dental Specialist Clinic	161	77.40	45	21.63	1	0.48	1	0.48	-	-	1.24 (0.47)
5.	I wish to be given the opportunity to attend relevant short courses related to the speciality that I have worked with if I did not get the scholarship within the intended period of my attachment	140	67.31	51	24.52	13	6.25	2	0.96	2	0.96	1.44 (0.74)
6.	In my line of work, I have the opportunity to participate/join/observe/ the multidisciplinary clinic with the specialist	139	66.83	55	26.44	10	4.81	2	0.96	2	0.96	1.43 (0.72)
7.	In my line of work, I am competent to practice with the expanded roles at the respective Dental Specialist Clinic	110	52.88	84	40.38	11	5.29	1	0.48	2	0.96	1.56 (0.71)

Career		Very Important		Important		Uncertain		Not Important		Not Very Important		Mean (SD)
		n	%	n	%	n	%	n	%	n	%	
8.	In my line of work, I am able to contribute to community mission/ services	106	50.96	73	35.10	21	10.10	2	0.96	6	2.88	1.69 (0.91)
9.	In my line of work, I am competent to practice enhanced clinical skills at the Dental Specialist Clinic.	104	50.00	89	42.79	14	6.73	1	0.48	-	-	1.58 (0.64)
10.	In my line of work, I can achieve the work-life balance	99	47.60	68	32.69	30	14.42	4	1.92	7	3.37	1.81 (0.98)
11.	In my line of work, I receive acknowledgement for my effort and commendable performance	93	44.71	95	45.67	14	6.73	3	1.44	3	1.44	1.69 (0.78)
12.	I wish to be given financial incentives with extended roles in that I have been involved if I did not get the scholarship within the intended period of my attachment	90	43.27	43	20.67	47	22.60	13	6.25	15	7.21	2.13 (1.24)
13.	In my line of work, I am competent to practice outside the respective Dental Specialist Clinic	87	41.83	86	41.35	28	13.46	6	2.88	1	0.48	1.79 (0.82)
14.	With regard to the progress of my future career, I wish to remain as a dentist with an expanded role in the Dental Specialist Clinic	80	38.46	61	29.33	41	19.71	13	6.25	13	6.25	2.13 (1.18)
15.	With regard to the progress of my future career, I plan/want to set up my own private dental clinic	23	11.06	36	17.31	71	34.13	41	19.71	37	17.79	3.16 (1.23)

Note: Each item scored 1-5; the lower the score, the higher the career expectations
The mean (SD) score for career expectations was 25.2 (6.4), with a full score of 75.

I Results Objective 2 (expectations)

- 84.1% dentists chose "very important" for *to gain additional theoretical knowledge relevant to the job scope of the DSC*
- 86.5% believe that *exposure to practice skills at the respective DSC* was the "most important" items for their career progress expectations.
- More than half reported that other factors also claimed to be "very important" for their career advancement, except for the item *in my line of work, I receive acknowledgement for my effort and commendable performance* (45.67%).
- 34.1% were "uncertain" with regard to the *progression of my future career, I plan/want to set up my own private dental clinic*
- Respondents also reporting *that in my line of work, I am competent to practice outside the respective DSC* as equally "important" and "very important".

(Descriptive findings)

Permanently-attached dentists had higher career expectations with a mean score of 24.5 ± 5 than partially attached dentists 27.2 ± 7 ($p= 0.004$) and were confirmed with multivariate logistic regression (AOR= 2.08; 95% CI = 1.05-4.12; $p= 0.037$).

(ANOVA and Multiple Logistic Regression)

I Discussion Objective 2 (expectations)

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- **Permanently-attached** dentists had **higher career expectations** among dentists at the DSC in the MOH.
- This might be the result of the **weighty responsibilities** assigned to them.
- These permanently-attached dentists will have higher expectations given they have **held numerous positions with increased workloads**, thereby heightening the expectations for their careers.

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- Individuals who perceive that they **possess a unique and valuable blend of expertise** are **more demanding** in terms of their **career advancement opportunities** (Lin et al. 2012).
- Their argument was consistent with the findings in the present study.

Results Objective 3 (satisfaction)

Table 4.3 (c)

Description of Career Satisfaction among Dentists at Dental Specialist Clinics (n=208)

Satisfaction		Very Dissatisfied		Moderately Dissatisfied		Not Sure		Moderately Satisfied		Very Satisfied		Mean (SD)
		n	%	n	%	n	%	n	%	n	%	
		1.	How satisfied are you with the physical aspect of your work conditions	6	2.88	35	16.83	17	8.17	112	53.85	
2.	How satisfied are you with the freedom to choose your method of working	3	1.44	33	15.87	37	17.79	104	50.00	31	14.90	3.61 (0.97)
3.	How satisfied are you with your colleagues	10	4.81	16	7.69	17	8.17	89	42.79	76	36.54	3.99 (1.09)
4.	How satisfied are you with the recognition you get for good work	15	7.21	26	12.50	28	13.46	86	41.35	53	25.48	3.65 (1.19)
5.	How satisfied are you with your immediate superior	9	4.33	23	11.06	16	7.69	85	40.87	75	36.06	3.93 (1.13)
6.	How satisfied are you with the amount of responsibility you are given	8	3.85	24	11.54	30	14.42	102	49.04	44	21.15	3.72 (1.04)
7.	How satisfied are you with the salary you received when performing extended roles at the Dental Specialist Clinic in the Ministry of Health Malaysia	27	12.98	47	22.60	58	27.88	57	27.40	19	9.13	2.97 (1.18)
8.	How satisfied are you with your opportunity to use your abilities in clinical/research or administration	9	4.33	20	9.62	66	31.73	84	40.38	29	13.94	3.50 (0.99)
9.	How satisfied are you with the working relationship between management and workers in your facilities	12	5.77	30	14.42	30	14.42	100	48.08	36	17.31	3.57 (1.11)
10.	How satisfied are you with your time-based promotion?	18	8.65	24	11.54	24	11.54	81	38.94	61	29.33	3.69 (1.25)
11.	How satisfied are you with the way your workplace is managed	11	5.29	37	17.79	27	12.98	96	46.15	37	17.79	3.53 (1.13)
12.	How satisfied are you with the attention paid to suggestions you make	11	5.29	22	10.58	42	20.19	99	47.60	34	16.35	3.59 (1.05)
13.	How satisfied are you with your operating working hour	6	2.88	26	12.50	21	10.10	99	47.60	56	26.92	3.83 (1.05)
14.	How satisfied are you with the amount of variety in your job	6	2.88	31	14.90	36	17.31	90	43.27	45	21.63	3.66 (1.06)
15.	How satisfied are you with your job security	12	5.77	21	10.10	19	9.13	89	42.79	67	32.21	3.86 (1.15)

Results Objective 3 (satisfaction)

- 28.0% of dentists were “unsure” **whether they are satisfied** with *the salary they received while performing extended roles at the DSC in the MOH*, 9.13% were **satisfied** and 12.98% were **very dissatisfied**.
- 72.6% were “**very satisfied**” with their *colleagues and immediate superiors*.
- Only 1.4% claimed to be “**very dissatisfied**” with *the freedom of choosing the method of working*.

(Descriptive findings)

Non-Malays group (AOR= 1.54; 95% CI = 0.30-0.96; p= 0.035) and dentists who **applied for scholarships more than three times** (AOR= 1.85; 95% CI = 0.10-3.41; p= 0.050) had **higher satisfaction** levels.

Dentists attached to the DSC for **more than 19 months** (AOR= 0.44; 95% CI = 0.21-0.92; p = 0.029) were associated with **lower career satisfaction**.

(Multiple Logistic Regression)

I Discussion Objective 3 (satisfaction)



- The **non-Malay** group had **higher career satisfaction** among dentists at the DSC.
- The percentage of the **Malay group was 52.1%**, and **non-Malay was 47.9%** consisting of other Bumiputra, 11.5%; Chinese, 21.2%; Indian, 6.2% and Others, 9.0% (Department of Statistics Malaysia, DOSM; 2021).



- This study might suggest that the minorities have a HIGHER satisfaction threshold when it comes to their career satisfaction
- This is similar to the findings of research regarding the **minority of African Americans** in the United States; **African workers** are **more satisfied** with their jobs than American workers (Greenhaus et al., n.d.; Koh et al., 2016).

I Discussion Objective 3 (satisfaction)



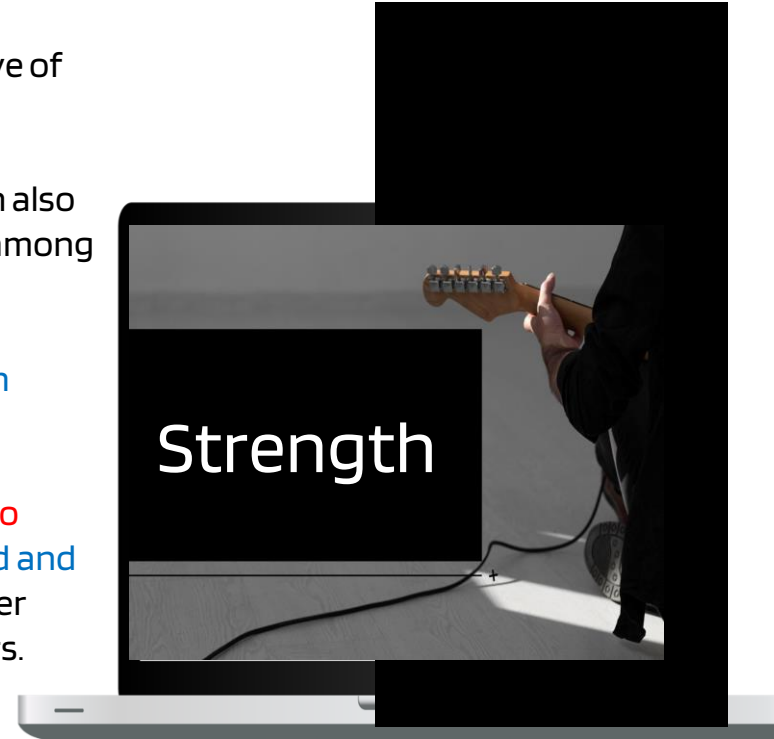
- Dentists who applied for **scholarships more than three times** have **higher satisfaction** levels.
- They were well-versed in the interview system, selection method, and process.



- People who went for the interview **more than once** have **more confidence** and experience in attending the following interview (Read, 2018).
- It may be advantageous or essential to **conduct serial interviews** in order to **comprehend longitudinal change** or variation over time (Read, 2018).

I Strength

- This study recorded a **high response rate of 76.0%**, thereby supporting the **generalisability** of the results and representative of the dentists at the DSCs.
- The current findings **yield important and valuable data** that can also serve **as a reference** for career expectations and satisfactions among these distinct dental officers.
- These results might be relevant to **future comparative research studies** investigating dentists in specialist clinic settings.
- An important **novelty** was introduced in this study given that **no previous research** either in Malaysia or worldwide has **examined and investigated** dentists' expanded roles domain; their- both career expectations and satisfaction, as well as those potential barriers.



Limitations

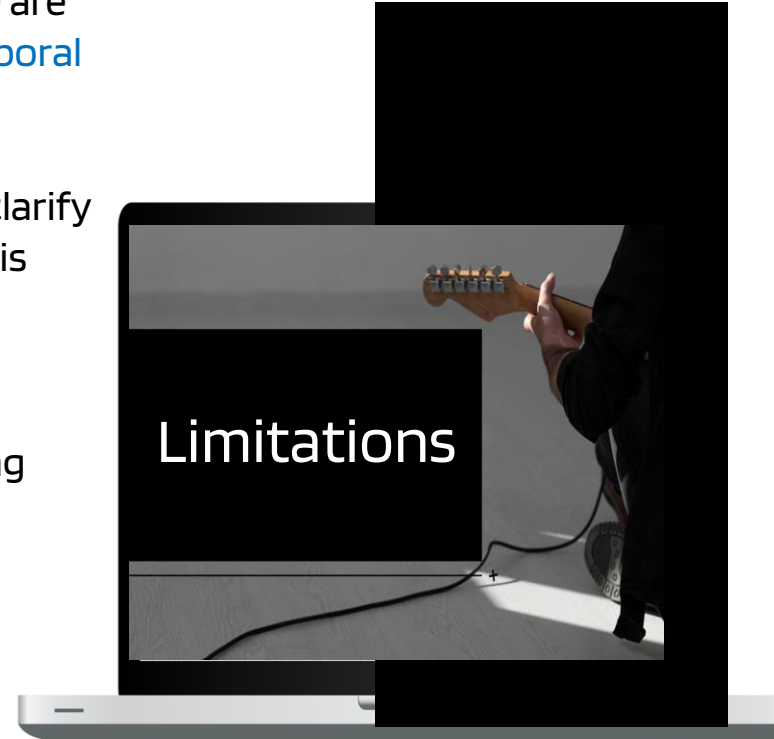
- It was a **cross-sectional studies**; exposure and outcome are assessed simultaneously, there is **no evidence of a temporal relationship between exposure and outcome**.

➡ Thus, **additional prospective research will be required** to clarify and confirm potential causal relationships identified in this study.

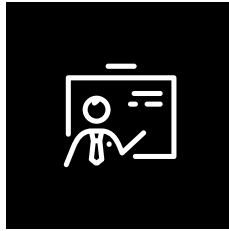
- **Recall bias** will occur when the respondent provides inaccurate information regarding their previous working experience.

➡ The recall bias is **minimized** by allowing the respondents enough time to recall, respond and return the survey.

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I The two conclusions



Dentists at DSC, MOH demonstrated diverse career expectations and satisfaction levels despite working under a similar organizational structure.

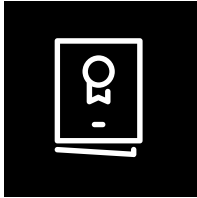
Dentists' ethnicity, duration of attachment, workplace and frequency of applying for scholarships influenced their career expectations and satisfaction.



Future career advancement plans in the MOH should consider these important influencing factors to ensure the delivery of quality healthcare from their personnel.

I Recommendations

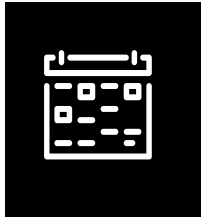
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- Based on the findings from this survey, dentists at DSC in MOH demonstrated **diverse career expectations, satisfaction levels, and barriers perceived**.

- These findings can be employed to **identify strategies and implementations for addressing** barriers, career expectations, and satisfaction that could affect the dentist's overall productivity.

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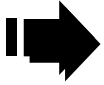
- Future research is recommended to use a **longitudinal study design** and attempt to explain this actual relationship as it is one of the more robust methodologies.

- They can serve as a **powerful argument in any debate involving stakeholders** and be used **in developing evidence-based-driven policies**.

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Thank you

21st ANNUAL SCIENTIFIC MEETING & 23rd ANNUAL GENERAL MEETING IADR MALAYSIAN SECTION

SATURDAY, 24 SEPTEMBER 2022



PROGRAMME BOOK

RESEARCH TO PRACTICE

Identifying the Gap, Solving the Problem



INTERNATIONAL ASSOCIATION FOR
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MESSAGE FROM

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23rd ANNUAL GENERAL MEETING IADR
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As the Chairman of the Local Organizing Committee, I would like to extend a warm welcome to all the participants of the 21st Annual Scientific Meeting and 23rd Annual General Meeting. My colleagues and I are especially honoured to be hosting this prestigious national event on the platform of IADR Malaysian Section.

This year, the year of 2022, we are finally back to the norm of face-to-face scientific conference and Annual General Meeting. We have missed the human touch and socializing meeting friends and colleagues for the past 2 years. It was a tough year for everyone, but I believe we have come out from it stronger.

IADR is a platform where researcher from all background comes together to learn from distinguished speakers and to share their research findings with colleagues. Many important and novel findings are outcomes from research activities that are then translated into clinical practices. This year, our Scientific Conference focused to the theme 'Research to Practice: Identifying the Gap, Solving the Problem. The keynote lecture will be delivered by Professor Dr Satoshi Imazato from Osaka University, and the plenary by our own renowned Professor, Prof Dato' Dr Mohamed Ibrahim Abu Hassan. However, as Professor Imazato would not be able to make it in person this time around, we will have him on virtual platform. A technology we have mastered and customarily used during the Covid-19 pandemic. The first symposium will be delivered by Associate Professor Dr Dasmawati from Universiti Sains Malaysia. We are continuing the 'What's Up Doc' symposium where 3 universities are sending their speakers to introduce their project and invite potential collaborators from other schools or researcher to join them. Tengku Dr Intan from UiTM, Associate Professor Dr Anitha Krishnan from SEGI University and Associate Professor Dr Azrul Hafiz from USIM.

For the scientific competitions, I would like to inform that we have received and accepted 38 projects from undergraduate students, postgraduate students and researchers from the universities, private practitioners and Ministry of Health. They will compete under different category award that IADR MalSec have prepared, thanks to the sponsor from Colgate Palmolive and Lions, and I wish them 'May the best man wins'.

I do hope that we will have a fruitful meeting and broaden our horizon in unlimited ways from this conference. Thank you again to everyone for joining us this year in Acapella Hotel and Suites, Shah Alam.

Warm regards.

Associate Professor Dr Siti Mariam Ab Ghani
Chairman, Local Organizing Committee
President, IADR Malaysian Section

International Association for Dental Research-Malaysian Councils 2020-2022



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IT, Multimedia & Technical

Dr Ooi Der Jiun

Dr Johari Yap

Azri Abas

Syed Izzat Emir Syed Ahmad Razali

SPEAKERS

PROFESSOR DR SATOSHI IMAZATO

*Professor and Chair Department of Biomaterials Science,
Osaka University Graduate School of Dentistry*

**21st ANNUAL SCIENTIFIC MEETING &
23rd ANNUAL GENERAL MEETING IADR
MALAYSIAN SECTION**



Title:

Smart antibacterial restorative materials Designing the next-generation bioactive materials for restorative dentistry

Abstract:

Nowadays, dental restorative materials on the market demonstrate excellent clinical performance. Therefore, innovations of restorative materials are being directed toward a new dimension, so-called “bioactive” materials, with preventive effects such as promotion of mineralization or control of bacterial infection. We have been working on development of various bio-active restorative materials for many years. Those include resinous materials, cements, or adhesives with the ability to inhibit bacteria or to promote tissue regeneration. One successful example is commercialization of the world’s first antibacterial adhesive incorporating a quaternary ammonium compound (QAC)- based resin monomer MDPB, which can contribute to minimally invasive treatments by showing cavity disinfecting effects. As for restorative materials with anti-biofilm effects, we are developing inorganic pH-responsive glass which releases antibacterial components according to decrease in environmental pH. This approach is different from the conventional one to employ a simple strategy to release antimicrobials in non-controlled manner. Resin composites with high-dense immobilized bactericide, which inhibit biofilm formation on their surfaces without releasing antimicrobial components, are also under investigation by utilizing new QAC polymer clusters. Based on those new technologies, we are aiming at achievements of “smart antibacterial restoratives” which exhibit antibacterial/anti-biofilm effects on demand. In this presentation, the concept of “smart antibacterial restorative materials” as the next-generation design of bio-active materials will be addressed with the summary of our recent research.

Professional Appointments:

- 1991-1999: Assistant Professor, Department of Operative Dentistry, Osaka University Faculty of Dentistry
- 1993-1994: Visiting Researcher, Department of Oral Biology, Newcastle University, UK
- 1999-2010: Associate Professor, Department of Restorative Dentistry and Endodontology, Osaka University Graduate School of Dentistry
- 2011: Professor, Department of Biomaterials Science, Osaka University Graduate School of Dentistry
- 2018: Professor (Concurrent), Department of Advanced Functional Materials Science, Osaka University Graduate School of Dentistry
- 2019: Dean, Osaka University Graduate School of Dentistry/School of Dentistry

IADR Activities:

- 2008-2009: IADR, President of Dental Materials Group
- 2019-2020: Japanese Division of IADR, President
- 2022: IADR, Vice President

SPEAKERS

PROF MADYA DR. DASMAWATI BINTI MOHAMAD

School of Dental Sciences

University Sains Malaysia

**21st ANNUAL SCIENTIFIC MEETING &
23rd ANNUAL GENERAL MEETING IADR
MALAYSIAN SECTION**



Title:

Polyamide Composite as a Potential 3D Printing Alloplastic Material

Abstract:

In reconstructive surgery of the craniofacial region, restoration of function and cosmesis are both important in order to ensure good quality of life. Craniofacial surgeons using commonly available biomaterials to reconstruct hard and soft tissue defects due to trauma or pathologies need to shape the implant manually during the operation to resemble the anatomy of the patient. This often leads to long additional operating time and inaccurate morphology. With the advantages of 3D printing technology, patient specific implant (PSI) with accurate morphology and cosmesis can be achieved. However, direct implant that can be printed from 3D printer is restricted due to the limited availability of biocompatible feed stock or alloplastic material. Our research team in USM, has successfully fabricated 3D printable hybrid ceramics filled polyamide 12 as a new potential printable biomaterial. The results showed good resemblance to the human craniofacial bone in its physical and mechanical properties. The in vitro cytotoxicity study using cell lines as well as in-vivo intracutaneous reactivity and dermal sensitization in animal studies showed favourable results in terms of its biocompatibility. This prototype namely 3D polyamide composite customised implant (3D-CPACC) has also won medals in ITEX 2018 and in other exhibitions. The 3D-CPACC gives benefit to the patients and surgeons alike by reducing operating time other than being more user friendly.

Biography:

Dasmawati Mohamad obtained her first degree from University of Birmingham in Chemical Engineering later, MSc in Polymer Science and Technology from UMIST and Ph.D. in Biomaterials from University of Manchester. She is currently an Associate Professor at School of Dental Sciences, Universiti Sains Malaysia. Her research interests in development of nanocomposite from nanosilica rice husk and 3D printable alloplastic implant for craniofacial reconstruction. She is also a Vice President for Malaysian Biomaterials Society and Editor in Chief of Archives of Orofacial Sciences.

SPEAKERS

PROFESSOR DATO' DR.
MOHAMED IBRAHIM ABU HASSAN
Faculty of Dentistry UiTM Sungai Buloh Campus
**21st ANNUAL SCIENTIFIC MEETING &
23rd ANNUAL GENERAL MEETING IADR
MALAYSIAN SECTION**



Title:

Update and Trends in Restorative Dentistry

Biography:

Professor Dato' Dr. Mohamed Ibrahim Abu Hassan's career in dentistry started when he graduated in 1984 and served the community in Terengganu for 1 year before joining UM as a tutor. Till today, he has more than 35 years of teaching Operative Dentistry, Endodontics, Dental Materials and Fixed Prosthodontics in undergraduate and postgraduate programmes. He held multiple administrative positions where he was the Deputy Dean, Faculty of Dentistry, University of Malaya in 1992 and founding Dean for Faculty of Dentistry, University Teknologi MARA from March 2006 – May 2022. He has vast experience in managing other academic appointments such as Adjunct/Visiting Professor/Visiting Academician in Manipal University (2015), USIM (2016), and the most recent was Malaysian Science University (MSU) and Lincoln University College in the year of 2020. He is a member of Professional Organisations such as Malaysian Dental Association, Malaysian Endodontic Society and few others. He is a recipient of several awards and has spoken at several talks. In addition he authored over 20 publications and involved in the teaching and supervision of Masters and PhD candidates as well as undergraduate students. His research interest and expertise are in Dental Materials, Restorative Dentistry and Dental Education

PANELS | *What's up doc symposium*



Tengku Dr Intan Baizura Tengku Jamaluddin (UiTM)

Title: Numbing up your patient!

Biography:

Tengku Dr Intan Baizura Tengku Jamaluddin completed her dental degree from the National University of Malaysia (UKM) in 2003 and then spent three years working with the Ministry of Health Malaysia in various departments. She then pursued her Master of Clinical Dentistry (MCLinDent) in Oral Surgery at Eastman Dental Institute, University College London, United Kingdom and completed it in 2008. In 2009 she obtained her Membership of Faculty of Dentistry (MFDS), Royal College of Surgeons Edinburgh, Scotland before continuing to serve various Ministry of Health's Hospital as Clinical Specialist (Oral & Maxillofacial Surgeon) before joining Centre of Oral & Maxillofacial Surgery Studies, Faculty of Dentistry, Universiti Teknologi MARA in 2014 as Senior Lecturer / Clinical Specialist (Oral & Maxillofacial Surgeon)

PANELS | *What's up doc symposium*



Associate Professor Dr Anitha Krishnan Pandarathodiyil (SEGi)

Title: Adverse effects following COVID-19 vaccination: Does vaccine type matter?

Biography:

Associate Professor Dr Anitha Krishnan has worked as an academician in several dental colleges across Saudi Arabia, India, and Malaysia. She has also served as a dental officer in the Ministry of health, Malaysia. She pursued her second Master's degree in Experimental Oral Pathology from Queen Mary University of London, UK. She is actively involved in scientific research and is the principal investigator of many funded research projects. Her field of interest is in the early detection of oral premalignant and malignant disorders and salivary biomarkers. She has published many scientific articles in international indexed journals. She has received her MFDS from the Royal College of Physicians and Surgeon of Glasgow, and is also a fellow of the prestigious International College of Dentists. Dr Anitha is an Associate Professor in OPOM in SEGi University, and is here to speak on the "Adverse effects following COVID-19 vaccination: Does vaccine type matter?"

PANELS | *What's up doc symposium*



Assoc Prof Dr Azrul Hafiz bin Abdul Aziz (USIM)

Title: The need for research and publication collaboration

Biography:

Assoc. Prof Dr Azrul Hafiz bin Abdul Aziz completed his dental degree from the National University of Malaysia (UKM) in 2004 and then spent three years working with the Ministry of Health Malaysia in various departments. He then joins Universiti Sains Islam Malaysia (USIM) in 2007 and went on to specialize in orthodontics in United Kingdom in 2008. He gains his Master in Sciences (Orthodontics) in University of Newcastle upon Tyne and also the Membership in Orthodontics (MOrthEdin) from the Royal College of Surgeons of Edinburgh in 2011. Currently, he holds the position of the Deputy Dean (Innovation and Research) and orthodontics lecturer at the Faculty of Dentistry, USIM. He has published many journals, books, proceedings and popular writing in news and online portals. He has also won many awards including Top 100 USIM's best researchers, writers of the months, and innovation competition.

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SENIOR POSTER

No	Abstract ID	Title	Authors	Presenter	Presentation ID	Start time
1	Paper 4	Proteomics of Periodontitis-associated Oral Bacteria and Its Possible Link to Rheumatoid Arthritis: A Narrative Review	Shue Kang Yeong , Chia Wei Cheah and Anis Rageh Mohammed Al-Maleki	Yeong Shue Kang	PG1	11.30AM
2	Paper 12	Assessment of Digital Literacy Among Malaysian Dental Students	Amirul Faiz Luai , Nawwal Alwani Mohd Radzi and Budi Aslinie Md Sabri	Amirul Faiz Luai	PG2	11.45AM
3	Paper 14	Evaluation and Comparison of Mechanical Properties of Lithium Disilicate-Based CAD/CAM Blocks	Sofya Zulkiffli , Yeoh Oon Take, Noor Azlin Yahya and Muralithran Govindan Kutty	Sofya Zulkiffli	PG3	12.00PM
4	Paper 15	A Narrative Review on The In-vitro Performance of All-ceramic Resin Bonded Bridges	Mas Linda Mohd Osman, Lim Tong Wah and Siti Mariam Ab Ghani	Mas Linda Mohd Osman	PG4	12.15PM
5	Paper 20	Effectiveness of Dental Plaque Removal of Selected Eco-Friendly Toothbrush Bristles vs Nylon Bristles – In-Vitro Study	Anas Hakimee Ahmad Ubaidillah , Mohd Azmi Abdul Razak, Azwatee Abdul Aziz and Selva Malar Munusamy	Anas Hakimee Ahmad Ubaidillah	PG5	12.30PM
6	Paper 25	Dental E-Professionalism and Ethics in Social Media in Malaysia	Abdul Raob Noor Asilati , Md Sabri Budi Aslinie and Md Bohari Nor Faezah	Abdul Raob Noor Asilati	PG6	2.00PM
7	Paper 27	Analysis of Health Profile and Treatment Provided in Patients with Special Health Care Needs - An Institutional Study	Tun Yasmin Iffah Mohd Suria Affandi , Mas Suryalis Ahmad and Ilham Binti Wan Mokhtar	Tun Yasmin Iffah Mohd Suria Affandi	PG7	2.15PM

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8	Paper 28	Development and Validation of the Index for Prosthodontic Treatment Needs (IPTN) in Adults: A Pilot Study	Siw May Lee , Suet Yeo Soo, In Meei Tew, Tuti Ningseh Mohd Dom and Nurul Asyikin Yahya	Siw May Lee	PG8	2.30PM
9	Paper 32	The Effects of Concentrated Growth Factor (CGF) on the Augmentation of Bone Regeneration: A Systematic Review of Animal studies	Nik Fatin Sarah Nik Mhd Abdul Nasser , Nur Zety Mohd Noh and Erni Noor	Nik Fatin Sarah Nik Mhd Abdul Nasser	PG9	2.45PM
10	Paper 35	Strategies to Reduce Sugar Intake in Adults: A Systematic Review	Syathirah H Azhar Hilmy , Norashikin Yusof and Norhasnida Nordin	Syathirah H Azhar Hilmy	PG10	3.00PM
11	Paper 36	Self-Perceived Orthodontic Need and Perception Towards Fake Braces Among University Students in Malaysia	Nor Azlida Mohd Nor , Yasmin Kamarudin, Aufa Dahlia Bahar, Joo Ming Cheong, Norasmiha Mohd Nor, Ruhil Hayati Hamdan and Shafa'atussara Silahudin	Nor Azlida Mohd Nor	PG11	3.15PM
12	Paper 37	Social Media Compliance of Dental Clinics on Instagram	Violette Xinhui , Yasmin Kamarudin, Nor Nadia Zakaria and Wei Ying Peh	Violette Xinhui	PG12	3.30PM
13	Paper 41	Differences In Salivary Proteome In Relation To Age	Mariati Abdul Rahman , Zamirah Zainal Abidin, Zaleha Shafiei, Saiful Anuar Karsani and Nor Rohana Abdul Rahim	Mariati Abdul Rahman	PG13	3.45PM
14	Paper 42	Salivary And Urinary Nickel Level Post Orthodontic Fixed Appliance Treatment	Nadia Izyan Muhamad Sabri , Indah Yuri Noviaranny and Jamil Ahsan Kazi	Nadia Izyan Muhamad Sabri	PG14	4.00PM

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SENIOR ORAL

No	Abstract ID	Title	Authors	Presenter	Presentation ID	Start time
1	Paper 9	Sexual Dimorphism of Cusp and Crown Area of Maxillary Posterior Teeth in Malay Population	Samiya Riaz , Mohd Fadhli Khamis, Wan Amir Wan Ahmad, Johari Abdullah Yap and Mohammad Khursheed Alam	Samiya Riaz	O1	11.30AM
2	Paper 10	Career Expectations and Satisfactions among Malaysian Dentists with Expanded Roles at Government Dental Specialist Clinic	Azizi Ab Malek , Nawwal Alwani Mohd Radzi and Muhd Firdaus Che Musa	Azizi Ab Malek	O2	11.45AM
3	Paper 13	Physiological Variations of Children with Neurodevelopmental Disorders in The Application of Passive Immobilization During Dental Treatment	Norsaima Ismail , Khairil Anuar Md Isa and Ilham Wan Mokhtar	Norsaima Ismail	O3	12.00PM
4	Paper 16	Type 1 Diabetes Mellitus (T1DM) Patients' Awareness of Periodontal Diseases and Their Bidirectional Association	Zaridah Zainal Abidin , Dr Rohaida Abdul Halim, Dr Erni Noor, Associate Professor Dr Noor Shafina Mohd Nor, Dr Nor Shafina Mohamed Nazari, Associate Professor Dr Azriyanti Anuar Zaini, Shahrul Aiman Soelar, Marshah Mohamad Shahrizad and Dr Nurul Zeety Azizi	Zaridah Zainal Abidin	O4	12.15PM
5	Paper 17	Quantitative Measurement of Enamel Loss After Repeated Etching and Attenuation Coefficient of Resin Infiltration	Dayang Fadzlina Abang Ibrahim , Annapurny Venkiteswaran, Noren Nor Hasmun and Yih Miin Liew	Dayang Fadzlina Abang Ibrahim	O5	12.30PM
6	Paper 39	Potential Haemostatic Activity From Locally Sourced Camellia Sinensis Variety Assamica Leaves Extract (CSALE)	Tengku Dr. Intan Baizura Tengku Jamaluddin , Assistant Dr. Muhamad Shirwan Abdullah Sanj, Prof. Dr. Ngeow Wei Cheong, Prof. Dato. Dr. Zainal Ariff Abdul Rahman, Dr. Azmeel Mazlee Anuar, Associate Professor Dr. Kazi Ahsan Jamil, Nur Atikah Anuar, Arisha Abdul Murad and Nabilah Mohd Amin	Tengku Dr. Intan Baizura Tengku Jamaluddin	O6	2.00PM
7	Paper 18	The Effect of Microinvasive Treatment on Enamel Surface of White Spot Lesions (WSL)	Kun Phang , Prema Sukumaran, Noor Azlin Yahya and Mohideen Saliyu Farook	Kun Phang	O7	2.15PM

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8	Paper 19	Evaluation of Interfacial Adaptation and Penetration of Bioceramic-based Sealers in Oval Root Canals	Chew Soo Teng, Afaf Yahya Al-Haddad and Kranthi Raja Kacharaju	Chew Soo Teng	O8	2.30PM
9	Paper 23	Colour Stability and Surface Roughness of Resin Infiltrated Teeth Subjected to Staining Solutions and Toothbrushing	Fatin Atiqah Mohamad Khairi, Norasmatul Akma Ahmad and Azwatee Abdul Aziz	Fatin Atiqah Mohamad Khairi	O9	2.45PM
10	Paper 24	Patients' Perceptions of Virtual Smoking Cessation: A Qualitative Study	Nurliyana Roslan, Norashikin Yusof and Nor Faezah Md Bohari	Nurliyana Roslan	O10	3.00PM
11	Paper 26	Geospatial Intelligence: Analysis of Oral Health Workforce Equity to The School Dental Services in Pahang	Mohd. Hidir Mohd. Atni, Nor Faezah Md Bohari and Budi Aslinie Md Sabri	Mohd. Hidir Mohd. Atni	O11	3.15PM
12	Paper 29	HLA Related Genetic Propensity for Manifestation of Oral Submucous Fibrosis among Indians	Bharathi Purohit	Bharathi Purohit	O12	3.30PM
13	Paper 30	Oral Health Beliefs, Perceptions and Utilisation of Oral Health Care Services Among Indigenous (Orang Asli) in Bera, Malaysia: A Qualitative Study	Izzati Mohd Khairunjauhari, Nor Faezah Md. Bohari and Ilham Wan Mokhtar	Izzati Mohd Khairunjauhari	O13	3.45PM
14	Paper 31	Prediction Models for Alveolar Cortical Thickness: Development and Implementation Through Mobile Android Application	Naghham M. Al-Jaf, Mohamed Ibrahim Abu Hassan, Rohaya Megat Abdul Wahab, Wan Eny Zarina Wan Abdul Rahman and Aslan S. Abraham	Naghham M. Al-Jaf	O14	4.00PM
15	Paper 34	The Perceptions of Dental Personnel Managing a Dental Public Health Specialist Unit in Alor Setar, Kedah	Nurul Fahizha Fahimi, Norashikin Yusof and Budi Aslinie Md Sabri	Nurul Fahizha Fahimi	O15	4.15PM

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JUNIOR POSTER

No	Abstract ID	Title	Authors	Presenter	Presentation ID	Start time
1	Paper 5	High Angle Cases in Different Types of Skeletal Pattern Among Malay Orthodontic Patients	Syiral Abdullah , Afifah Syairah Abu Yazid and Amir Ashraf Muhammad Sukri	Afifah Syairah Abu Yazid	UG1	11.30AM
2	Paper 6	Do Attractive Young Malay Females Correlate to Golden Proportion, Neoclassical Canons, 'Ideal' Ratios and 'Ideal' Angles?	Nurhaifa Adlina Mohd Yunos, Nurul Fatimah Hussien, Michelle Clare Mah, Roger A. Zwahlen, Tong Wah Lim, Noraina Hafizan Norman and Tan Su Keng	Nurhaifa Adlina Mohd Yunos	UG2	11.45AM
3	Paper 7	Does Recommended Facial Parameters Relate to Soft Tissue Anthropometry Norms in Malay Female?	Nurul Fatimah Hussien, Nurhaifa Adlina Mohd Yunos, Michelle Clare Mah, Roger A. Zwahlen, Tong Wah Lim, Noraina Hafizan Norman and Tan Su Keng	Nurul Fatimah Hussien	UG3	12.00PM
4	Paper 8	Dental Students' Knowledge on Appropriate Use of Systemic Antibiotics for Endodontic Infections	Choong Jing Wei, Adriel Tan Jhia Shen and Safura Anita Baharin	Adriel Tan Jhia Shen	UG4	12.15PM
5	Paper 11	Hand Hygiene Knowledge and Practice of Generation Z Dental Students in Malaysia	Dr Nor Azlina Ismail , Dr Nusima Mohamed, Nur Haninah Ahmad Sobri and Nur Hidayah Ahmad Zaki	Nur Haninah Ahmad Sobri	UG5	12.30PM
6	Paper 22	An Assessment of Knowledge and Current Clinical Practice on Deep Caries Removal Among Dental Practitioner in Klang Valley, Malaysia	Ahmad Ashraaf Ahmad Badri, Norazlina Mohammad and Siti Hajar Omar	Ahmad Ashraaf Ahmad Badri	UG6	2.00PM
7	Paper 33	Reasons of Attendance among Patients Referred to Periodontology Clinic During Two Different Time Periods	Nur Izzati Farhanis Idris , Lina Badrina Nor Shakiman, Nor Haliza Mat Baharin and Nur Ayman Abdul Hayei	Nur Izzati Farhanis Idris	UG7	2.15PM
8	Paper 38	Setting Time, pH and Push-Out Bond Strength of A Fast-Set Radiopaque Malaysian White Portland Cement	Stephen Lik Soon Kong , Hany Ahmed and Muralithran Govindan Kutty	Stephen Lik Soon Kong	UG8	2.30PM

Senior Poster Category

Paper ID: 4

Proteomics of Periodontitis-associated Oral Bacteria and Its Possible Link to Rheumatoid Arthritis: A Narrative Review

Yeong Shue Kang¹, Cheah Chia Wei¹, Anis Rageh Mohammed Al-Maleki²

¹Department of Restorative Dentistry, Faculty of Dentistry, Universiti Malaya.

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Introduction: Periodontitis is a chronic inflammatory condition of the structures supporting the teeth. It is associated with host response towards the accumulation of dental biofilm along the gingival margin. Periodontitis-associated bacteria express their virulence factors in disease pathogenesis. The newly emerging pathogenic bacteria warrant further investigation at protein levels to gain a better understanding of the etiopathogenesis of periodontitis. Besides, many identified proteomes have not been analyzed, and discussed intensively in this regard. Rheumatoid arthritis (RA) is an autoimmune condition associated with chronic inflammation affecting small joints. The association between periodontitis and RA, is potentially through bacterial proteomes induced inflammation. **Objective:** Therefore, this review investigated the molecular functions and pathways of the periodontitis-associated bacterial proteomes and their association with RA. **Methods:** The search for related literature published from 2017 to 2021 was done on MEDLINE/PubMed, EBSCOhost, and Web of Science databases. Bacteria of interest include *Porphyromonas gingivalis* (*P. gingivalis*), *Tannerella forsythia* (*T. forsythia*), *Treponema denticola* (*T. denticola*), *Prevotella intermedia* (*P. intermedia*), *Fusobacterium nucleatum* (*F. nucleatum*), *Aggregatibacter actinomycetemcomitans* (*Aa*), *Campylobacter rectus* (*C. rectus*), *Eubacterium nodatum* (*E. nodatum*), *Parvimonas micra* (*P. micra*) and *Filifactor alocis* (*F. alocis*). **Results:** Several virulence factors have been found to be involved in the inflammatory response, immune-modulation, motility, adhesion, colonization, biofilm formation, survival, nutrient acquisition, protein translocation, invasion, and tissue destruction. To date, evidence suggests *P. gingivalis* peptidylarginine deiminase (PPAD) and Leukotoxin A (LtxA) of *Aa* are associated with RA. However, the mechanistic link between them still requires further investigation. **Conclusion:** The proteomic study could help us in understanding the bacterial involvement in the pathogenesis of periodontitis at a multifaceted molecular level. With molecular pathways and interactions unveiled to researchers, a more targeted periodontal therapy such as protein interaction inhibitor can then be developed. This periodontal therapy could also possibly help indirectly improve the management of RA.

Keywords: Periodontitis, Bacteria, Rheumatoid Arthritis, Proteomes, Virulence Factors

Assessment of Digital Literacy Among Malaysian Dental Students

Amirul FL^{1,2}, Nawwal AMR¹, Budi AMS¹

¹ Centre of Population Oral Health and Clinical Prevention Studies, Faculty of Dentistry,
Universiti Teknologi MARA

² Discipline of Dental Public Health, Department of Family Oral Health, Faculty of Dentistry,
Universiti Kebangsaan Malaysia
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Introduction: The greatest challenge in dental education is the need to consistently adapt and adjust to the advancement of digital dentistry and its application in dental practice. Thus, the scarcity of evidence on digital literacy (DL) levels among Malaysian dental students must be addressed to identify areas in dental education that need improvement. **Objectives:** To assess the level of DL skills and its association with sociodemographic factors among Malaysian dental students. **Methods:** Online self-administered questionnaires were distributed to 668 Malaysian dental students that have been proportionately sampled. A total of 501 (75%) dental students from 11 dental schools completed the validated questionnaire. The mean score of the DL skills level was analysed with the p-value set at 0.05. **Results:** The majority of Malaysian dental students reported high skills level in uploading documents online (95.21%), sending and receiving e-mails (94.61%), and using different social media platforms (92.41%). Parametric tests of ANOVA and Independent t-test revealed no association between sociodemographic factors and the level of DL skills. Overall, the mean score of the dental students' DL skills level was categorised to be in a moderate range (DL [Moderate] = 29.01 – 32.99) with 31.13 (SD ± 4.95). In addition, after adjusting the relevant confounders, multiple linear regression predicted that dental students from public dental school positively influences the level of DL skills. However, it is predicted that if the respondent is from a private university, the level of DL skills is decreased ($p=0.026$). **Conclusion:** Current dental education and training need to prioritize efforts that increase the levels of DL among undergraduates. This data presents an opportunity for the policymaker and educators to modify the current educational method to advance student's current learning method.

Keywords: Digital Literacy, Dental Students, Malaysia

Evaluation and Comparison of Mechanical Properties of Lithium Disilicate-Based CAD/CAM Blocks

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Introduction: The variations of IPS emax CAD were utilised for construction of dental prosthesis ever since its patent expired in 2015. However, data and studies concerning mechanical properties of these recent lithium disilicate-based CAD/CAM are scarce and it warrants for an investigation to provide scientific evidence to support its routine use. **Objective:** To investigate and compare the mechanical properties of lithium disilicate-based CAD/CAM blocks from four different brands. **Methods:** Four CAD/CAM lithium disilicate brands were investigated; IPS emax, Mazic Claro, Cameo, and Tessera. Specimens ($n = 10$) were cut and final crystallization was performed following manufacturer's instructions. Specimens were polished until the final dimensions for flexural strength ($16 \times 4 \times 1.2$ mm) and microhardness test ($15 \times 13 \times 2$ mm) were achieved. One specimen from each brand was analysed for the microstructure, elemental composition and distribution before and after heat treatment using scanning electron microscope and energy dispersive x-ray spectroscopy. The three-point flexural strength test ($n=10$) was performed using universal testing machine and microhardness test ($n=10$) was performed using Vickers microhardness testing machine. Data were analysed using one-way ANOVA and Dunnett's T3 test. **Results:** The highest mean flexural strength was from Group 4 Tessera (540.52 ± 143.33 MPa). For microhardness, the highest mean was from Group 1 Mazic Claro (667.70 ± 9.41 HV). Within the four groups, statistically significant difference is noted for flexural strength ($p=0.001$) and microhardness ($p<0.001$). **Conclusion:** Tessera demonstrated significantly higher flexural strength than IPS emax and Cameo. Mazic and Tessera demonstrated significantly higher microhardness than IPS emax and Cameo. There was a difference in the crystal size after the heat treatment of all four lithium disilicate CAD/CAM blocks. All the materials tested were above the threshold of 300 MPa, thus they meet the ISO 6872:2015 requirements for construction of Class 3 restorations.

Keywords: Lithium Disilicate, CAD/CAM, Flexural Strength, Microhardness, Microstructure

A Narrative Review on The In-vitro Performance of All-ceramic Resin Bonded Bridges

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Introduction: Resin-bonded bridge (RBB) is a minimally invasive restorative method for replacing a single missing anterior or posterior tooth. Currently the success and longevity of RBB are mainly reported through clinical studies with limited finite element analysis (FEA) and in-vitro studies. The two later studies are very important as a reference for future work and to investigate different parameters and dimension prior clinical studies. **Objective:** This narrative review aims to critically examine the existing literature for FEA and in-vitro studies in the field of all ceramic resin-bonded bridges. **Methods:** A literature search was conducted using the Web of Science, PubMed, and Scopus for in-vitro and FEA studies on anterior resin-bonded bridges. The search terms used alone or in combination were in-vitro AND cantilever bridge, finite element AND cantilever bridge, resin-bonded bridges, fixed dental prosthesis NOT implant AND resin bonded, cantilevered resin-bonded bridges. Studies included literature published before July 2022. The results were then reviewed and limited to FEA and in-vitro studies published in English and prostheses made or simulated with all-ceramic materials. **Results:** From the search, 18 articles were found: 4 FEA and 14 in-vitro studies. From the FEA studies, model simulation and loading conditions were investigated to allow for findings comparison. 3 studies had similar methodology producing similar findings and outcome. For the 14 in-vitro studies, observation was done on the methodology of testing method, tooth type used, and loading conditions. Majority of the studies were testing on fracture resistance with static loading of 45-degree angulation on extracted human tooth. However, major differences were noted on parameters tested in the studies. **Conclusion:** This narrative review has found that there are limited number of studies done both using FEA or in-vitro testing on anterior resin-bonded bridges with no ideal model or standardization on testing can be concluded.

Keywords: In-vitro, Finite Elemental Analysis, Fixed Dental Prosthesis, Resin-bonded Bridges

Effectiveness of Dental Plaque Removal of Selected Eco-Friendly Toothbrush Bristles vs Nylon Bristles – In-Vitro Study

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Introduction: Plastic products have always been in high demand, and it has a significant influence on the consumer economy. However, the rise in plastic pollution due to high consumption is very worrying. Unfortunately, the use of modern toothbrushes with nylon bristles and plastic handles contributes to pollution. Replacing the conventional nylon bristles toothbrush with an eco-friendly toothbrush has the potential in reducing its impact on pollution. The effectiveness of eco-friendly bristles in eliminating plaque is crucial to be examined since the bristles are the most critical portion of the toothbrush in the mechanical removal of plaque. **Objective:** To investigate the efficacy of selected eco-friendly toothbrush bristles in plaque removal. **Methods:** Three types of toothbrushes with different bristles were chosen and divided into three respective groups (n=15); Group 1: Conventional nylon bristles, Jordan Clean Smile (Control group), Group 2: Bio-based bristles toothbrush, Jordan Green Clean, Group 3: Miswak bristles, Al-Abyad Miswak Toothbrush. The artificial plaque (Arti spray) was sprayed on the upper anterior teeth and lower left posterior teeth segment of the dental Kavo model. Toothbrushing simulation was done by a volunteer for 30 seconds per segment with horizontal brushing motion. After brushing, the remaining plaque index was evaluated with Turesky modification of the Quigley Hein plaque index. Statistical analysis was performed using One Way ANOVA. **Results:** Group 3 showed the lowest mean plaque index (MPI) after the toothbrushing simulation (1.55 ± 0.29). The difference in MPI was statistically significant ($p < 0.05$; $p = 0.003$) between Group 1 and 3, where the latter group has more plaque removed after the toothbrushing simulation. **Conclusion:** Eco-friendly toothbrush bristles have the potential to replace conventional nylon bristles as shown by their efficacy in mechanically removing plaque substrates from the tooth surfaces.

Keywords: Eco-Friendly Toothbrush, Dental Plaque, Laboratory Study, Artificial Plaque, Manual Toothbrushing

Dental E-Professionalism and Ethics in Social Media in Malaysia

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Introduction: E-professionalism is a subset of professionalism described as applying conventional professionalism concepts to online activities. The concept of e-professionalism is nested in the ethics of healthcare. Dentists as professionals still need to adhere to the principle of ethics while using social media. **Objectives:** To assess the knowledge, attitude, practice and perception of dental e-professionalism and ethics in social media among dentists in Malaysia. **Methods:** An online structured questionnaire-based, cross-sectional study was administered to 482 registered dentists and specialists in Malaysia. The study population was selected using stratified random sampling. **Results:** The response rate of the study participants was 70.5% (n=340). Knowledge of dental e-professionalism and ethics was found to be significantly associated with age, working experience and university graduates ($p < 0.05$). Significant association were also found between perception and working experiences, females and local university graduates, with higher mean scores ($p < 0.05$). **Conclusions:** Participants in this study had a good understanding of e-professionalism and ethics that govern dentists' conduct on social media. However, a minority of the participants in the research lacked sufficient knowledge and practice of ethics. Integrating moral principles into dental practice in social media is crucial. In order to advance toward good ethical behaviour in dentistry, it is necessary to offer the dental profession the necessary training approaches or conducive guidelines.

Keywords: Social Media, E-professionalism, Ethics, Dentistry

Analysis of Health Profile and Treatment Provided in Patients with Special Health Care Needs - An Institutional Study

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Introduction: Special Care Dentistry (SCD) provides oral health care to the person who are disabled by their environmental, cultural, or social setting that echoes on their oral health. **Objective:** This study aims to analyse patient's profile managed at a Special Care Dentistry Clinic at a teaching hospital based on the sociodemographic background, medical or disability condition, dental diagnosis and treatment provided. **Method:** It is a cross-sectional audit study includes patients seen from the inception of the clinic until June 2022 from the faculty's record management system. The pattern of patients seen arranged on an Excel sheet and analysed using SPSS. **Results:** There is an increase in number of patients seen since 2017 until June 2022 by 220%. Majority of patient seen are diagnosed with intellectual disability (46.2%), followed by medically compromised (15.1%) and patients with genetic condition or syndromic (12.0%). Meanwhile, the combination of periodontal and restorative treatments has the highest percentage (20.1%). 42.7% patients presented with caries and 31.6% of patients are diagnosed with periodontal disease. **Conclusion:** This study provides information on the type of patients seen in SCD specialist clinic according to their health profile, oral diagnosis and treatment provided hence providing valuable information in cultivating a comprehensive care dental centre for this group.

Keywords: Special Care Dentistry, Special Health Care Needs, Disability

Development and Validation of the Index for Prosthodontic Treatment Needs (IPTN) in Adults: A Pilot Study

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Introduction: The literature suggests a high prevalence of prosthodontic treatment needs yet little is known from the dental patients' perspective and there is still a lack of valid and reliable instrument to assess them in the adult population. **Objectives:** This study described the development of a novel instrument that assess the prosthodontic treatment needs in adults termed the Index of Prosthodontic Treatment Needs (IPTN) and its implementation in a prospective pilot study. **Methods:** Following a review of the literature, consultation with health care providers and semi-structured qualitative interview with patients, a pilot instrument was developed. The IPTN consisted of 15 questions and a self-rated need for prosthodontic treatments, categorized in a Likert scale with 5 categories of choice per question. Face validation for the IPTN was done by the researcher (SML) with an initial group of 5 patients. A self-administered IPTN questionnaire was then pilot tested on a convenience sample of 15 adults and a test-retest carried out 2-6 weeks later to perform reliability and validity analysis using SPSS v25. **Results:** The IPTN demonstrated a high level of internal consistency and reliability as measured by a Cronbach's alpha of 0.92. The average measure intraclass coefficient (ICC) was also 0.92 with a 95% confidence interval from 0.84 to 0.97, $F(14, 210) = 11.97, p < 0.001$. A higher IPTN score indicated a greater need for prosthodontic treatments. **Conclusions:** The results suggest that the proposed instrument, termed the Index of Prosthodontic Treatment Needs (IPTN), is reliable and might be a promising tool for further research and clinical application in prosthodontics. Additional application of the IPTN among the Malaysian adult population is necessary to further evaluate the instrument's validity and reliability, and to establish population norms of prosthodontic treatment needs as measured by the IPTN.

Keywords: Prosthodontic Treatment Needs, Index, Patient-Reported Outcome Measures, Questionnaire, Restorative Dentistry

The Effects of Concentrated Growth Factor (CGF) on the Augmentation of Bone Regeneration: A Systematic Review of Animal studies

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Objectives: The biocompatibility of autologous platelet concentrates as well as the high growth factor that promotes tissue healing have made them widely tested *in vitro* and *in vivo*. Therefore, this review aims to evaluate the effects of concentrated growth factor (CGF) on bone regeneration in animal studies. **Methods:** A literature search was conducted on PubMed, Scopus and Web of Sciences from inception up to June 2022 for relevant studies. Studies utilizing diagnostic imaging modalities to assess quantitative bone formation were selected without language limitations or follow-up duration restrictions. **Results:** A total of 13 studies were selected from 253 studies that were identified and screened from databases, eight of which examined critical-size calvaria defects, two examined peri-implant defects, and one examined extraction sockets, maxillary sinus floor augmentation, and mandibular defects separately. The total amount of mineralized bone was greater in CGF groups compared to unfilled groups in rats and rabbits with surgically induced calvaria defects. The amount of newly formed bone was significantly increased when CGF was combined with bone marrow-derived mesenchymal stem cells (BMSC), adipose-derived stem cell (ADSC) sheets, bone collagen, and nano-hydroxyapatite (n-HA) hybrid scaffolds. The combined use of CGF and autogenous bone grafts produced similar results in the treatment of peri-implant deficiencies. Mandibular anterior teeth extraction sockets were also effectively regenerated with CGF. In beagle dogs, the combination of Bio-Oss® with CGFs also promoted new bone regeneration more efficiently than Bio-Oss® alone in maxillary sinus augmentation procedure. A micro-CT analysis of the surgically created mandibular defect revealed that the Nano-hydroxyapatite/collagen (nHAC) combined CGF group had better new bone regeneration than nHAC alone. **Conclusion:** CGF may act as potential booster bone regeneration. In addition, it was evidenced that the combination of CGF with different types of scaffolds may also enhance bone regeneration.

Keywords: Concentrated Growth Factor; Bone Regeneration; Regenerative Therapy

Strategies to Reduce Sugar Intake in Adults: A Systematic Review

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Introduction: Sugar is a risk factor for many non-communicable diseases, including dental diseases. It is essential to develop effective interventions to reduce sugar intake among adults to prevent dental caries in Malaysia. **Objective:** To identify various interventions used in health promotion among adults in reducing sugar intake and their impact on the amount or frequency of sugar intake or behaviour change towards that action. **Methods:** The search involves articles published from 2000 to June 2022 using four databases (MEDLINE, PubMed, EMBASE and Web of Science). All human experimental and observational studies involving participants aged 18 years and above were included. The interventions included health promotions globally. No restriction on settings, sex, or follow-up period. The outcome was reported on sugar intake or the changes in sugar reduction behaviour. Two reviewers independently assessed the study's methodological quality using the risk of bias 2 tools and MMAT for cross-sectional studies. **Results:** In this review, four RCTs and two cross-sectional studies with 1763 participants were included. Most studies were judged with an overall low risk of bias and raised some concerns. Interventions were varied, adopting behavioural approaches such as motivational interviewing in delivering knowledge either face- to-face or technology-mediated approaches. **Conclusions:** There is enough evidence to merge the traditional way of health promotion by giving knowledge only to combine with various techniques of behaviour change either by technology or face-to-face. The need for a well-designed and adequately powered intervention is essential to determine the best intervention to reduce sugar intake among adults.

Keyword: Adults, Sugar Intake, Face-to-face, Technology-mediated, Intervention

Self-Perceived Orthodontic Need and Perception Towards Fake Braces Among University Students in Malaysia

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Introduction: Fake braces are fitted by unqualified individuals without formal dental training targeted to young adults. This illegal practice is becoming a major concern in Malaysia. **Objective:** This study aimed to explore self-perceived orthodontic need and perceptions towards fake braces among university students in Malaysia. **Methods:** A cross sectional study using self-administered questionnaire was distributed via Google Form to university students located in the East-Coast, South and Central of Malaysia. The data were analysed descriptively using SPSS. **Results:** In total, 246 participants completed the questionnaire. Majority of them were female (68.3%) with a mean age of 21.74 (SD: ±1.08). More than half were Malay (56.1%) followed by Chinese (30.5%), Indian (8.5%) and other ethnicities (4.9%). Only 44.3% of them were satisfied with their teeth appearance with 15.4% perceived they definitely need orthodontic treatment. Another 58.1% perceived they most probably needed orthodontic treatment. About 6.5% admitted have had experience wearing fake braces. Similar proportions of fake braces were observed among Malay and Chinese students, and there was no significant difference in terms of gender. Participants also reported having friends (27.6%) and family members (6.1%) wearing fake braces. Meanwhile one third (33.7%) of them had searched for information about fake braces. Most of them agreed barriers towards orthodontic treatment include long waiting lists in government clinics (67.1%) and expensive treatment fees in private dental clinics (56.5%). Only a small proportion (8.1%) agreed with the benefit of fake braces in improving alignment of teeth, while the majority (67.5%) of them believe the risks of wearing fake braces were greater. **Conclusions:** There are mixed perceptions towards fake braces among Malaysian university students, with a minority favouring fake braces treatment. Thus, there is a need for continuous oral health promotion to deter young adults from seeking fake braces.

Keywords: Fake Braces, Illegal Dentistry, Illegal Orthodontics, Perceptions, Young Adults

Social Media Compliance of Dental Clinics on Instagram

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Introduction: Instagram has quickly become an alternative method for dental clinics to advertise their services. Information disseminated to the public via social media, however, are governed by guidelines set by the Malaysian Dental Council (MDC). **Objective:** This study aimed to investigate Instagram posts of dental practices in Malaysia and their compliance with MDC guidelines. **Methods:** This was a cross-sectional analysis of Instagram posts by private dental clinics in Malaysia. Instagram accounts were identified using the keywords 'dental clinic', '*klinik pergigian*', 'dentist' and '*doktor gigi*'. Data was extracted from posts uploaded over a six-month period between 1st October 2021 and 1st April 2022. Information available, frequency of posts and type of posts were recorded. Each post was then categorised as being compliant or non-compliant with the Code of Professional Conduct (2008) and the 3rd edition of Public Information Guidelines set by the MDC, using an assessment framework. Data was tabulated in Google sheets to generate descriptive statistics with frequency tables. **Results:** In total, 95 Instagram accounts were analysed. More than two thirds of the accounts had information regarding the clinic's address, contact number and email. Only two accounts provided information on the dentist's qualification. Frequency of posts were mainly irregular (56%), with only 16% of pages actively posting more than once a week, with seven clinics reaching more than 10,000 followers. A total of 3876 posts were analysed over the six months period. Types of posts were mainly advertisements (49%) and sharing of clinical photos (20%). 17% of posts were non-compliant with MDC guidelines, mainly due to elements of soliciting patients (72%) and for recommending specific products (27%). **Conclusions:** This study concluded that majority of dental clinics are posting advertisements or clinical photos on their social media pages and not all posts are compliant with MDC guidelines.

Keywords: Malaysian Dental Council, Guidelines, Advertising, Professionalism

Differences In Salivary Proteome In Relation To Age

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Introduction: Saliva contains a vast array of proteins with important biological functions for oral health. Physiological and biochemical changes occur with ageing. This may result in modifications to the proteome profile of saliva. Utilizing comparative proteomics, these distinctions can be studied and identified. **Objective:** The purpose of this study was to compare and identify changes in unstimulated whole salivary protein levels between two age groups of female participants (n=3) (20–30 years old vs 50–60 years old). **Methods:** Sixty micrograms of salivary proteins were separated by 2-DE over the pH range of 3 to 10. The protein spots were identified using matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF-MS). Using Student's T- test, the quantitative differences between the proteome profiles were analysed (using the Image master software). **Results:** More than 200 protein spots with high resolution were detected. A total of 37 protein spots with at least a two-fold difference in abundance were identified. Only four protein spots were found in the older group ($p < 0.05$). In the older group, the abundance of 22 proteins increased while the abundance of 2 proteins decreased ($p < 0.05$). Energy metabolic enzymes comprised the largest group of proteins with increased abundance, followed by structural proteins, ligand-binding proteins, and acute phase proteins. **Conclusion:** In conclusion, differences were detected between the proteomes of these two age groups. These findings may contribute to a better understanding of the ageing process in humans.

Keywords: Proteomics, Saliva, Young, Old

Salivary And Urinary Nickel Level Post Orthodontic Fixed Appliance Treatment

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Introduction: Nickel is a metallic element widely used in dentistry and orthodontic materials. Prolonged nickel exposure, even in low amount, is cytotoxic, genotoxic and carcinogenic. Previous studies focused on the nickel level before and during orthodontic treatment changes. However, there are insufficient reports on the nickel level post orthodontic treatment. **Objective:** This study aims to evaluate the salivary and urinary nickel level post orthodontic fixed appliance treatment. **Methods:** Saliva and urine samples of fourteen orthodontic patients were taken at debonding (T0), after one month (T1), and three months post-debonding (T2), and compared with control group. Samples were analysed using Inductively Coupled Plasma Optical Mass Spectrometry (ICP-MS) and IBM SPSS Version 27 was used for statistical analyses. The repeated measures Analysis of Variance (ANOVA) test was performed to compare mean salivary and urinary nickel levels between two groups based on different time points. **Results:** The mean (SD) of orthodontic treatment duration was 33.6 (9.6) months. In comparison to the control group, the mean (SD) nickel levels in saliva and urine were highest at debonding (T0) with 12.71 ppb (9.64) and 9.71 ppb (8.27), respectively. In the test group, there was a significant difference of nickel level in saliva between T0 and T1 (MD = 9.75, 95% CI: 3.71, 15.71; $p < 0.05$) and in urine between T0 and T1 (MD = 6.46, 95% CI: 1.38, 11.55; $p = 0.012$). **Conclusion:** The results demonstrated that the nickel level in saliva and urine remained higher at the end of orthodontic treatment compared to the control group. Further studies with a longer duration of observation and larger samples are essential to substantiate these results.

Keywords: Nickel Level, Orthodontic Treatment, Fixed Appliance

Senior Oral Category

Sexual Dimorphism of Cusp and Crown Area of Maxillary Posterior Teeth in Malay Population

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Introduction: Studies have been conducted for sexual dimorphism in the Malay population on tooth size using linear measurement methods while there is a lack of data for 2D cusp and crown area measurement. **Objectives:** To compare the cusp area and crown area of maxillary first premolar, second premolar and first molar between male and female Malay population.

Methods: Maxillary posterior teeth of 168 dental casts (84 male and 84 female) were selected for scanning. Inclusion criteria was Malay origin, completely erupted teeth, and teeth with clearly demarcated groove pattern for marking the cusp and crown area outline. Exclusion criteria were maxillary second and third molar, a tooth with any anomaly or trauma obscuring the tooth occlusal morphology, restored tooth, damaged casts, and any distorted scanned digital cast. Measurement for cusp area and the crown area was performed on the selected dental casts using 2D-Hirox KH-7700. Data were analyzed using independent t-test. The significance level was set at 0.05. **Results:** Measurements of all the crown and cusp areas were statistically significantly larger in males than in females ($p < 0.001$). The most sexually dimorphic tooth was maxillary first molar (Mean difference 11.45mm^2), while the most sexually dimorphic cusp was the Protocone cusp (Mean difference 3.71mm^2) of maxillary first molar. **Conclusion:** Maxillary posterior teeth in Malay population exhibit significant sexual dimorphism, thus may be used for sex determination along with other procedures.

Keywords: Cusp Area, Crown Area, Maxillary Teeth, 2D, Sexual Dimorphism

Career Expectations and Satisfactions among Malaysian Dentists with Expanded Roles at Government Dental Specialist Clinic

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Introduction: Public dentists in Malaysia undergoing attachment at the Ministry of Health (MOH) Dental Specialist Clinic (DSC) hold enhanced skills that enable them to treat cases of intermediate complexity. Public dentists interested in pursuing post-graduate studies for career advancement were required to complete a period of clinical attachment at selected MOH DSCs. **Objectives:** This cross-sectional study aimed to explore dentists' expanded roles, career expectations and satisfactions at the MOH DSC. **Methods:** A total of 208 dentists from DSC nationwide completed an online questionnaire in June 2022. Demographic data and information on dentists' expanded roles were retrieved. Responses on dentists' career expectations and satisfaction were collected using a 5-point ordinal scale. Associations between sociodemographic and other variables were determined using the chi square, independent t-test and ANOVA ($p < 0.05$). **Results:** The mean age of the respondents was 32.68 ± 2.48 . Almost half (49%) of the respondents were attached to a non-hospital-based clinic. 71% of the dentist was permanently attached at the DSC, while 21% were attached temporarily at the DSC. Permanently-attached dentists had significantly higher career expectations mean scores of 24.5 ± 5 compared to partially-attached dentists (27.2 ± 7) ($p = 0.004$). Dentists attached at a non-hospital-based clinic ($p=0.046$), working with more than 15 years of experience ($p=0.013$) and 12-18 months of attachment ($p=0.014$), had higher career satisfaction. Multiple logistics regression analysis revealed that non-Malay (OR=1.54; $p=0.035$) and those who applied for scholarships more than three times (OR=1.85; $p=0.050$) had a higher satisfaction level. In contrast, the duration of attachment at DSC of more than 19 months contributed to a lower career satisfaction level (OR=0.44; $p=0.029$). **Conclusion:** Dentists at DSC, MOH demonstrated diverse career expectations and satisfaction levels despite working under a similar organizational structure. Dentists' ethnicity, duration of attachment, workplace and frequency of applying for scholarships influenced their career expectations and satisfaction.

Keywords: Expanded Roles, Career Expectations, Satisfaction

Physiological Variations of Children with Neurodevelopmental Disorders in The Application of Passive Immobilization During Dental Treatment

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Introduction: Passive immobilization is regarded to cause physical distress and intense anxiety manifestations in children during dental treatment. **Objective:** The study aims to investigate the physiological variations of heart rate, blood pressure, and oxygen saturation level for children with neurodevelopmental disorders while using a papoose board, and a combination of Tell-Show-Do, Distraction, and Positive reinforcement techniques during dental treatment. **Methods:** This is a crossover trial that involved 90 children with known neurodevelopmental disorders receiving standard dental care with two methods of behaviour guidance sequentially in which the exposure is randomised. Exposure A is a combination of basic behaviour guidance while exposure B is passive immobilization with papoose board. The subject child's blood pressure, heart rate, and oxygen saturation level were measured at four different times when receiving either dental prophylaxis or restorative treatment using slow-speed rotary handpiece. Seventy-four children's physiological data were successfully collected during the study protocol. **Results:** The mean age of the children was 9.85 years (SD= 2.71). 64.9% of the children diagnosed with Autism Spectrum Disorder, 9.5% Attention Deficit Hyperactivity Disorder, 8.1 % Down syndrome, 2.2% Global Developmental Delay, Dyslexia 1.1%, and Cerebral Palsy with Intellectual Disorder 1.1%. The measurement of children's blood pressure, heart rate, and oxygen saturation level on the application of papoose board or combination of the basic behaviour guidance revealed no significant changes ($P>0.05$). **Conclusion:** The use of papoose board is safe and has no discernible influence on the child's physiological responses. This study offered physiological evidence that the full-body passive immobilization technique can be considered reliable and applicable in paediatric dentistry, particularly among children with neurodevelopmental disorders population.

Keyword: Passive Immobilization, Physiological Response, Children, Neurodevelopmental Disorders

Type 1 Diabetes Mellitus (T1DM) Patients' Awareness of Periodontal Diseases and Their Bidirectional Association

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Introduction: One of the most common oral diseases in individuals with T1DM is periodontal disease. An adequate self-perception of periodontal status could contribute to its prevention. **Objective:** The study aimed to evaluate diabetic patients' self-perception of their periodontal health and the bidirectional association between periodontal disease and diabetes mellitus. **Methods:** A 130 of children and adolescents, aged 18 years and below who were diagnosed with T1DM from the Faculty of Medicine Universiti Teknologi MARA and the University of Malaya were invited to participate in the study. **Results:** A total of 113 completed the questionnaire and 104 were able to be examined for basic periodontal examination. The median age of participants was 11.4 ± 4 , 56(49.6%) were females and 57(50.4%) males. 91(83.5%) participants rated their oral condition as good, and 30(27.5 %) participants reported they had gingival bleeding. Clinical examination revealed that 55(48.7 %) had a healthy gingiva whereas 54(47.8%) were found to have gingivitis. The question "Do you have the following symptom: Bleeding when brushing, flossing, or eating food?" had good accuracy in the evaluation of periodontal disease ($p < 0.001$). **Conclusion:** The results presented here indicate that this instrument has a high probability of identifying individuals with a history of oral diseases who are at greater risk for future disease and in need of an oral examination. This would allow a non-dental healthcare provider to confidently suggest a dental visit and make the needed referral.

Keywords: Periodontal Disease, Type 1 Diabetes Mellitus, Self-perception

Quantitative Measurement of Enamel Loss After Repeated Etching and Attenuation Coefficient of Resin Infiltration

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Introduction: Resin infiltration is one of the materials used for management of demineralized enamel. The maximum application of resin infiltration recommended by the manufacturer is three cycles, but many clinicians exceeded this number to obtain a better aesthetic result. This followed by two applications of resin infiltration to minimize the shrinkage and improve the resin penetration into the demineralized enamel. The changes in the attenuation coefficient measured using optical coherence tomography (OCT) represents the optical penetration depth of resin infiltration. **Objectives:** This study aims to investigate the incremental and total enamel loss following multiple etching cycles using 15% hydrochloric acid (HCl) and compare the attenuation coefficient of resin infiltration placed after each etching cycle protocol. **Methods:** Artificial demineralization was prepared on the buccal surface of 27 sound extracted premolars. The teeth were divided into 9 groups (n=3); with each consecutive group having an additional etching cycle up, to 9 cycles. The teeth were scanned with OCT and enamel loss was measured with MATLAB software. Two cycles of resin infiltration applied with the first cycle (Resin 1) applied for 3 minutes followed by Resin 2 for 1 minute. One-way ANOVA used to compare the incremental and total enamel loss. **Results:** No significant difference observed in incremental loss between groups (p=0.524). Etching with 15% HCl for 2 minutes results in loss of enamel $60.64 \pm 59.15 \mu\text{m}$ for each cycle up to 9 applications. There was significant difference in total enamel loss between 8th (p=0.028) and 9th (p=0.04) etching cycles as compared to 3 cycles. There was no significant difference between attenuation coefficient of the resin placed for each etching cycle (p=0.633). **Conclusion:** Repeated etching cycles results in incremental enamel loss, with remarkable loss observed when applied for 7th cycles and more; however no substantial effects on the penetration depth of resin.

Keywords: Resin Infiltration, 15% Hydrochloric Acid, Enamel Loss, Attenuation Coefficient, Optical Coherent Tomography

Potential Haemostatic Activity From Locally Sourced *Camellia Sinensis Variety Assamica* Leaves Extract (CSALE)

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Introduction: The bioactive composition of *Camellia sinensis* (tea) has been advocated with potential haemostatic properties, highlighting opportunities for utilisation in dental and surgical fields. **Aim:** Fresh *Camellia sinensis var. assamica* (J.W.Mast.) Kitam tea leaves (green tea) were obtained from the Malaysian highlands for this study which aimed to identify the bioactive compounds of the partially-purified CSALE (*Camellia sinensis var. assamica* leaves extract) and its potential haemostatic activity. **Methodology:** In Vitro Study Phase One (IVSP1) employed three consecutive solid-liquid extractions using deionised water, calcium carbonate (CaCO₃), and diluted hydrochloric acid (1% HCl:0.16 mol) to produce CSALE 1, 2 and 3, respectively. Biomarker analysis was conducted using gas chromatography-mass spectrometry (GCMS) (Agilent Technologies, USA). Subsequently, the functional potentiality of the CSALEs in inducing haemostasis was tested in Phase Two (IVSP2) using coagulation time profiling. Fresh human venous blood was obtained and collected in 3.2% buffered sodium citrate solution tubes; coagulation was induced by adding 500µL of 0.1M calcium chloride (CaCl₂), and adsorption of plasma proteins from the CSALE-coated gauze samples (0.5cm x 0.5cm) was determined by measuring the absorbance at 540nm using a microplate reader, Thermo Scientific™ SkanIt™ Software. **Results:** GCMS analysis revealed that caffeine was the major biochemical compound based on 90% similarity match against mass fragmentation patterns of the National Institute of Standard Mass Spectral 11 library (NIST11). The mean absorbance percentage escalated throughout the incubation period; 26.3%, 40.2%, 48.2% implying that the blood incubated by the CSALE 1-coated gauze validated the thrombogenicity (haemostatic activity) in comparison to other extracts. **Conclusion:** Results from this study clearly exhibit that Malaysian *Camellia sinensis variety assamica* leaves extract has the potential application as a non-chemical haemostatic agent. Subsequent to the in vitro study, an animal study will be conducted to represent the in vivo effectiveness of our research intervention (CSALE).

Keywords: Tea Leaves, Chemical Composition, Coagulation Test, Oral Surgery

The Effect of Microinvasive Treatment on Enamel Surface of White Spot Lesions (WSL)

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Introduction: Microabrasion and resin infiltration are known as microinvasive treatments. They are known for their ability to reverse white spot lesions (WSLs). However, little is known about the surface roughness changes post intervention between microabrasion and resin infiltration. **Objective:** The aim was to investigate surface roughness changes post microabrasion and resin infiltration. **Methods:** Forty-five extracted premolars were selected, and artificial caries induction was done. Subsequently, the samples were randomly distributed into three groups Group 1 (control), Group 2 (microabrasion), and Group 3 (resin infiltration). Baseline data of surface roughness values was obtained using 3D optical (non-contact) profilometry Alicona Infinite Focus Metrology G4. Post treatments surface roughness evaluations were collected. Subsequently, all groups were immersed in SAGF artificial saliva for 7, 14, and 21 days. The surface roughness changes between groups were recorded on day 7, day 14, and day 21. Repeated measured ANOVA was used to analyse the surface roughness changes of all groups at different time points. **Results:** The reduction of surface roughness was significant as compared to post demineralisation in Group 2 and Group 3. A pairwise comparison carried out to compare the surface roughness changes post intervention and there was statistically significant difference between Group 1 against Group 2 and Group 3. During subsequent artificial saliva immersion, there was statistically surface roughness reduction on all groups at day 14 and day 21. **Conclusion:** Both microinvasive treatment was able to improve the surface roughness of WSLs. The action of artificial saliva for 21 days was able to recover the surface roughness of microabraded WSLs.

Keywords: White Spot Lesions, Microabrasion, Resin Infiltration, Surface Roughness Changes

Evaluation of Interfacial Adaptation and Penetration of Bioceramic-based Sealers in Oval Root Canals

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Objective: To assess the interfacial adaptation and penetration depth of three different bioceramic based sealers (CeraSeal, EndoSeal MTA, Nishika Canal Sealer BG) compared to an epoxy resinbased sealer (AH Plus) in oval root canals. **Methods:** Fourty extracted single-rooted mandibular premolar with oval canal were prepared and randomly allocated according to the obturation into; CeraSeal, EndoSeal MTA, Nishika Canal Sealer BG and AH Plus. The roots were sectioned at 3, 6 and 9 mm. The sealer adaptation and the penetration depth were evaluated under confocal laser scanning microscope. One-way ANOVA and Repeated measure ANOVA were used to statistically analyse the data. **Results:** Nishika Canal Sealer BG showed significantly higher sealer adaptation than EndoSeal MTA ($P < 0.001$) at apical and middle thirds. Meanwhile, AH Plus showed significantly higher sealer adaptation than EndoSeal MTA ($P = 0.011$) at middle third. For sealer penetration, Nishika Canal Sealer BG showed the longest sealer penetration that was significant compared to AH Plus ($P < 0.001$) and EndoSeal MTA ($P < 0.001$) while CeraSeal was significantly higher than EndoSeal MTA ($P = 0.029$) at coronal third. For AH Plus, there was a significant less sealer penetration at coronal third compared to apical and middle thirds ($P < 0.05$). Whereas for EndoSeal MTA, the coronal third has significant less penetration compared to the middle third ($P = 0.032$). **Conclusion:** Endoseal has the lowest adaptation and sealer penetration depth. Nishika Canal Sealer BG has better adaptation and penetration depth using single cone obturation technique in oval canal.

Keywords: Adaptation, Bioceramic, Penetration, Sealers, Single Cone

Colour Stability and Surface Roughness of Resin Infiltrated Teeth Subjected to Staining Solutions and Toothbrushing

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Introduction: White spot lesion (WSL) is an early carious lesion on the enamel when the teeth are dried or moist. In improving the aesthetic of the WSL, resin infiltration (ICON®) has been shown to have a masking effect. Resin infiltrated teeth will be subjected to daily toothbrushing challenges and staining beverages; hence good colour stability is important to ensure the aesthetic outcome would not be compromised. **Objective:** The aim of this study is to evaluate the colour stability (ΔE) and surface roughness (Sa) of ICON® in the treatment of WSL when immersed in staining solutions and subjected to toothbrushing. **Methods:** Artificial enamel subsurface lesions were induced using acetate buffer solution on extracted sound human central incisor (N=48). Specimens were then infiltrated with ICON® and randomly assigned into 6 groups (n=8), 1: non-brushing+distilled water, 2: nonbrushing+coffee, 3: non-brushing+turmeric, 4: brushing+distilled water, 5: brushing+coffee, and 6: brushing+turmeric. Focus variation microscopy (Alicona) and spectrophotometer (CM5, Konica Minolta) were used to measure baseline data for the surface roughness and colour values (CIE L*a*b*). The specimens were then infused in the staining solution (distilled water, coffee, or turmeric solution) for 15 minutes, three times daily and brushed twice daily according to the group. The colour values, ΔE and Sa were remeasured after 14 days. Two-way ANOVA and Paired T-test were then used to analyse analyse ($p < 0.05$). **Results:** There is a significant difference in ΔE between each solution ($p < 0.05$) but no differences between brushing or non-brushing. Turmeric had the highest ΔE . No significant difference was found in Sa after 14 days in all groups except in Group 1. **Conclusion:** Resin infiltrated teeth present a significant colour alteration after infusion in staining solution with no difference when subjected to brushing. The surface roughness of resin infiltrated teeth does not differ after being subjected to staining and brushing challenges.

Keywords: ICON®, Staining, Surface Roughness, Toothbrushing

Patients' Perceptions of Virtual Smoking Cessation: A Qualitative Study

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Introduction: Among the clinical requirements for undergraduate (UG) dental students in the Faculty of Dentistry, Universiti Teknologi MARA (UiTM) is to deliver smoking cessation counselling to patients who smoke. As the institution was closed during the Movement Control Order (MCO) implementation, students were faced with delays in completing their tobacco cessation schedule. An alternative was to allow students to conduct virtual counselling (VC) for smoking cessation for their patients. **Objective:** This study explores the opinions and perceptions of the patients receiving smoking cessation counselling through virtual platforms. **Methods:** Semi-structured interviews among consented patients who completed three VC sessions for smoking cessation were conducted via phone or online, depending on the patient's preference. Uncontactable patients were excluded. Each interview session was recorded with the participants' permission. The recorded session was transcribed verbatim and thematically analysed using the qualitative data analysis software, Nvivo™. **Results:** Nine male smokers were interviewed with a mean age (standard deviation, SD) of 33.11 (10.41). Five themes have emerged which are: 1) Opinions on VC, 2) Patient-clinician relationship, 3) Provision of remote access, 4) Technical issues, 5) Positive changes after VC. **Conclusion:** VC has value in enabling remote access to counselling, but it is also subjected to some limitations, especially regarding human touch and internet problems. In the end, the behavioural change will depend on the patient's thrive in making a difference.

Keywords: Perception, Opinion, Interview, Virtual Counselling, Smoking Cessation

Geospatial Intelligence: Analysis of Oral Health Workforce Equity to The School Dental Services in Pahang

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Introduction: Equity in access to high-quality dental health care is essential for the improvement of several dental health outcomes. The optimal resource allocation in dental health care should guarantee that the majority of school student have access to equitable dental health care services when required. **Objectives:** This research focuses on the geographical component of school dental service (SDS) workforce in relation to workload for each school. This research aims to provide a deeper knowledge of the geographical imbalance affecting the distribution of SDS workforce in Pahang. **Methods:** Workforce and workload data for each corresponding school were obtained from Pahang State Health Department. Data on School location in Pahang and socioeconomic status were obtained from Population and Housing Census of Malaysia 2019. All information acquired were integrated and imported to ArcGIS Pro software for geospatial analysis. For statistical analysis, data were imported to SPSS software. **Results:** In Pahang, schools located in rural area 565 (77.4%) is 3 times higher than in urban area 165(22.6%). Primary schools accounted for 71.9% (n=525) from total number of schools while secondary school accounted for 28.1% (n=205). Operator to student ratio for the whole Pahang is 1:470. Out of 10% (n=72) school with high ratio of one operator to total students, 47 of it are located in Kuantan. Jerantut has the farthest distance from dental clinic to school. All dental clinics that provide dental care for schools are located more in the south area , Increasing distance to travel to the school situated far to the north of Jerantut. **Conclusion:** High ratio of one operator to total student distributed relative to urban area. High number of student resulting more students to treat per operator compare to schools located in rural area. The need to equally distribute SDS workforce based on workload is evident.

Key word: Workforce, School Dental Service, ArcGis Pro

HLA Related Genetic Propensity for Manifestation of Oral Submucous Fibrosis among Indians

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Introduction: Oral Sub-Mucous Fibrosis (OSMF) is a pre malignant condition that alters the fibro elasticity of oral submucosa and is predominantly confined to South East Asian region. Variability in clinical course is intriguing, a fraction of betel nut users develop OSMF (0.1-11%), while a majority show no signs and symptoms despite prolonged use. However, some severe forms are associated with very short history of tobacco use. Clear molecular mechanism involved in its pathogenesis still remains unexplored & this inconsistency in disease association can be indicative of genetic association, but specific role of any genes in defining its susceptibility remains largely unidentified. Investigating genetic predisposition to OSMF can potentially help characterize inter individual variations in immune responses and identify susceptibility/protective HLA alleles for OSMF. **Objectives:** To explore the profile of HLA class II antigens among OSMF patients to investigate HLA association with OSMF, its severity and progression. **Methods:** Total of 220 patients (with and without OSMF) were enrolled in the study, 110 patients in each group. The information on demographic details, type, frequency, and history of tobacco habit was recorded. Blood samples were collected and after DNA extraction and quality check, all samples were stored at -20o C for further use. HLA class II genotyping was performed using Next Generation Sequencing based protocol. Data was analyzed using sequencing software. **Results:** Mean age of the population was 42.23±11.98 years with almost equal number of OSMF patients in mild (36.7%), moderate (36.7%) and severe categories (26.7%). **Conclusions:** HLA genotyping was performed for HLA-DRB1, HLA-DQA1, HLA-DQB1 genes. Interim results show deviations in the frequency of HLA class II alleles in patients with OSMF when compared to those without OSMF and these will be presented.

Keywords: Oral Sub-Mucous Fibrosis (OSMF), Histocompatibility Antigens, Class II Allele Frequency Genotype, Precancerous Conditions

Oral Health Beliefs, Perceptions and Utilisation of Oral Health Care Services Among Indigenous (Orang Asli) in Bera, Malaysia: A Qualitative Study

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Introduction: A wide gap is still observed in the inequality among the Orang Asli and non-Orang Asli regarding the beliefs and perception of their oral health and acceptance of oral health care utilisation. Inclusivity is vital to ensure they are not excluded from getting quality oral healthcare services. **Objectives:** To explore the oral health beliefs, perceptions, and utilisations of the oral health care services among the indigenous (Orang Asli) in Bera, Malaysia. **Methods:** A qualitative study utilising Focus Group Discussions (FGD) was conducted to ascertain views and opinions among Orang Asli Semelai in Bera to determine current beliefs and perceptions of their oral health and assess their perceptions of the deployment of the oral health care services. Nineteen participants were involved in the FGD (response rate= 95%) from suburban and rural villages in Bera, Pahang. Qualitative data were analysed via thematic analysis, involving open and close-coding, followed by identification of emerging themes. **Results:** The results showed that the Orang Asli Semelai believed that oral health problems are caused by improper oral health care, preferred modern over traditional medicine predominantly because of relative inaccessibility to traditional medicine, and considerable acceptance of dentists and dental treatments. Most still chewed betel nuts and believed that limestone paste caused oral cancer. The main barriers to utilising oral healthcare services were time constraints and distance to the nearby clinic. **Conclusion:** The findings implied that most indigenous communities in Bera were open to modern oral healthcare to improve their oral health conditions. This study also provided recommendations for stakeholders to overcome barriers with future mobile dental clinics for Orang Asli to attend on the treatment needs and for oral health promotion programs to improve these indigenous communities' oral health and well-being.

Keywords: Oral Health Beliefs, Oral Health Care Services, Indigenous People, Orang Asli

**Prediction Models for Alveolar Cortical Thickness:
Development and Implementation Through Mobile Android Application**

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Introduction: Alveolar cortical thickness is a crucial consideration in successful planning for orthodontic miniscrews placement. It can only be viewed with three-dimensional X-ray imaging. **Objectives:** To measure buccal cortical thickness and interradicular distance in maxillary and mandibular alveolar bone in subjects with Class I skeletal pattern and use the data to formulate a prediction model for alveolar buccal cortical thickness using artificial neural network (ANN). The other objective is to build an android mobile application to facilitate the use of the ANN model. **Methods:** Using cone beam computed tomography (CBCT) images of 180 adult subjects with Class I skeletal pattern, cortical thickness of maxillary and mandibular alveolar processes was measured from central incisor to second molar at 8mm from cemento-enamel junction. Prediction models for buccal cortical thickness of anterior and posterior alveolar cortical thickness were developed using ANN. The developed models were tested and validated using the Mean Squared Error (MSE) and the Correlation Coefficient (R). Based on the ANN models, a mobile application on the android platform was developed. The app prediction performance was tested on an external sample of 39 subjects. **Results:** Cortical thickness and interradicular distance showed different patterns in maxilla and mandible. Cortical thickness is highest between the two molars in both arches. Four ANN prediction models were developed. Mean Squared Error (MSE) for the test set was in the range of 0.104-0.13, while the Correlation Coefficient (R) value for the validation set was in the range of 0.87-0.97 and for the test set in the range of 0.86-0.95. For the mobile application, the MSE range was 0.12-0.23. **Conclusions:** ANN based prediction models can be used to estimate buccal cortical thickness without exposing patients to three-dimensional imaging. The mobile app could facilitate the use of ANN models.

Keywords: Cortical Thickness, Prediction Models, Android Apps

The Perceptions of Dental Personnel Managing a Dental Public Health Specialist Unit in Alor Setar, Kedah

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Introduction: Dental Public Health Specialist Unit (DPHSU) in Kedah is among the earliest preventive dental clinic set up and managed by dental public health specialists. This unit conducts preventive cases referred by primary care and other specialities. The development of the units is to improve oral health status in Malaysia by targeting high-risk individuals. **Objectives:** This study explore the experiences and barriers experienced by dental personnel managing DPHSU. **Methods:** In-depth interviews were done with 11 dental personnel managing patients in DPHSU using semi-structured validated questions. Face-to-face and phone call interviews were conducted according to participants' preferences and recorded with a digital recorder. The recordings were transcribed verbatim and thematically analysed using the qualitative data analysis software, Nvivo™. **Results:** Experiences and barriers were identified across four domains: patient management, training, human resources and suggestions. Primary care, orthodontics, periodontics and restorative dentistry were the specialities involved in references to the DPHSU. Patients referred consisted of those wishing to quit smoking, with poor oral hygiene, for caries risk assessment or dental anxiety management. Investigations were conducted to classify the patient's risk before starting with management. The management included tobacco cessation, dental health education, diet counselling, oral hygiene instruction and behavioural modification. Barriers identified were low attendance, lack of referral, unfollowed cases, undertrained personnel and understaffing. **Conclusions:** Despite facing challenges and barriers in delivering preventive treatment to the referred patient, dental personnel encountered improvements in the oral health condition and patient motivation.

Keywords: Dental Public Health, Dental Public Health Specialist, Preventive Clinic

Junior Poster Category

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High Angle Cases in Different Types of Skeletal Pattern Among Malay Orthodontic Patients

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Introduction: High angle cases is a type of malocclusion where the value of maxillo-mandibular plane angle (MMPA) exceeds normal value and orthodontists often face problem in managing patient with these types of cases. **Objectives:** This study was conducted to determine the prevalence of high angle cases in Malay orthodontic patients treated in Universiti Sains Islam Malaysia (USIM) specialist clinic and the dentoalveolar features associated with it. **Methods:** The sample comprised of 264 lateral cephalograms that were traced manually. ANB angle, MMPA, interincisal angle (IIA), upper molar angulation (UMA), and lower molar angulation (LMA) values were assessed based on 11 landmarks. Vertical skeletal pattern, anteroposterior skeletal pattern, and dentoalveolar features based on interincisal angle and molar angulation were calculated. Data were analyzed using descriptive statistics and chi-square test. **Results:** The prevalence of high angle cases was the highest in class II skeletal pattern (n=25, 48.1%). There was a significant association between anteroposterior and vertical skeletal patterns. For dentoalveolar features, most patients were found with reduced IIA with the mean values for Class I, II and III were as follows $111.8^{\circ} \pm 8.8^{\circ}$, $109.4^{\circ} \pm 9.5^{\circ}$, $112.4^{\circ} \pm 11.04^{\circ}$. In contrast for UMA and LMA, the patients presented with average angles where mean UMA for Class I, II and III were as follows $85.7^{\circ} \pm 9.2^{\circ}$, $82.9^{\circ} \pm 6.5^{\circ}$, $85.9^{\circ} \pm 9.2^{\circ}$ whereas LMA values were $95.5^{\circ} \pm 10.0^{\circ}$, $95.7^{\circ} \pm 8.9^{\circ}$, $95.7^{\circ} \pm 8.9^{\circ}$. **Conclusion:** Most patients with high angles in vertical dimension were found in class II skeletal pattern with reduced interincisal angle and average molar angulation which normally indicated high anchorage demand and long-term retention after orthodontic.

Keywords: High Angle, Dentoalveolar Features, Vertical Skeletal Pattern, Anteroposterior Skeletal Pattern, Maxillary Mandibular Plane Angle

Do Attractive Young Malay Females Correlate to Golden Proportion, Neoclassical Canons, 'Ideal' Ratios and 'Ideal' Angles?

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Introduction: Face plays a major role in determining the attractiveness of one's physical appearance. Beauty perception may change with current trends, expectations, and surrounding cultures. However, there is still a lack of information regarding beauty perception among the Malay population. **Objective:** To determine the perception of young Malay female attractiveness as well as the relation of facial attractiveness to the golden proportion, neoclassical canons, 'ideal' ratios, and 'ideal' angles. **Methods:** Fifteen sets of photographs (5 each with skeletal Class I, II and III patterns) were randomly selected among sixty-four eligible photograph models. The attractiveness of the photograph models was rated by 180 juries based on a 7-point Likert scale (1 = extremely attractive; 7 = extremely unattractive). Additionally, the juries have named one key facial part that according to their opinion affected the facial appearance the most. **Result:** The nose (23%) was rated as the most important feature while skin colour (1%) was the least important part in determining one's facial attractiveness. There were no statistically significant associations ($p=0.08-0.98$) found between facial attractiveness and golden proportion ($r= -0.47-0.36$), neoclassical canons ($r= -0.27-0.43$), 'ideal' ratios ($r= -0.32-0.47$) and 'ideal' angles ($r=-0.23-0.28$). **Conclusion:** The attractive young Malay females did not correlate to golden proportion, neoclassical canons, 'ideal' ratios, and 'ideal' angles.

Keywords: Beauty Perception, Soft Tissue Anthropometry, Golden Proportion, Neoclassical Canon

Does Recommended Facial Parameters Relate to Soft Tissue Anthropometry Norms in Malay Female?

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Introduction: Golden proportion, neoclassical canons, 'ideal' ratios, and 'ideal' angles have been recommended as treatment guides in medical and dental fields. However, their validity and applicability in young Malay females have not been verified. **Objective:** Our objectives included determination of the applicability of golden proportion, neoclassical canons, 'ideal' ratios, and 'ideal' angles in young Malay female facial soft tissue anthropometry norms, as well as assessing the association between measured parameters and self-assessed facial appearance and health-related quality of life among them. **Methods:** Sixty-four eligible dental students were recruited as photograph models and answered a self-administered questionnaire. Nineteen proportions, twenty-six angles, twenty-four ratios and nine canons were measured on all images and were then compared with recommended ideal values. **Results:** The mean FACE Q scores were not significantly different statistically ($p=0.063-0.810$) between Malay females with different skeletal patterns. Eyes have been identified as the most attractive (38.4%) while nose (23.1%) as the least attractive parts by the participants. Among the seventy-four measured parameters, only three proportions, one canon, four ratios and four angles were not significantly different from the recommended ideal values ($p>0.05$). **Conclusion:** A significant deviation was noted between measured parameters among young Malay females from the recommended gold standards. Therefore, these recommendations shall be referred to with caution in the Malay population.

Keywords: Facial Anthropometry, Golden Ratio, Neoclassical Canon, Ideal Ratio, Ideal Angle

Dental Students' Knowledge on Appropriate Use of Systemic Antibiotics for Endodontic Infections

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Introduction: Odontogenic infections including endodontic infections are polymicrobial, and in most cases, the prescription of antibiotics is empirical. Antibiotics overuse and the emergence of antibiotic resistant bacterial strains is currently one of the major health threats globally. **Objective:** The present study aimed to determine the knowledge and practice of Malaysian undergraduate dental students on the appropriate use of systemic antibiotics in the management of endodontic infections. **Methods:** Final year undergraduate dental students from 13 Malaysian universities were invited to answer an online questionnaire on antibiotic usage for the treatment of endodontic infections. Data were collected and analysed by IBM SPSS© version 26. Frequency distributions were created to describe the frequency and percentages of responses. **Results:** A total of 287 responses were obtained from Malaysian dental schools (43.2% response rate) and the highest representation of participants was from the National University of Malaysia (UKM, 13%). Amoxicillin (85%) was the most prescribed antibiotic either alone or in combination with clavulanic acid, while Clindamycin was the drug of choice in healthy adults with penicillin allergy (53.7%). Endodontic infection cases that had the most prescription of antibiotic were acute apical abscesses with systemic complications (fever, malaise, lymphadenopathy). Approximately two-thirds of the participants prescribed antibiotics for 5 days. **Conclusion:** This study demonstrates that it is essential to improve the knowledge of Malaysian undergraduate dental students on the appropriate antibiotic prescription and indications for their use in endodontics.

Keywords: Antibiotics, Endodontic Infections, Knowledge

Hand Hygiene Knowledge and Practice of Generation Z Dental Students in Malaysia

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Introduction: Hand hygiene is the most effective infection control measure for preventing nosocomial pathogen transmission and illness. Hand hygiene compliance need to be continuously evaluated especially in Generation Z dental students. The objective of this study was to assess hand hygiene knowledge and practice of Generation Z dental students in Malaysia. **Methods:** This study was a cross sectional study being carried out from March 2021 to December 2021. A questionnaire was developed and distributed to the sample size of Generation Z final year dental students, from five selected universities. All dental faculties at Klang Valley are listed due to easy location to access by researcher. 3 government and 2 private universities were randomly selected by the computer. The data collected was analysed using the SPSS Version 26.0. A total of 211 respondents were retrieved. **Results:** From the questionnaire distributed, a response rate of 91.7% was recorded. Significantly, of all the questions asked, most respondents answered the correct answers except for one question. Only 30 percent of the respondents know the main source of pathogen causing nosocomial infections. **Conclusion:** The findings proved that the level of hand hygiene knowledge of Generation Z dental students is up to its level best, in parallel with their practice too. This shows that the particular teaching on the hand hygiene technique in the dentistry syllabus has successfully address the theory of hand hygiene and their practical implementation.

Keywords: Hand Hygiene, Generation Z, Dental Student

**An Assessment of Knowledge and Current Clinical Practice on Deep Caries Removal
Among Dental Practitioner in Klang Valley, Malaysia**

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Introduction: The current caries removal practice supports partial caries removal approach to reduce the risks of pulp exposure and to preserve tooth vitality during deep caries management compared to the traditional complete caries removal. **Objective:** To investigate the current knowledge and practice of deep caries removal method among general dental practitioner (GDP) in Klang Valley, Malaysia. **Methods:** An online questionnaire was distributed to the general dental practitioners in Klang Valley, Malaysia. The questionnaire consists of demographic data, knowledge, and practice on deep caries removal method as well as material preference for vital pulp therapy (VPT) and deep caries restoration. **Results:** A total of 305 general dental practitioners responded to the survey. 58.2% were equipped with practice experience of 0-5 years, followed by 30.5% (5-10years), 5.3% (11-20years), and 6.0% (>20years). The preferred carious removal method among GDP is partial carious removal with 66.2% compared to total carious removal of 33.8%. However, 50.4% to 58.5% of the GDP identified the criteria of remaining dentine left as complete caries removal. 99.6% of dental practitioners routinely placed VPT materials over the pulp, with calcium hydroxide (74.1%) as material of choice in indirect pulp capping and 66.7% in direct pulp capping. On the other hand, Mineral Trioxide Aggregate (MTA) is the material of choice in pulpotomy at 36.5%. 61.7% of the respondents preferred resin composite as the restorative material during deep caries management followed by zinc oxide eugenol (ZnOE) (14.5%) and glass ionomer cement (GIC) (12.4%). **Conclusion:** Partial caries removal was the preferred method of caries removal, in line with the current recommendation. Discrepancy between knowledge and practice of deep caries removal was identified. Calcium hydroxide and composite were respectively the preferred VPT material and restorative materials among the GDP in Klang Valley, Malaysia.

Keywords: Deep Caries Removal, Dental Practitioner, Vital Pulp Therapy

Reasons of Attendance among Patients Referred to Periodontology Clinic During Two Different Time Periods

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Introduction: Periodontal disease is one of the oral health burdens in Malaysia. It is known that periodontitis patients often present at late stage of the disease causing more complicated treatments to be offered. The reason of attendance is closely related to the oral disease that the patient may have. During COVID-19 pandemic, attendance of patients to dental clinic was restricted. Patients with mild symptoms may not come to the dental clinic. The reasons of attendance among patient referred to periodontology clinic in Universiti Sains Islam Malaysia (USIM) has never been studied. **Objectives:** To compare the reasons of attendance among patient referred to periodontology clinic in USIM before and during COVID-19 pandemic. **Methods:** The study was conducted by checking the clinical records of patients referred to periodontal waiting list between January 2019 to December 2020. Data was analysed using the SPSS Version 26.0 and the p-value was set at $p < 0.05$. **Results:** A total of 303 patients' clinical record were retrieved. It was found that 79.9% of the patients referred were periodontitis cases. The most common reasons of attendance before COVID-19 pandemic was requesting dental check-up which was 33.6%. Referral to periodontology clinic was reduced to only 89 patients during COVID-19 with dental check-up remained as the main reason of attendance with (29.2%). However, there was no association for reasons of attendance before and during COVID-19 pandemic ($p=0.236$). **Conclusion:** The main reason of attendance for patients referred to periodontology clinic was for dental check-up. COVID-19 pandemic did not affect the reasons of periodontal patients' attendance to dental clinic.

Keywords: Attendance, COVID-19, Periodontal Disease, Referral

Setting Time, pH and Push-Out Bond Strength of A Fast-Set Radiopaque Malaysian White Portland Cement

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Introduction: Calcium silicate cements (CSCs) such as White Mineral Trioxide Aggregate (WMTA) remains the gold standard in endodontic therapy, but Malaysian White Portland Cement (MWPC) is emerging as a potential substitute. Calcium chloride dihydrate ($\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$) has been suggested as a potential additive to CSCs to improve their properties. **Objectives:** This study compared the effects of $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ as a setting accelerator on the initial setting time, pH and push-out bond strength of WMTA and RMWPC (MWPC mixed with 20% nano-zirconium oxide). **Methods:** Four cements [WMTA, RMWPC, fast set WMTA (FS-WMTA) and fast set-RMPC (FS-RMWPC)] were prepared, and the initial setting time was evaluated using Vicat apparatus. The evaluation of pH was performed by immersing cement capsules in water and measuring at seven-time intervals (day 0 till 90 days) using a pH meter. For the push-out bond strength experiment, 48 root samples of 1 mm thickness were sectioned from the middle third of sound maxillary incisors. After application of cements for 24 hours, the push-out test was performed using a universal testing machine, and the maximum force needed to dislodge the cement from the samples were recorded. Parametric and non-parametric tests were performed for data analysis using SPSS 26, and the level of significance was set at 0.05 ($P=0.05$). **Results:** The addition of $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ decreased the initial setting time of both RMWPC and WMTA significantly ($P<0.05$). The pH values of FS-WMTA and FS-RMWPC were alkaline at all time intervals and were comparable to their non-accelerated counterparts ($P>0.05$). The fast-set formulations showed an increased push-out bond strength; however, significant difference was only observed with FS-WMTA ($p<0.05$). **Conclusions:** The addition of $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ to RMPC and WMTA decreases the setting time, while maintaining the alkaline effect of both cements and increasing the push-out bond strength. The locally produced formulation is a potential substitute to WMTA.

Keywords: Calcium Chloride Dihydrate, Mineral Trioxide Aggregate, Zirconium Oxide, Bond Strength, Setting Time