ORGANIZERS

ICⵀM 2020

IN CONJUNCTION WITH

13th **POSTGRADUATE e-CONFERENCE**
FACULTY OF DENTISTRY

8th-9th September 2020 | Virtually via Google Meets

Theme: Oral Health for Holistic Well-being

ABSTRACT BOOK

Message from Dean, Faculty of Dentistry, Universiti Malaya

First and foremost, welcome to the 3rd International Conference on Oral Microbiology and Oral Immunology in conjunction with 13th Postgraduate e-Conference with the theme of "Oral health and Holistic Wellness".

Allow me to also take this opportunity to welcome our eminent speakers, distinguish panel of judges, academicians, clinicians and all delegates around the world to the first webinar session conducted virtually by Faculty of Dentistry, University of Malaya, albeit differently this year and a new norm to practice safe social distance, due to the COVID-19 pandemic.

Research in dentistry is constantly evolving and there have been remarkable advances in technology as well as continuous development in oral health care. The integration of applied and fundamental science is inevitable for efficient scientific research partnership and such integration is crucial for sustaining oral health and wellness within the community. No doubt the COVID-19 pandemic have created a significant impact on the health of our society at large, but with the combine effort of clinicians, dentists and researchers, it is hoped that these joined forces will help create a holistic development that ultimately will benefit the community.

This e-Conference aims to serve as a platform for all delegates to disseminate their research findings and it is hope that through this conference, ideas can be exchanged, network can be enlarged and knowledge can be enhanced. I believe that the assembly of plenary speakers from prominent international and local institutions, invited speakers as well as oral and e-poster presentations from clinician and researchers from different parts of the world will provide an informative and interesting session that will have significant impact to the future direction for oral health as a whole.

I wish to congratulate the Organizing Committee from Faculty of Dentistry and with the collaboration effort from MYSOMOI team to organize and successfully line-up an exciting program while the nation is still in the recovery movement control order (RMCO) extended phase. I would also like to express my sincere gratitude to all parties involved for their relentless effort in making sure that this event would run smoothly.

Thank you very much to our industrial partner for your generosity in sponsoring this important occasion and indeed, it is a great symbol of partnership which will definitely benefit the dental industry in a long term. Your continued contribution to the academic and scientific field have been instrumental in encouraging new breakthrough and innovations.

Lastly, I wish all delegates a fruitful event and have a great e-Conference.

Thank you.

Prof Dr Sabri bin Musa
Dean, Faculty of Dentistry, University Malaya

Message from the President, MySOMOI

Since the inception in the year 2017, MySOMOI has been organizing international conferences every year. The first was held on 14-15 August 2018 in collaboration with the Faculty of Dentistry UM; while the second one was held on the 19-20 November 2019 in collaboration with the Faculty of Medicine, University Putra Malaysia. With those success stories, MySOMOI has planned to organize the 3rd ICOMOI in conjunction with the 13th Postgraduate Conference of the Faculty of Dentistry, UM.

Given the ongoing global pandemic of COVID-19, the joint conference goes online - where the participants will have the luxury to present their work sitting at home or in their private office room. Sadly, we are going to miss the lively interaction and chatting - while the chatbox in the online meeting platform might help to reduce the pain a bit.

This year, the theme for the joint conference is "Oral health and holistic wellness". Needless to say, how oral health is important for overall wellbeing. Imbalance in oral health adversely affects many physiological systems including the systemic and metabolic functions. It is well evident that a number of major public health concerns namely, but not limited to, rheumatoid arthritis, obesity, cardiovascular diseases are linked to wellness of oral health. Malaysia with a growing number of the aging population is also combating those major public health challenges.

Looking at the list of presentations and topics a diverse discussion on various aspects of oral health and its link to the overall well-being are expected. This will, in turn, help the health care professionals, academicians, researchers as well as policymakers to have a better view of the current status and future perspectives of population oral health.

On behalf of MySOMOI, I sincerely thank all the presenters to join this conference. My sincere appreciation goes to the Faculty of Dentistry, Postgraduate students at the faculty, the dedicated and sincere administrative staff of DRMU of UM, and finally MySOMOI members to make their all-out efforts to make this event a successful one.

Mohammad Tariqur Rahman
President and Advisor of 3rd MySOMOI

Faculty of Dentistry
University Malaya
Jalan Universiti
KL 50603, Malaysia

Message from the 3rd ICOMOI & 13th Postgraduate Conference of the Dental Faculty, University Malaya Chairperson

It gives me great pleasure to welcome all of you to the 3rd International Conference on Oral Microbiology and Oral Immunology (ICOMOI) 2020. This year, the 3rd ICOMOI 2020 conference is held in conjunction with the 13th Postgraduate Conference of the Dental Faculty, University Malaya. This is the first conference that we are conducting virtually as the conference which was originally planned to take place on the 17-18th August 2020 had to be postponed due to the COVID 19 pandemic.

The theme for this year's conference is "Oral health and holistic wellness". I sincerely hope that this conference will serve as a great platform for the participants to keep up with the latest research and scientific development in dentistry for the maintenance of oral health. I would like to thank our invited speakers for agreeing to take time out of their busy schedules to give us their perspectives on a broad-ranging set of topics.

I would like to acknowledge the support from the Dean, Faculty of Dentistry, University Malaya in organizing this Conference. I would like to close this welcome with a round of thanks to all committee members of the 3rd ICOMOI 2020 who have made this conference a reality. Organizing a virtual conference has its own challenge and I am grateful for the support received from the Dental research management unit, University Malaya. I would also like to extend our gratitude to our sponsors for supporting ICOMOI 2020.

Wishing you all a successful and enjoyable conference.

Thank you

Marina Mohd Bakri

Chairperson of 3rd ICOMOI 2020 & 13th Postgraduate Conference of the Dental Faculty, University Malaya

Faculty of Dentistry
University Malaya
Jalan Universiti
KL 50603, Malaysia

INDEX

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Plenary Speakers

Professor Dr. Alison Rich

Alison is Professor of Oral Pathology at the Faculty of Dentistry and Head of the Pathology Department, Dunedin School of Medicine, University of Otago, New Zealand. She is a registered specialist in oral pathology and is Head of the Oral Pathology Centre, the University's oral pathology diagnostic service and the Leader of the Oral Immunopathology Research Group. She is a previous Chair of the Faculty of Oral and Maxillofacial Pathology of the Royal College of Pathologists of Australasia and their current Chief Examiner. She is President-Elect of the International Association of Oral and Maxillofacial Pathologists.

Professor Emeritus Dr. Lakshman Samaranayake

Professor Lakshman (Sam) Samaranayake is the Professor Emeritus and the immediate-past Dean of the Faculty of Dentistry, University of Hong Kong, and the immediate past Dean of Dentistry, University of Queensland, Australia. The author of over 450 research articles, and many texts (h-index 83 and 23,500 citations), he has won numerous, coveted awards including the King James IV Professorship of the Royal College of Surgeons of Edinburgh, UK. Professor Samaranayake has lectured in all five continents and is the Founding Editor-in-Chief of the Journal of Investigative and Clinical Dentistry. His main research interest is the role of human microbiota in health and disease. More recently, during the pandemic, he has published over ten articles on COVID-19 and dentistry thus far.

Associate Professor Dr. Raja Azman Raja Awang

Dr Raja is a periodontist and lecturer at the School of Dental Sciences, Universiti Sains Malaysia, where he worked since 1999. Dr Raja received his PhD in periodontal immunology from the University of Glasgow in 2014. He completed his specialist training in periodontics (2004) and his first degree in dentistry (1997) at the Universiti Malaya (Malaysia). In addition to seeing patients and teaching dentistry, Dr Raja also has interests in research, focusing on periodontal clinical research and immunology, as well as dental biomaterials. He teaches periodontology to undergraduate and postgraduate dental students. He has published a number of internationally refereed research articles on periodontology and dental biomaterials. He is currently President of the Malaysian Section of the International Association for Dental Research (IADR) (2018-2020) and Vice President of the Malaysian Society of Oral Microbiologists and Oral Pathologists (MySOMOI) (2018-2020). He also writes children's educational books for Dewan Bahasa & Pustaka.

Professor Dr. Wanninayake M Tilakaratne

Professor Wanninayake M Tilakaratne is currently a Professor attached to the Department of Oral and Maxillofacial Clinical Sciences, Faculty of Dentistry, University of Malaya. After completing BDS from university of Peradeniya, Sri Lanka he obtained his MS degree from University of Colombo. Then he obtained his professional qualifications from United Kingdom and PhD from Japan. He has been working as an Oral Pathologist for three decades and held many positions in the field of Oral Pathology. He is the immediate past president of the International Association of Oral Pathologists. He has worked as the Professor of Oral Pathology at Queen Mary University of London and a visiting Professor to many universities in different countries. He was the former Dean, Faculty of Dental Sciences, University of Peradeniya Sri Lanka. Professor Tilakaratne's main research field is Oral cancer and precancer. He has published over 130 papers with a H-index of 34 and written a textbook and contributed to many chapters in internationally recognized textbooks.

Prof. Dr. Mohammad Tariqur Rahman

Since July 2015, Prof Tariq has been attached to the Faculty of Dentistry, UM. His academic qualifications include BSc and MSc in Microbiology (Dhaka University), MSc and PhD in Biochemistry (KU Leuven). After a brief period of working at Khulna University and East West University (founding chair of Department of Pharmacy), Tariq joined University of Fukui as CoE researcher and subsequently IIUM. His research interests include metallo-biochemistry; neocortex development; pharmacology of natural products; halal science; stem cells; and scientometrics. Tariq also writes columns on science and lifestyle in news-portals in Malaysia (New Straits Times, Astro Awani) and in Bangladesh (Daily Star). Prof Tariq is a life member of GNOBB, BSM, MSMBB, Malaysian Society for Oral Microbiologists and Oral Immunologists (MySOMOI), and MSBMB. Prof. Tariq is the current Executive Editor of Annals of Dentistry University of Malaya, and the President (founding) of the EC of MySOMOI (2018-2020).

Professor Dr. Fouad Hussain M.H.AL-Bayaty

Professor Dr Fouad is currently professor Faculty of Dentistry, Universiti Teknologi MARA, Malaysia. He obtained his Master and PhD in clinical Periodontology France 1984, in addition he obtained Master and Doctorate PhD in general Immunity (Distinction Degree) France. He was promoted to professor 1994. Prof. Fouad obtained his BDS in 1973 Baghdad University. Chief editor of the journal of advanced medical research (JAMR), Supervisor and member of the implant center. Teaching periodontology, supervising 32 PhD and MSc students, invited speaker and external examiner, published more than 160 researches and 6 books. Obtained the Prize of Distinguished Professor for 3years and excellence in service in faculty of dentistry, UiTM. He obtained the prize and diploma of honor from the higher committee of Lyon university association as distinguished postgraduate student 1982, obtained 92 Medals and 4 patents. He is currently a member of international and national societies.

Assoc. Prof. Dr. Dessy Rachmawati

Dessy Rachmawati is a Lecturer at the Department of Dental Biomedical Science, Faculty of Dentistry Universitas Jember, Indonesia. She obtained her BDS (2000) and graduated as a DDS (2002) from Universitas Jember, Indonesia. In 2004 she studied for her master's degree (MDSc) in Dental Biomaterial Science, at the Graduate School Gadjah Mada University, Yogyakarta, Indonesia. She graduated cum laude for her master's degree in 2006. She received her Ph.D in Medical Immunology, Department of Pathology, VU University Medical Centre, Amsterdam in 2016. As an Associate Professor, she is involved in academic teaching and also active in research. She was granted "Best Lecturer Award in the faculty and Universitas Jember in 2017" for her appreciable work. Initially, she teaches in the discipline of Oral Biology and Oral Immunology, and works as a dentist at the Dental Hospital, Faculty of Dentistry, Universitas Jember. She is also a reviewer for various top-tier journals.

Professor Dr. Koshy Philip

Dr. Koshy Philip completed his Ph.D in 1985 majoring in Microbial Biotechnology and started his research career in 1986 at the University of Agriculture, Malaysia. In 1987, he joined a Sabah state funded project followed by World Bank, Asian Development Bank and industry funded projects to map and develop flora and micro-flora based on sustainable management. In 2000, Dr. Philip was awarded an International Visiting Fellowship by the U.S State Department on "Biotechnology & Sustainable Development". In 2004, Dr. Philip joined University of Malaya Medical Faculty's Department of Molecular Medicine and later the Faculty of Science as an Associate Professor in Biomedical Science and Microbiology. Dr. Philip collaborated with Ulster University, University of Illinois, Asper Biotech, RMIT, University of Victoria and University of Otago during his UM tenure working on Oral Microbiology, Microarray and Biopharmaceuticals. He has current collaboration with University of Iowa and the Lawrence Berkeley Laboratory. He is also a Review Editor of the Frontiers in Microbiology Journal. Dr. Philip has published widely in peer reviewed journals and developed patents from his research collaborating with the industry for University of Malaya to scale up antimicrobial peptides for Oral and Gut Microbiology. Currently, his microbiome research is based at IOES and the Medical Faculty of University of Malaya. He serves University of Malaya's Institutional Biosafety Committee (IBC), holds Life Memberships in Malaysian Society of Microbiology (MSM) and Malaysian Society of Molecular Biology and Biotechnology (MSMBB). Since 2018, he also serves as a Visiting Professor in Biomedical Science at Lincoln University College.

7th September 2020 (Webinar on Scientific Writing)

Time	Event	Facilitator
09.00-09.15:	Introduction to the Webinar	Prof. Dr. Mohammad Tariqur Rahman (UM)
09.15-10.15:	Essentials of preparing science-based manuscripts	Prof. Dr. Mohammad Tariqur Rahman (UM)
10.15-11.15:	Essentials of preparing clinical manuscripts	Prof. Dr. WM Tilakaratne (UM)
11.15-11.45:	Prepare a cover letter, response to reviewer, and selecting journal	Prof. Dr. Mohammad Tariqur Rahman (UM)
11.45-12.45:	Usage of Reference Manager	Dr. Ahmad Mahfuz Gazali (UMP)
LUNCH BREAK		
14.00-16.00:	Data analysis for biomedical/clinical research	Prof. Dr. Noor Lide Abu Kassim (IIUM)
16.00-17.00:	Discussion with the Facilitators	ALL FACILITATORS
17.00	Closing	

8 September 2020 (e-Conference Day 1)

Time	Event	Moderator
09.00-09.10:	Introduction to Mysomoi by Prof Maha Abdullah	(MCs) Dr Amirul Fahmi Che Mohd Fadzillah Dr. Anas Hakimee
09.10-09.20:	**Welcome Speech** Assoc Prof Dr Marina Bakri, Chairman, 3rd ICOMOI 2020 + 13th Postgrad Conference UM	
09.20-09.30	**Opening ceremony** Prof. Dr Sabri Musa, Dean, FoD, University of Malaya	
9.30-10.30:	**Plenary Lecture 1** Speaker: Prof Dr Alison Rich, Univ Otago, New Zealand Topic: **Risk Factors for Oral Cancer**	A/P Dr. Marina Bakri, UM
10.30-11.30:	**Plenary Lecture 2** Speaker: Prof Dr Lakshman Samaranayake, Univ Hong Kong Topic: **COVID-19 and Dental Research in the New Normal Era**	Prof. Dr. Fathilah Abdul Razak, UM

11.30-13.15:	**e-Poster Presentations**
	e-Poster session 1:
	Judges: 1. Prof. Dr Fouad Al-Bayaty (Chief judge)
	       2. Prof Dr Wan Himratul Aznita Wan Harun
	       3. A/Prof Dr Raja Azman Raja Awang
	
	<table><tr><td>Time</td><td>Poster</td><td>Presenter</td><td>Title</td></tr><tr><td>11.30</td><td>EP01</td><td>Ghasak Ghazi Faisal</td><td>Anti-cancer effects of Eurycoma longifolia jack dichloromethane root extract on nasopharyngeal carcinoma cell line</td></tr><tr><td>11.45</td><td>EP02</td><td>Cheah Chia Wei</td><td>Subgingival oral microbial profile of patients with rheumatoid arthritis and chronic periodontitis</td></tr></table>
		Dr Aiman Nadiah binti Ahmad Tajudin

Time	Poster	Presenter	Title
12.00	EP03	Nurul Inaas Mahamad Apandi	Differential Mucin in Salivary Gland Tumours
12.15	EP04	Ainon Natrah Binti Aminnudin	Can post-treatment oral cancer patients' concerns reflect their cancer characteristics, HRQoL, psychological distress level and satisfaction with consultation?
12.30	EP05	Ema Marlisa Abdul Malek	Oral health-related quality of life (OHRQoL) following clinical interventions of odontogenic infection in 3-8-year-old children : randomised control trial
12.45	EP06	Sem Guan Wan	Desensitizing toothpaste with arginine reduces pain perception during dental scaling
13.00	EP21	Yuen Sze Wan	The association between perception of immunology among Malaysian healthcare professionals and academic qualifications

e-Poster session 2:
Judges: 1. A/Prof Dr Maha Abdullah (Chief Judge)
       2. Assoc Prof Dr Zuraiza Mohamad
       3. Dr Ros Anita Omar

Dr Susan Shalani a/p Gnanapragasam

Time	Poster	Presenter	Title
11.30	EP07	Elly Munadziroh	Application of recombinant secretory leucocyte protease inhibitor amnion membrane on incision of Rattus norvegicus to the number of TNF- α and blood vessel cell on wound healing process
11.45	EP08	Hala Fathalla Ben Ghasheer	Psychosocial factors and ohrqol: structural equation modelling
12.00	EP09	Azwin Assilah Kamaruddin	Metagenomic analysis of bacteria associated with root canal infections of primary teeth treated with antimicrobials
12.15	EP10	Aira Syazleen binti Ahmad	Fluoride and pH level of commercially available children's beverages in Malaysia
12.30	EP11	Retno Indrawati	The importance of maintaining a normal oral microbiome in pregnant women: Current perspectives

	12.45	EP12	Nora Azirah Mohd Zayi	Chitosan as a potential drug nanocarrier for oral disease treatment		
BREAK **LUNCH TALK:** 13.15-13.25: GSK topic : Stop The Clock On Gum Disease Speaker : Ms Vivien Ong Xiu Yao (Senior Product Specialist)						
14.00-14.50:	**Plenary Lecture 3** Speaker: Prof Dr W M Tilakaratne, UM Topic: **Oral Microbiome and Oral cancer**					A/P Dr. Wan Himratul Aznita Wan Harun, UM
14.50-15.40:	**Plenary Lecture 4** Speaker: Assoc Prof Dr Raja Azman Raja Awang, USM Topic: **Role of biofilm in periodontal disease: how much do we know?**					A/P Dr. Rathna Vaithilingam, UM
15.40-16.20:	**Plenary Lecture 5** Speaker: Prof Dr Mohammad Tariqur Rahman, UM Topic: **Metal and metal proteins in immune protection in the oral cavity**					A/Prof Marina Bakri, UM
16.20-18.00:	**MySOMOI BGM 2020** Chairperson: A/P Dr. Maha Abdullah (UM) **[for MySOMOI Members only]** Confirmation of Minutes of previous BGM (Dr Intan) Reports from Vice Presidents Presentation of Treasurer's report (Prof Marina) Arising matters Vote of thanks by outgoing EC President and Declaring the new President Announcement of New EC by the New President Closing					A/Prof Maha Abdullah
16.20-18.00:	**Immunology Quiz**					A/Prof Dr. Thomas George Kallarakkal, UM

9 September, 2020 (e-Conference Day 2)

Time	Event	Moderator
9.00- 10.30:	**Oral Presentations** Oral session 1: Judges: 1. Assoc Prof Pullikotil Shaju Jacob (Chief Judge) 2. Assoc Prof Salequl Islam 3 Assoc Prof Dr Syarida Hasnur Safii	Dr. Leong Xin Fang, UKM

Time	Oral	Presenter	Title
09.00	OP01	Foo Qi Chao	The Fabrication of TMJ 3D model for arthrocentesis and arthroscopy simulation
09.15	OP02	Rohazila Mohamad Hanafiah	Antibacterial activities of spilanthol against oral bacteria
09.30	OP03	Sama Naziyha Shaban	Flaxseed (Linum usitatissimum) extract activity on human oral fibroblasts (HOrF) cell line
09.45	OP04	Rheta Elkhaira	Lactic Acid Bacteria in Healthy Subjects and those with Chronic Periodontitis: Colony Count and Macroscopic Identification
10.00	OP05	Mak Siew Thong	Antibacterial Activity of Endodontic Sealers by Modified Direct Contact Test against Planktonic Bacteria
10.15	OP06	Nur Syahirah Salehuddin	Acmella paniculata extract as antimicrobial agent against Streptococcus mutans

Oral session 2:
Judges: 1. Prof Fathilah Abdul Razak (Chief Judge)
      2. Prof Ngeow Wei Cheong
      3. A/Prof Chen Yeng

Dr. Cheah Chia Wei, UM

Time	Oral	Presenter	Title
09.00	OP07	Lew Xian	Comparison of Efficacy between Modified Vacuum-formed Retainer and Hawley Retainer in Expansion Cases– A Multicentre Randomised Controlled Trial

	09.15	OP08	Yazeed Magbul Althomali	Evaluating the pit and fissure sealant retention capabilities of self-etch and conventional acid-etch techniques: a randomized controlled trial	
	09.30	OP09	Ainol Haniza Kherul Anuwar	Developing clinical practice guidelines for dental caries management for malaysian population through the adapte trans-contextual adaptation process	
	09.45	OP10	Suthalini Krishnasamy	Clinical outcomes following the use of systemic and local antimicrobials in the management of odontogenic infections in paediatric patients	
	10.00	OP11	Siti Nur Nabihah Zainul Abidin	Comparison of speech intelligibility and quranic recitation proficiency in malay cleft palate patients	
	10.15	OP12	Hetal Ashvin Kumar Mavani	Eco-enzyme as endodontic irrigant: impact on dentine microhardness	

10.30-11.15:	**Invited Speaker 1** Speaker: Prof. Dr Fouad Hussain Al-Bayaty, UiTM Topic: **Effect of andrographolide on atherosclerotic rabbits induced by *Porphyromonas gingivalis***	Dr. Ahmad Mahfuz Gazali, UMP

11.15-12.45:	**Oral Presentations**
	Oral session 3:
	Judges: 1. Assoc Prof Pullikotil Shaju Jacob (Chief Judge)
	       2. Assoc Prof Dr Salequl Islam
	       3. Assoc Prof Dr Syarida Hasnur
		Dr. Nadia Najwa Shuhairi, UM

Time	Oral	Presenter	Title
11.15	OP13	Nurul Szawani Mohd Zubri	Antimicrobial activity of probiotic against Porphyromonas gingivalis, a periodontal pathogen
11.30	OP14	Wong Yin Ling	Identification of serum proteomic signatures associates with oral squamous cell carcinoma
11.45	OP15	Jazli Aziz	Salivary and serum levels of zinc and metallothionein in periodontitis patients with or without rheumatoid arthritis
12.00	OP16	Tan Ke En	identification and characterization of a novel Epstein-Barr virus – encoded circular RNA from LMP-2 gene

12.15	OP17	Nur Fauziani binti Zainul Abidin	Expression of FSCN1, TNFRSF12A and Ki67 in histologically non-involved surgical margins as predictive marker for relapse in oral squamous cell carcinoma
12.30	OP18	Chin Siok Yoong	Accuracy of contrast-enhanced computed tomography scan in assessing depth of invasion in oral tongue squamous cell carcinoma

Oral session 4:
Judges: 1.   Prof Dr Fathilah Abdul Razak (Chief Judge)
       2.   Prof Ngeow Wei Cheong
       3.   A/Prof Dr Chen Yeng

Time	Oral	Presenter	Title
11.15	OP19	Eb Robson Gubod	Clinicopathological Study Of Oral Lichen Planus And Oral Lichenoid Reactions
11.30	OP20	Siti Nur Farhanah Binti Mohd Desa	Fluoride Concentration in Malaysian Infant Formulas: A Laboratory Study
12.00	OP21	Ahmad Fadhli Bin Ahmad Badruddin	Survival Rate & Mortality Rate of Oral Cancer Patients In Oral & Maxillofacial Clinical Sciences Department, Faculty Of Dentistry, University Of Malaya: A Retrospective Study
12.15	OP22	Eas Haryati Sabri	The haemostatic effect of chlorhexidine: in-vitro study
12.30	OP23	Dewi Mayang Sari	Comparing The Oral Health Status Of Malaysian Sheltered And Unsheltered Homeless.
12.45	OP24	Nurul Hayati Anwar	The Effects And Feasibility Of The SIMS Programme To Improve Preschool Children's Oral Hygiene Level: A Cluster Randomised Control Trial

Dr Nazurah Nik Eezemmuddeen, UM

	e-Poster Presentations				

BREAK / E-POSTER SESSION	**e-Poster Presentations**
	 e-Poster session 3:
	 Judges: 1. Prof. Dr Fouad Al-Bayaty (Chief judge)
	         2. A/ Prof Dr Wan Himratul Aznita Wan Harun
	         3. A/Prof Dr Raja Azman Raja Awang
					Dr Aimen Batool, UM

e-Poster session 3:

Time	Poster	Presenter	Title
13.00	EP13	May Ameen Saeed Al-koshab	Chemopreventive activity of Ficus Deltoidea extract against oral squamous cell carcinoma—an in vivo study
13.15	EP14	Ahmed Ebrahim Abdullah Alahdal	Chemo-preventive effects of Orthosiphon Stamineus extract on oral cancer cells in vivo using animal model
13.30	EP15	Farhana Bte Yahya	The involvement of TRPV4 in angiogenesis of oral squamous cell carcinoma: An in-vivo study
13.45	EP16	Nurul Jannah binti Mohd Asngari	Fluorescence study on the interaction of cysteine protease inhibitor, Odanacatib with human serum albumin

e-Poster session 4:
Judges: 1. A/Prof Dr Maha Abdullah (Chief Judge)
        2. A/ Prof Dr Zuraiza Mohamad
        3. Dr Ros Anita Omar

Time	Poster	Presenter	Title
13.00	EP17	Noor Afifah Hanin Binti Mohamad	Comparative genomic and evolutionary relationship analysis in characterization of A. Naeslundii proteins that may contribute to probiotic properties
13.15	EP18	Intan Nirwana	Changes on Wistar rat wounds after topical application of fig leaf (Ficus carica linn.) extracts

Dr. Norhaslina Mohd Rokem, UM

	13.30	EP19	Mohammed Khalid Salem Alsharif	Oral health status among Arabic pre-school children in Klang valley, Malaysia and its associated factors	
	13.45	EP20	Datu Mohd Amyril bin Abduludin	Content validation and response process validation of questionnaire on accessibility of children with cerebral palsy to oral health care services	
14.00-15.15:	**Oral Presentations** Oral session 5: Judges: 1. Assoc Prof Pullikotil Shaju Jacob (Chief Judge) 2. Assoc Prof Dr Salequl Islam 3. Assoc Prof Dr Syarida Hasnur				Dr Hadi Mohd Hanifah, UM

Oral session 5:
Judges: 1. Assoc Prof Pullikotil Shaju Jacob (Chief Judge)
        2. Assoc Prof Dr Salequl Islam
        3. Assoc Prof Dr Syarida Hasnur

Time	Oral	Presenter	Title
14.00	OP25	Jonathan Rengarajoo	The Effect Of Lyophilized Platlet Rich Plasma In A Third Molar Extraction Socket And Its Surrounding Tissues
14.15	OP26	Muhammad Arif Bin Mohamed Bashir	Thematic Analysis Of Malay Medical Manuscripts Focusing On Dental Problems With Special Reference To Mss 3084
14.30	OP27	Abdul Rahim bin Rosli	Immunohistochemistry Analysis Of Il-17c And Il-17re Expression In Gingival Tissue Affected By Periodontitis
14.45	OP28	Nurhalim Bin Ahmad	Addition Of Methylprednisolone Enhances Analgesic Effect Of Painkillers Following Third Molar Surgery.
15.00	OP29	Nawwal Alwani Mohd Radzi	Malaysian school-based smoking cessation programme (the Kotak programme): Qualitative investigation of dentists' perception

Oral session 6:
Judges: 1. Prof Dr Fathilah Abdul Razak (Chief Judge)
        2. Prof Ngeow Wei Cheong
        3. A/Prof Dr Chen Yeng

Time	Oral	Presenter	Title
14.00	OP30	Noratikah bt Awang Hasyim	Mageb2 Antibody As Potential Diagnostic And Predictive Tool In The Progression Of Oral Cancer
14.15	OP31	Nizam Abdullah	Evaluating The Anti-Plaque Efficacy Of Silver Diamine Fluoride (SDF) Using An In-Situ Grown Biofilm Model

Dr Joanne Goh, UM

	14.30	OP32	Faizah binti Abdul Karim	Dental caries among 12-year-old schoolchildren after discontinuation of water fluoridation in Pahang, Malaysia	
	14.45	OP33	Nazirah Ab Mumin	Opinions of secondary school students on the use of a smartphone application as oral health education tool: A qualitative study	
	15.00	OP34	Munirah Mokhtar	The effect of oral probiotic Streptococcus salivarius K12 on Candida albicans cells count in polymicrobial biofilms	
15.15-16.00:	**Invited Speaker 2** Speaker: Dr. Dessy Rachmawati, University of Jember, Indonesia Topic: **The Efficacy of Green Robusta Coffee Beans Extract on the Antioxidant Activity To Inhibit Innate Immune Response to Dental Alloy**				Dr. Basma Ezzat Mustafa IIUM
16.00-16.45:	**Invited Speaker 3** Speaker: Assoc Prof Dr Koshy Philip, UM Topic: **Human Oral Microbiomes Influenced by Lantibiotics**				A/P Dr. Mohd Hafiz Arzmi, IIUM
16.45-17.15:	**Closing Ceremony** Vote of Thanks: Assoc Prof Dr. Marina Bakri Declaration of Winners: Prof Dr Norsiah Yunus, Deputy Dean Postgraduate Studies, FoD, University of Malaya Closing Remarks: Assoc Prof Dr Firdaus Hariri, Deputy Dean Research and Development, FoD, University of Malaya				(MCs) Dr Amirul Fahmi Che Mohd Fadzillah/ Dr. Anas Hakimee

Oral Abstracts

THE FABRICATION OF TMJ 3D MODEL FOR ARTHROCENTESIS AND ARTHROSCOPY SIMULATION

Qi Chao Foo[1], Firdaus bin Hariri[1], Zainal Ariff bin Abdul Rahman[1]
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Abstract
Arthrocentesis and arthroscopy are relatively safe treatment for atherogenic Temporomandibular Disorders (TMD). Training in both procedures are essential for surgeons to be competent but unfortunately opportunity for hands on training in these procedures are limited. We aim to develop a model that allows trainees to practice arthrocentesis and arthroscopy. A TMJ prototype was designed using 3D design software based on data collected from cadaveric dissection. The final prototype was developed at a cost of USD 151.36 and we successfully performed arthrocentesis and arthroscopy on the model. Despite its limitation, this model is a viable adjunct to TMJ surgical training and can be fabricated easily by any training centre with 3D printer.

ANTIBACTERIAL ACTIVITIES OF SPILANTHOL AGAINST ORAL BACTERIA

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Abstract
Although there are many important benefits in using the mouthwashes containing alcohol, frequent use of it can have adverse and harmful effects to the users such as oral cancer, irritates canker sores and masks bad breath. Recently, researcher has starting to find other alternative in producing mouthwash products that can give the same function as current commercial mouthwashes and more importantly it is safe to use. The new alternative is by using bioactive compound from plant-based extract as the main ingredients of the replacing the alcohol. The objective of this study to determine antibacterial activities against *Streptococcus mutans* and *Lactobacillus acidophilus* by using disc diffusion assay, minimum inhibition concentration (MIC) and minimum bactericidal concentration (MBC) methods. As the results, spilanthol showed the greatest inhibition zone towards *S. mutans* when compared to *L. acidophilus*. MIC and MBC values of spilanthol against *S. mutans* were 0. 125 mg/mL and 0.5 mg/mL, respectively. Whereas MIC and MBC values for spilanthol against *L. acidophilus* were 0.25 mg/mL and 1 mg/mL, respectively. In conclusion, spilanthol demonstrated bactericidal properties against *S. mutans* and *L. acidophilus*.

FLAXSEED (LINUM USITATISSIMUM) EXTRACT ACTIVITY ON HUMAN ORAL FIBROBLASTS (HORF) CELL LINE

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Abstract
General health benefits has been demonstrated by natural products. Flaxseed (*Linum usitatissimum*) extract's bioactivities have been reported in many studies, *L. usitatissimum* extract has various health effects such as antimicrobial, anti-oxidant, and anti-inflammatory effects in addition to that it has skin wound healing activity and general oral health benefits like treating oral ulcers. *L. usitatissimum* is extracted using 70% ethanol via soxhlet method, gas chromatography mass spectrum (GC-MS) is used to illustrate the components of *L. usitatissimum* extract. Human oral fibroblasts (HOrF) are cultured to be used for testing the activity of *L. usitatissimum*. 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay is used to assess the human oral fibroblasts (HOrF) cell viability in different timelines at 24, 48 and 72 hours. Wound healing assay is used to monitor the healing of HOrF cells after treating them with flaxseed extract the results of the assay were obtained at 18, 24, 48 and 72 hours. The results illustrate the major component present in *L. usitatissimum* extract, the effect of *L. usitatissimum* extract on HOrF cell line show high proliferation effect at 24 and 48 hours and the highest proliferation effect was recorded at 72 hours' post treatment. Wound healing assay results show healing activity of *L. usitatissimum* extract on HOrF cells as fast as 18 hours' post treatment. *L. usitatissimum* extract have proliferating and healing effects on HOrF cell line. Therefore, it can be considered as a potential promising oral wound healing agent.

LACTIC ACID BACTERIA IN HEALTHY SUBJECTS AND THOSE WITH CHRONIC PERIODONTITIS: COLONY COUNT AND MACROSCOPIC IDENTIFICATION

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Abstract
Lactic Acid Bacteria (LAB) are normal flora found in the oral cavity. LAB can produce antimicrobials and regulate the host immune response so that the growth of pathogenic bacteria can be inhibited. LAB in the oral cavity are important to maintain oral health and prevent periodontal disease. Hence research on LAB in the oral cavity could lead to alternative therapy for periodontal disease, especially chronic periodontitis. This study evaluated the relative abundance of LAB in saliva and examined relationship between LAB with chronic periodontitis condition. This research is a cross sectional comparative study: the healthy group consisted of 49 subjects with healthy gingiva, whereas the chronic periodontitis group was comprised of 49 subjects with chronic periodontitis. Macroscopic identification of the colonies was based on the observation morphological characterization of form (viewed from above), margin (viewed from above), elevation (viewed from side), color, size, and mucoid. The difference in the number of LAB colonies in the healthy group and the chronic periodontitis group was analyzed using an Independent Sample T Test. The result of data analysis showed a significant difference in the number of LAB colonies between the healthy subjects and those with chronic periodontitis ($p < 0.05$). The study shows that the existence of LAB in oral cavity is essential to maintain oral health.

ANTIBACTERIAL ACTIVITY OF ENDODONTIC SEALERS BY MODIFIED DIRECT CONTACT TEST AGAINST PLANKTONIC BACTERIA

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Abstract
Endodontic sealers entomb residual bacteria after chemomechanical treatment of the root canal. Many studies have investigated the antibacterial activity of epoxy-resin-based sealer, but little information is available regarding the bioceramic- and MTA-based sealers. This research aimed to determine and compare the antibacterial activity of AH Plus™, iRoot SP™ and EndoSeal MTA™ against four species of planktonic grown bacteria. The antibacterial activity of AH Plus™, iRoot SP™ and EndoSeal MTA™ was assessed using a modified direct contact test. The freshly prepared sealers and the set sealers at 1, 3, 7, and 14 days were exposed to the bacteria suspension of *Enterococcus faecalis* (ATCC 29212), *Streptococcus mutans* (ATCC 700610), *Staphylococcus aureus* (ATCC 25923), and *Actinomyces viscosus* (ATCC 15987) for an hour. Subsequently, the bacteria count was determined after plating on respective agar for 24 hours. The antibacterial activity of endodontic sealers was analysed by one-way analysis of variance (ANOVA) and Tukey's post hoc test for multiple comparisons. For freshly prepared samples of AH Plus™, no surviving bacteria were recovered from these four bacterial species investigated. Whilst freshly prepared iRoot SP™ showed limited antibacterial activity. Similarly, antibacterial activity of both endodontic sealers was lost after 24 hours of setting. The EndoSeal MTA™ showed antibacterial activity up to 3 days against *S. mutans* and *S. aureus* while up to 14 days against *A. viscosus*. AH Plus™ demonstrates higher antibacterial activity in comparison to iRootSP™. EndoSeal MTA™ exhibits strongest antibacterial activity with prolonged action up to 14 days.

ACMELLA PANICULATA EXTRACT AS ANTIMICROBIAL AGENT AGAINST *STREPTOCOCCUS MUTANS*

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Abstract

Acmella paniculata or popularly known as toothache plant has been widely used as traditional medicine to help treating diseases that associated with toothache and gum infections. The objective of this study is to determine antibacterial activity of *A. paniculata* leaves and flowers extracts against *S. mutans*. Antibacterial activities of this study had been determined by using disc diffusion assay, minimum inhibition (MIC), minimum bactericidal concentration (MBC) anti-biofilm activity and microscopic analysis. The result showed Methanol (ML) and n-hexane leaves (NL) extracts showed the greatest inhibition zone towards *S. mutans* compare than other leaves extracts. Meanwhile n-hexane (NF) and DCM flowers (DF) extracts showed greatest inhibition zone towards *S. mutans* compared than other extracts. MIC values of NL and ML extracts were 25 mg/mL, respectively. Meanwhile MIC values of NF and DF extracts were 12.5 mg/mL, respectively. MBC values of NL and ML extracts were 50 and 100 mg/mL, respectively. Meanwhile MBC values of NF and DF extracts were 50 mg/mL, respectively. As for the biofilm formation of *S. mutans* was decrease until 70.0% after exposed with NL, ML and NF extracts. Meanwhile, biofilm activities of *S. mutans* were inhibited at 80% after treated with DF extracts. This has been proven by looking at the morphological conditions of *S. mutans* when treated with DF extract showed more lysis compared to the one that treated with NF extract. In conclusion, the crude extract of *A. paniculata* demonstrated antimicrobial properties against *S. mutans*.

COMPARISON OF EFFICACY BETWEEN MODIFIED VACUUM-FORMED RETAINER AND HAWLEY RETAINER IN EXPANSION CASES– A MULTICENTRE RANDOMISED CONTROLLED TRIAL

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Abstract
Hawley retainer (HR) is well known to be more effective in maintaining transverse expansion due to its rigidity. Different versions of vacuum-formed retainer (VFR) were described in the literature for expansion cases. The use of this modified VFR (mVFR) was shown to be as effective as other methods of retention. However, the majority of the studies did not compare the mVFR with a HR in expansion cases. To compare the efficacy of HRs and modified VFRs with palatal coverage in transverse expansion cases. Thirty-five (n=35) subjects who had undergone expansion ($\geqslant$3mm) during treatment either with quadhelix, RME, removable appliances with midline screw or by archwires were selected from the Orthodontic Unit of Universiti Kebangsaan Malaysia, Klinik Kesihatan Bandar Botanik Klang and Klinik Kesihatan Sungai Chua Kajang. Written informed consent was obtained from patients who agreed to participate in the study. A centralised randomisation technique that incorporated external involvement was used in order to prevent selection bias and protect the assignment sequence until allocation. The subjects were randomly allocated to mVFR and HR groups. The interarch widths of each subject were measured at debond (T0), 3 months post-debond (T1) and 6 months post-debond (T2). Intraclass correlation coefficient which used to assess intra-observer reliability demonstrated excellent reliability with all arch widths measurements scoring over 1.0. Mixed ANOVA was used to assess the arch width changes between retainer groups over the study period. Intention-to-treat analysis was performed for lost to follow-up subjects. The trial is on-going. Data collection was completed for 24 subjects up to T2 review. No statistical difference was found between two retainer groups in terms of arch width changes. Interim results suggested that there was similar efficacy between HRs and modified VFRs in maintaining transverse width of expansion cases.
Clnicaltrials.gov ID:NCT04237298

EVALUATING THE PIT AND FISSURE SEALANT RETENTION CAPABILITIES OF SELF-ETCH AND CONVENTIONAL ACID-ETCH TECHNIQUES: A RANDOMIZED CONTROLLED TRIAL

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Abstract
Resin-based fissure sealants have been widely studied and established to prevent and control the progression of non-cavitated caries in the pits and fissures of the occlusal surfaces of permanent molars. A recently introduced self-etch adhesive system that reduces the number of steps required for treatment has been found to decrease procedure sensitivity and the chair time required in fissure sealant applications. The objectives of this study were to evaluate and compare the clinical retention capabilities and incidence of caries of the self-etch adhesive system and conventional acid-etch techniques at a 6-month follow-up period. Based on the inclusion and exclusion criteria, a total of 47 healthy children aged between 9 and 10 years (mean age 9.7 years) with all erupted permanent first molars, either sound or non-cavitated (ICDAS 0A), were included in the trial. The 188 molars were randomly assigned in split-mouth design to two application strategies, the self-etch mode in the universal adhesive (Single Bond Universal Adhesive Scotchbond™) (intervention) and conventional acid-etch (control). The fissure sealants placed on the molars were evaluated after six months to assess sealant retention using Simonsen's criteria while caries incidence was evaluated using ICDAS scoring system. At the 6-month follow-up, the retention rate for the fissure sealant application using conventional acid-etch was significantly higher at 84.5% than for the self-etch mode using the universal adhesive system at 28.5%. A higher level of caries incidence was observed in the self-etch group compared to the control group due to a total loss of sealant retention, though the difference was not statistically significant. Based on that, it can be concluded that at the 6-month follow up, the conventional phosphoric acid-etching technique had superior retention rates over the self-etch adhesive technique. However, no differences in caries incidence were apparent between the two groups.

DEVELOPING CLINICAL PRACTICE GUIDELINES FOR DENTAL CARIES MANAGEMENT FOR MALAYSIAN POPULATION THROUGH THE ADAPTE TRANS-CONTEXTUAL ADAPTATION PROCESS

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

CLINICAL OUTCOMES FOLLOWING THE USE OF SYSTEMIC AND LOCAL ANTIMICROBIALS IN THE MANAGEMENT OF ODONTOGENIC INFECTIONS IN PAEDIATRIC PATIENTS

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

COMPARISON OF SPEECH INTELLIGIBILITY AND QURANIC RECITATION PROFICIENCY IN MALAY CLEFT PALATE PATIENTS

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Abstract

Speech intelligibility is the most important parameter in determining the success of cleft palate repair. Previous studies have shown that adequate speech intelligibility can be achieved after primary palatoplasty. In Muslim Malay population, there is additional requirement to read Quran proficiently. The aim of this study is to assess perceptual intelligibility of speech and proficiency of Quranic recitations and to compare if there are differences between the two. Data collection was done on 30 patients clinically and by recording speech samples while these patients were reading on a Malay passage and first verse of Holy Quran. Both samples were assessed by authors using assessment form adapted from Cleft Audit Protocol for Speech–Augmented and Quranic Assessment Form adapted from the Malaysian Ministry of Education's learning module. Result showed that 100% of the patients have understandable speech however only 60% of these patients were able to at least recite Quran fluently with adherence to the Rules of Tajwid. Statistical analysis revealed significant correlation between these two parameters with p-value<0.001. The reported speech intelligibility and Quranic recitation result provide important prognostic reference information not just to the professionals in cleft team but parents and Quranic teachers as well.

ECO-ENZYME AS ENDODONTIC IRRIGANT: IMPACT ON DENTINE MICROHARDNESS

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Abstract
To evaluate the effect of papaya enzyme, pineapple and orange mixture enzyme, and sodium hypochlorite on dentine microhardness at coronal, middle and apical thirds of root dentine. Ethical approval was obtained for this in-vitro study. Thirty-three recently extracted single-rooted human permanent premolars with close apex were prepared using rotary endodontic files and longitudinally sectioned into sixty-six root fragments that were randomly divided into three groups: (1) papaya enzyme (PE); (2) pineapple and orange mixture enzyme (POE); and (3) 2.5% sodium hypochlorite (NaOCl). The dentine microhardness was measured using Vickers diamond indenter with twenty-five grams load and ten seconds dwell time at coronal, middle and apical thirds of the roots, before and after treatment with PE, POE, and NaOCl. The mean difference in dentine microhardness over three different irrigants and locations of the roots were statistically measured using two-way mixed Analysis of Variance with post-hoc comparison analyses performed if required. The level of statistical significance was set at 0.05. All three groups reduced the root dentine microhardness. No significant difference was observed between the groups ($p > 0.05$). Only microhardness at the coronal third of root dentine was significantly decreased after immersion in POE ($p = 0.05$) as compared to PE and NaOCl which significantly affected the apical and middle root dentine respectively as well. Eco-enzyme such as papaya enzyme or pineapple and orange mixture enzyme could be an alternative endodontic irrigant to sodium hypochlorite as the effect on dentine microhardness is comparable to sodium hypochlorite.

ANTIMICROBIAL ACTIVITY OF PROBIOTIC AGAINST PORPHYROMONAS GINGIVALIS, A PERIODONTAL PATHOGEN

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Abstract

Periodontal disease is biofilm associated polymicrobial disease which involves common pathogen *Porphyromonas gingivalis* (*P. gingivalis*). Current treatment strategies of periodontal disease include eliminating specific pathogen by antibiotic treatment. However, this strategy could last only temporary as recolonization occurs within months and it might cause the emergence of antibiotic resistant pathogens. Thus, there is urgency to find alternative treatment which are safer but efficient as compared to commercial antibiotics. Probiotics is live microorganism which when consumed in adequate amount, it will be beneficial to the host. One of the common uses in dental field is the application of probiotic as adjunct therapy for oral problems. However, most of the probiotics studies in the oral care have only focused on dental caries. The aim of this study is to determine the antibacterial activity of *L. rhamnosus* against *P. gingivalis*. The antimicrobial activity is determined by disc diffusion assay. The disc diffusion assay of the cell free supernatant of *L. rhamnosus* against *P. gingivalis* shown consistent inhibition diameter of 11 mm compared to commercial Chlorhexidine as the positive control which shown 14 mm average inhibition diameter. This shown that the cell free supernatant is almost as efficient as commercial Chlorhexidine. Thus, it can be inferred that *L. rhamnosus* cell free supernatant is an efficient antimicrobial agent against *P. gingivalis*. Further observation on the molecular mechanism will be investigated throughout the study.

IDENTIFICATION OF SERUM PROTEOMIC SIGNATURES ASSOCIATED WITH ORAL SQUAMOUS CELL CARCINOMA

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Abstract
Oral squamous cell carcinoma (OSCC) is an aggressive disease with poor prognosis. It is often diagnosed at an advanced stage. Despite the advancement in diagnosis and treatment, there is still a need for early detection and improvement in the prognosis of OSCC. This study aims to identify the serum proteomics signatures for OSCC patients. Serum samples (n=60) from OSCC patients, oral potentially malignant disorder (OPMD) patients, and healthy individuals were analysed using two-dimensional gel electrophoresis (2-DE), mass spectrometry (MS) and bioinformatics analyses. Further validation was performed using enzyme-linked immunosorbent assay (ELISA) (n=120) and immunohistochemistry (IHC) (n=70). In total, 20 differentially expressed proteins were identified, of which 9 were significantly upregulated and 11 were significantly downregulated in OPMD and OSCC compared to control. Bioinformatics analysis revealed platelet degranulation, activation of classical complement pathway, liver X receptor/retinoid X receptor (LXR/RXR) activation, and acute phase response signalling pathways are associated with the development and progression of OSCC. α1-antitrypsin (AAT), apolipoprotein A-I (APOA1), clusterin (CLU), and haptoglobin (HP) were shown to be significantly different in OSCC when compared with control using ELISA analysis. However, only CLU and HP were found to have significantly lower levels in the OSCC tissues. The identified protein signatures could reflect the development and progression of OSCC. These protein signatures may play important roles to improve the detection of OSCC. Nevertheless, further investigation is warranted to determine their roles in OSCC.

SALIVARY AND SERUM LEVELS OF ZINC AND METALLOTHIONEIN IN PERIODONTITIS PATIENTS WITH OR WITHOUT RHEUMATOID ARTHRITIS

Jazli Aziz[1], Mohammad Tariqur Rahman[1], Rathna Devi Vaithilingam[1]
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Abstract

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

IDENTIFICATION AND CHARACTERIZATION OF A NOVEL EPSTEIN-BARR VIRUS–ENCODED CIRCULAR RNA FROM LMP-2 GENE

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Abstract

Epstein–Barr virus (EBV) is a human virus that infects approximately 95% of the world's population. EBV is transmitted mainly through saliva and has been associated with various oral diseases, including periodontal disease, oral hairy leukoplakia as well as various lymphoid and epithelial malignancies. EBV's life cycle comprises of latent and lytic phases; latently infected memory B lymphocytes in the peripheral blood are the main reservoir for EBV persistence. Latent EBV infection is the predominant mode of infection for various diseases, therefore understanding of EBV latent gene expression would provide insights into EBV pathogenesis. Circular RNAs (circRNAs) are novel non-coding RNAs formed by backsplicing and emerging evidence shows that EBV-encoded circRNAs are expressed in some EBV-associated diseases. However, a comprehensive identification and characterization of EBV-encoded circRNAs in B lymphocytes remains unexplored. Here we report an *in silico* analysis for the detection of EBV-encoded circRNAs in an EBV-transformed lymphoblastoid cell line using find_circ and customized algorithms. The expression of four bona fide EBV circRNAs were validated and of these, a circRNA generated from LMP-2 gene (circLMP-2_1) which showed the highest in silico expression was chosen for further study. The expression of circLMP-2_1 was detected in a panel of EBV-positive cell lines modelling different latency programmes (type I, II and III) as well as in lytic state. Further, circLMP-2_1 is expressed concomitantly with the linear LMP-2 mRNA upon EBV lytic reactivation, indicating production of circLMP-2_1 is dependent on its linear counterparts. We also showed that circLMP-2_1 is localized at both the cytoplasm and nucleus, suggesting that circLMP-2_1 might involve in pre- and post-transcriptional regulation of viral or host gene expression. Taken together, we have identified and characterized a novel EBV circRNA encoded by LMP-2 gene, results that will provide a more comprehensive understanding of EBV biology and its associated diseases.

EXPRESSION OF KI-67, FSCN1 AND TNFRSF12A IN HISTOLOGICALLY NON-INVOLVED MUCOSAL SURGICAL MARGINS AS PREDICTIVE MARKERS FOR LOCAL RELAPSE IN ORAL SQUAMOUS CELL CARCINOMA

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Abstract

The presence tumour-related genetic alterations in histologically non-involved mucosal surgical margins was linked to development of local relapse in OSCC. The present study aimed to determine the association between expression of Ki-67, FSCN1 and TNFRSF12A in histologically non-involved mucosal surgical margins of OSCC patients and relapse. The study involved a total of 34 OSCC cases including 15 cases of patients who had relapse within the 5 years follow-up period and 19 cases of patients who did not had relapse. Two-stage sampling was carried out to select the margins' site, followed by the representative sections from the selected site. All the selected sections were subjected to FSCN1, TNFRSF12A and Ki-67 immunostaining. The immunostaining for FSCN1 and TNFRSF12A were evaluated by a semi-quantitative approach (HSCORE), while Ki-67 immuno-positivity was scored by the percentage of positive staining cells in randomly selected fields (Labelling index). The correlation of FSCN1, TNFRSF12A and Ki-67 expressions and clinicopathological parameters with OSCC relapse were analysed by Chi-square test. Binary logistic regression was performed to predict the relationship of OSCC relapse and the significantly associated parameters. Our results showed that expression of FSCN1, TNFRSF12A and Ki-67 in histologically non-involved mucosal surgical margins was weak to moderate in both study and control groups. OSCC relapse in this study was significantly associated with patients' age (p < 0.001), pattern of invasion (p=0.007), Chinese ethnicity (p=0.013), presence of epithelial dysplasia (p < 0.001), and alcohol consumption habits (p = 0.025). Age was the only predictor of relapse from the binary logistic regression analysis with an 11-fold risk of OSCC relapse noted in relation to patients who were aged above 57.5 years. OSCC relapse in this study model is associate with patients' age but not the expression of FSCN1, TNFRSF12A and Ki-67 in histologically non-involved mucosal surgical margins.

ACCURACY OF CONTRAST-ENHANCED COMPUTED TOMOGRAPHY SCAN IN ASSESSING DEPTH OF INVASION IN ORAL TONGUE SQUAMOUS CELL CARCINOMA

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Abstract

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

CLINICOPATHOLOGICAL STUDY OF ORAL LICHEN PLANUS AND ORAL LICHENOID REACTION

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Oral lichen planus is a chronic inflammatory disease that affects the mucosa of the oral cavity. Oral lichenoid reactions/ lesions share many clinical and histopathological features with oral lichen planus, and represent a response to extrinsic or causative factors (drugs, allergens). Objectives: The objectives of this study were to assess the clinical and histopathological features of patients diagnosed with oral lichen planus and oral lichenoid reaction/ lesions. This study also sought to investigate the association between clinicopathological characteristics and patients with/ without exposure to causative factors. Finally, this study compared the ratio of plasma cells to lymphocytes in patients with/ without exposure to causative factors. This study was conducted in a retrospective manner utilizing 122 samples obtained from Faculty of Dentistry, University of Malaya. Clinical and histological evaluation were carried out for each case using data extracted from clinical folders and hematoxylin and eosin stained slides. Presence of eosinophils were significantly associated with exposure to causative factors ($p=0.016$ and $p=0.011$). There were significant difference in plasma cells to lymphocytes ratio between patients who were exposed to causative factors and those who were not ($p=0.043$ and $p=0.031$). Plasma cells to lymphocytes ratio in patients exposed to causative factors were higher than those who were not ($p=0.048$ and $p=0.032$). There is association between the presence of eosinophils and exposure to causative factors (drugs and restorations). This study also demonstrated higher plasma cells to lymphocytes ratio in patients exposed to causative factors than those who were not. These findings strongly support the role of causative factors, mainly the drugs and dental restorative materials in the etiology of oral lichenoid reactions/ lesions.

FLUORIDE CONCENTRATION IN MALAYSIAN INFANT FORMULAS: A LABORATORY STUDY

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

SURVIVAL RATE & MORTALITY RATE OF ORAL CANCER PATIENTS IN ORAL & MAXILLOFACIAL CLINICAL SCIENCES DEPARTMENT, FACULTY OF DENTISTRY, UNIVERSITY OF MALAYA: A RETROSPECTIVE STUDY

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

THE HAEMOSTATIC EFFECT OF CHLORHEXIDINE: IN-VITRO STUDY

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Abstract

The management of intra-operative bleeding in paediatric patient is still a challenge among dental practitioners. The haemostatic agents might be helpful in procedure that involves blood. Chlorhexidine was believed to have a potential effect on reducing bleeding time. The objective of this study is to determine the haemostatic effect of chlorhexidine-based and chlorhexidine gluconate mouthwashes with different concentrations in enhancing blood coagulation. An experimental control study (in-vitro) of plasma samples from eight subjects was conducted in the Dental Research and Diagnostic Laboratory, Faculty of Dentistry, UM. The coagulation test (PT and APTT) with a tilt tube method for assessing the coagulation effect of chlorhexidine for each subject was divided into eight groups of different solutions and labelled as A, B, C1, C2, C3, D1, D2 and D3. Group A, without added solution, was set as baseline PT and APTT, whilst Group B as a control added with distilled water. The pure chlorhexidine solutions 0.12%, 0.2% and 2.0% were labelled as C1, C2 and C3 respectively. While the three chlorhexidine mouthwashes with different concentrations 0.1%, 0.12% and 0.2% were labelled as D1, D2 and D3 respectively. Ultimately, the obtained data were analysed using descriptive and paired-sample test. The results were compared with the normal reference range, 9-to-15 seconds for the PT test and 25-to-40 seconds for the APTT test. Test results showed no clotting or delayed clotting time for both PT and APTT with chlorhexidine addition. The mean PT and APTT for Group C1 with pure chlorhexidine gluconate 0.12% were 75.50±127.48 and 58.19±37.19 respectively. The clotting time for the chlorhexidine groups was significantly more than the baseline and control group (P> 0.001). Chlorhexidine may not be an effective haemostatic agent to accelerate haemostasis in PT and APTT coagulation test at an in-vitro study.

COMPARING THE ORAL HEALTH STATUS OF MALAYSIAN SHELTERED AND UNSHELTERED HOMELESS.

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Abstract

There are two type of homeless in Malaysia which include primary and secondary homeless. This study aimed to compare oral health status among the primary (rough sleepers/roofless) and secondary (sheltered) adult homeless in Malaysia. This was a cross-sectional survey among adult homeless in five states in Malaysia. Oral examination was conducted in nine homeless facilities under the supervision of Yayasan Kebajikan Negara (YKN). The DMFT index, Simplified-Oral Hygiene Index (OHI-S) and Basic Periodontal Examination (BPE) were used to record caries experience, oral hygiene status and the assessment of periodontal status, respectively. Out of 192 respondents, 37% were primary homeless and 63% were secondary homeless. There were no statistically significant differences found in the oral health status between the primary and secondary homeless in this study. The mean DMFT for primary homeless was 9.25(SD=7.57) while secondary homeless was 11.11(8.63). In both categories, missing due to caries (MT) recorded as the highest mean score. More than half of respondents in both categories presented with fair to poor oral hygiene status. Periodontitis was found in 80.9% of primary homeless and 76.1% of secondary homeless. There were no statistically significant differences in relation to caries experience, oral hygiene and periodontal status among unsheltered and sheltered homeless population in Malaysia. Both primary and secondary homeless presented with high caries experience and high prevalence of periodontitis. Findings from this study suggest the need to include both homeless categories in any oral health-related initiatives for the homeless in Malaysia.

THE EFFECTS OF THE SIMS PROGRAMME TO IMPROVE PRESHOOL CHILDREN'S ORAL HYGIENE LEVEL: A CLUSTER RANDOMISED CONTROL TRIAL

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Abstract
This study evaluated the effects of Senyuman Indah Milik Semua programme (SIMSP) versus existing preschool oral healthcare programme (POHP) on oral hygiene levels of children in Kampar district, Perak, Malaysia. This was a pragmatic, cluster randomised, matched pair, examiner-blind, controlled trial. Using computer generated numbers, 14 preschools were randomly selected to receive SIMSP intervention over 6 months and another 14 continued with existing POHP with allocation concealment achieved at cluster level. Healthy 5-6-year-old children and parents who understand Malay were recruited. The SIMSP comprised of preschool visits by dental therapists, and oral health education for children and parents. The 14 control preschools received existing POHP. Primary outcome was dental plaque scores. Secondary outcomes were children's oral behaviours and parental oral health literacy (OHL). Data were analysed using SPSS software. Overall, 653 children were recruited at baseline (intervention: 344 vs control: 309). At 6-month, 83.4% and 76.4% completed the study, respectively. Mean plaque score decrement was higher in SIMSP than that in POHP (p=0.027, effect size=+0.51). Significantly more SIMSP children took carbonated drinks ≤1-3x/week (p=0.033). Parents in SIMSP had higher knowledge (p=0.024) with higher OHL scores (effect size=+0.97) than parents in POHP. The SIMSP was effective in reducing children's plaque scores, soft drinks intake, and improve parental OHL than the POHP.

THE EFFECT OF LYOPHILIZED PLATELET RICH PLASMA IN THIRD MOLAR EXTRACTION SOCKETS AND ITS SURROUNDING TISSUES

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Abstract
Lyophilized platelet rich plasma (LPRP) is isolated platelet cells that have been freeze-dried into powder form, making it easily storable for repeated use. α-granules in platelets contain mitogenic, chemotactic growth factors and associated healing molecules which aid socket healing. Since socket healing is dynamic in nature, this study aims to determine the effect of repeated placement of quantified lyophilized platelet rich plasma to its soft and hard tissue components. Lyophilized platelet rich plasma was topically placed and later injected into fresh sockets using third molar surgical model, randomized according to the split mouth approach. The control site received placebo. The application of lyophilized platelet rich plasma was done intraoperatively, 1 month and 2 months postoperatively. The endpoint measurements were post-operative pain, swelling, trismus, pocket depth at mid-distal adjacent second molar, soft tissue healing and bone formation (which was assessed radiographically). Fifteen healthy young adults were recruited into this study. There was no significant difference in post-operative pain, size of swelling, trismus and bony healing within their specific timeline of this study. However, the lyophilized platelet rich plasma group showed significant reduction in pocket depth at 2 months post-operative period suggesting that lyophilized platelet rich plasma improves soft tissue healing.

THEMATIC ANALYSIS OF MALAY MEDICAL MANUSCRIPTS FOCUSING ON DENTAL PROBLEMS WITH SPECIAL REFERENCE TO MSS 3084

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Abstract
Malay manuscripts are gateways to our ancestor's knowledge and view on the ancient practices of health, medicine and pharmaceutical approaches in Malay history. These Malay manuscripts were written in an old form of Jawi, an alphabetical system that was practiced by the Malays as early as the 12th century. However, the transliteration work of these texts is often limited to history, philology and cultural studies. With the emergence of antibiotic resistant bacteria, low quality of life due to dental problems and the high cost for dental treatment, the World Health Organization Traditional Medicine Strategy 2014-2023 offers a solution that could overcome the current dental challenges. In view of this strategy, it is timely for scientists to review manuscripts written by our scholars to find alternative remedies that could help to improve oral health, holistic wellness as well as patient autonomy. This study aims to transliterate MSS 3084 and analyze several Malay medical manuscripts including MSS 3084 for remedies and treatments for dental problems from the Ancient Malay culture. In this study, MSS 3084 text, an original jawi manuscript which is available at the National Library of Malaysia, was transliterated and several other Malay manuscripts with dental-related contents were examined. A total of fifteen remedies for dental problems were found from six Malay manuscripts. The traditional formulations were described for problems such as dental abscesses, toothaches, gingivitis and halitosis. Most of the ingredients used in the formulations are from natural sources, readily available, inexpensive and some has been scientifically proven to possess properties that can improve dental health. With further scientific experimentation and research, these traditional remedies have the potential to be developed into effective treatments that may improve dental health.

IMMUNOHISTOCHEMISTRY ANALYSIS OF IL-17C AND IL-17RE EXPRESSION IN GINGIVAL TISSUE AFFECTED BY PERIODONTITIS

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Abstract
IL-17 family are among the most recently described cytokines shown to play a role in the pathogenesis of the chronic inflammatory disease, including periodontitis. This study aimed to compare the expression of IL-17C and its receptor E (IL-17RE) in the healthy and diseased gingival tissue using immunohistochemistry. This study was performed to compare the expression of IL-17C in the gingival tissue of healthy and periodontal subjects using immunohistochemistry. Ten samples of gingiva tissue were obtained from groups of healthy and periodontal disease subjects. Each gingiva tissue sample was embedded into paraffin block before cutting and transferred onto poly-lysine slides prior to the immunohistochemistry (IHC) analysis for the IL-17C and IL-17RE respectively. The IHC analysis was carried out using the ImmPACT DAB Peroxidase detection kit (Vector Lab, USA). The presence of immunological staining was observed and counted using the manual counting grid. Our data showed that IL-17C and IL-17RE expressed at the epithelium layer of the gingiva tissue both in healthy and disease samples. Statistical analysis showed that the expression of both antibodies in the healthy and diseased sample were not substantially different. IL-17C and its receptor IL-17RE were found to be expressed in the epithelial layer of healthy and diseased tissue, but the expression was not significantly different. This study was supported by USM Research grant: 304/PPSG/61313137.

ADDITION OF METHYLPREDNISOLONE ENHANCES ANALGESIC EFFECT OF PAINKILLERS FOLLOWING THIRD MOLAR SURGERY.

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Abstract
The aim of this study was to study synergistic analgesic effect of pre-operative submucosal injection of 40mg methylprednisolone following mandibular third molar surgery. This double-blinded randomized control trial recruited 60 patients who required surgical extraction of lower third molar under local anaesthesia. All patients were randomly assigned to 3 groups: Group 1 = pre-operative methylprednisolone/post-operative ibuprofen, Group 2 = pre-operative methylprednisolone/post-operative paracetamol, and Group 3 = post-operative ibuprofen (control). Pain intensity was measured with Visual Analog Scale (VAS) on the first post-operative 1 hour to 8 hours, 12 hours, Day1, Day2 and Day7. Pain relief score and amount of rescue analgesic (Tramadol) consumed was also recorded. Total pain relief (TOTPAR) was then generated from pain relief score. Besides pain, facial swelling and trismus were also assessed. Descriptive and multivariate analysis were computed, and level of significance was set at $P<0.05$. Group 1 and 2 had significantly lower VAS score and higher total pain relief (TOTPAR) on post-operative 6 hours to 8 hours and 24 hours ($p<0.05$). Both groups also recorded less consumption of rescue analgesic. This study showed that single pre-operative submucosal injection of methylprednisolone enhanced analgesic effect of painkillers (ibuprofen and paracetamol), besides reducing post-operative swelling and trismus.

MALAYSIAN SCHOOL-BASED SMOKING CESSATION PROGRAMME (THE KOTAK PROGRAMME): QUALITATIVE INVESTIGATION OF DENTISTS' PERCEPTION

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Abstract

The KOTAK programme was established by the Ministry of Health to reduce smoking prevalence and prevent early smoking uptake among students. Government dentists are the front liners who delivered the KOTAK programme. The nature of KOTAK programme's execution is through the collaboration between dentists, teachers as host and students as the recipients. Therefore, the feedback and insights from the dentists regarding the KOTAK programme are of paramount importance to be considered as part of the process evaluation of this programme. To document the perceptions of the government dentists towards school-based smoking cessation programme in Malaysian schools (the KOTAK Programme) in terms of its strengths, weaknesses and recommendations for improvement. A qualitative approach using Focus Group Discussion was conducted with three groups of dentists exploring the strengths, weaknesses and recommendations for improvement of the KOTAK programme. A general inductive approach was used to identify recurrent themes. Data management and thematic coding were done using NVIVO software. Several themes emerged based on input from dentists, teachers, and students. "School as an ideal setting", "dentist as subject-matter expert" and "positive perceived effectiveness" were found to be the emerging themes for the strengths of Kotak programme. Similar emerging themes concerning the weaknesses and recommendations for improvement were related to "operational', "attitudinal", and "collaboration". Addressing difficulties faced by the dentists may improve the delivery of the programme. As for the receiver of the programme, the students' suggested that appropriate personnel should be appointed to provide the smoking cessation advice. Despite the weaknesses, the KOTAK programme was perceived to be effective by the government dentists. There is a need for content and delivery improvement of KOTAK programme through multisectoral collaborations to promote its effectiveness and sustainability in the long term.

MAGEB2 ANTIBODY AS POTENTIAL DIAGNOSTIC AND PREDICTIVE TOOL IN THE PROGRESSION OF ORAL CANCER

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Abstract

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

EVALUATING THE ANTI-PLAQUE EFFICACY OF SILVER DIAMINE FLUORIDE (SDF) USING AN IN-SITU GROWN BIOFILM MODEL

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Abstract

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

DENTAL CARIES AMONG 12-YEAR-OLD SCHOOLCHILDREN AFTER DISCONTINUATION OF WATER FLUORIDATION IN PAHANG, MALAYSIA

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Abstract
This study aimed to compare caries prevalence and mean caries experience among Malaysian children in water fluoridation (WF) and WF-ceased areas, and its associated risk factors. This was a cross-sectional study with comparison communities conducted among 12-year-old school children (n=620) in two Malaysian states, namely Pahang (WF-ceased in 2012) and Perak (WF-continued). Dental caries was examined using ICDAS criteria by a trained and calibrated examiner. Questionnaire was used to collect data on oral hygiene practices, dietary habits, and demographic background. Data analysis was conducted using complex sample analysis in SPSS version. Association between independent variables and dental caries were analysed using simple logistic regression and general linear model analyses. Dental caries (D4-6MFT) data were significantly higher among children in WF-ceased (prevalence: 39.0%, mean: 0.80) areas than children in communities where WF continued (prevalence: 20.9%, mean: 0.33). After adjusted for other confounders, exposure to WF (β: 0.28, 95%CI: 0.14-0.41) remains a strong predictor of low caries experience among the study population. In addition, children with irregular toothbrushing frequency before sleep and whose parents have lower education attainment are associated with higher caries experience in the multivariate analysis. Caries prevalence and mean caries experience were significantly higher among children in WF-ceased areas than children in communities where WF continued. Exposure to WF, toothbrushing frequency before sleep and parents' education level were associated with caries experience in the multivariate analysis. The findings are valuable to build a case for local authorities to reinstate WF in the state of Pahang.

OPINIONS OF SECONDARY SCHOOL STUDENTS ON THE USE OF A SMARTPHONE APPLICATION AS ORAL HEALTH EDUCATION TOOL: A QUALITATIVE STUDY.

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Abstract

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

THE EFFECT OF ORAL PROBIOTIC STREPTOCOCCUS SALIVARIUS K12 ON CANDIDA ALBICANS CELL COUNT IN POLYMICROBIAL BIOFILMS

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Abstract

Candida albicans is an opportunistic pathogen in the oral cavity and considered as one of the aetiological factor for oral cancer. Meanwhile, *Streptococcus salivarius* K12 is an oral probiotic that is beneficial to the oral cavity. The objective of the present study is to determine the effect of *S. salivarius* K12 on *C. albicans* cell count with the hypothesis that *S. salivarius* K12 reduced the number of *C. albicans* in polymicrobial biofilm. To assess the effect of *S. salivarius* K12 on *C. albicans* cell count, *C. albicans* strains MYA-4901, ALC2, ALC3 and *S. salivarius* K12 were grown in both nutrient broth (NB) and RPMI-1640. In mono-species biofilm, 10^5 of *C. albicans* cells and 10^6 of *S. salivarius* K12 cells were grown separately in a 96-well plate. In contrast, both microorganisms were combined for polymicrobial biofilms with similar cell numbers as in mono-species. The biofilms were incubated for 72 hours at 37 °C, and the media were replenished every 24 hours. The biofilms were scratched, and 10 µL of diluted suspension was pipetted into haemocytometer chamber to quantify *C. albicans* cells. A decrease of *C. albicans* cell number were observed in polymicrobial biofilms compared to mono-cultured biofilm when grown in NB and RPMI-1640. However, only RPMI-1640 grown *C. albicans* ATCC MYA-4901 and ALC2 exhibited significant decreased (P<0.05). *S. salivarius* K12 inhibited *C. albicans* colonisation in polymicrobial biofilms, thus supported the hypothesis of present study.

ANTI-CANCER EFFECTS OF EURYCOMA LONGIFOLIA JACK DICHLOROMETHANE ROOT EXTRACT ON NASOPHARYNGEAL CARCINOMA CELL LINE

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Abstract

Eurycoma longifolia jack (Tongkat Ali) root extract is well known to contain bioactive compounds that exhibit many properties including cytotoxic activity against cancer cells. The purpose of this study was to assess the cytotoxic activity of dichloromethane DCM root extract against nasopharyngeal cancer cell line (ORL-115). *E. longifolia* root was extracted using DCM solvent by Soxhlet method. MTS assay was used to evaluate the cytotoxic effect of the root extract against ORL-115 cell line for three different incubation times which were 24-hour, 48-hour, and 72-hour. Results showed that DCM extracts exert cytotoxic activity against ORL-115 cell line. The IC 50 of DCM extract were 678.87 µg/ml, 136.71 µg/ml, 73.72 µg/ml for 24-hour, 48-hour and 72-hour incubation period, respectively. The cytotoxic activity increased as the incubation time increased. Our results demonstrate that DCM root exerted cytotoxic activity against the nasopharyngeal carcinoma cell line. The cytotoxic activity of the extract was dose dependent and time dependent.

SUBGINGIVAL ORAL MICROBIAL PROFILE OF PATIENTS WITH RHEUMATOID ARTHRITIS AND CHRONIC PERIODONTITIS

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Abstract

Associations between rheumatoid arthritis (RA), a chronic inflammatory autoimmune disease of the joints, and chronic periodontitis (CP), a chronic inflammatory disease affecting tooth supporting tissues have been reported. Changes in bacterial composition (dysbiosis) and systemic inflammation (such as RA) are thought to disrupt the balance between host and oral microbiota leading to destruction of periodontal tissues and CP. Therefore, this study aimed to investigate the subgingival oral microbial profile of RA subjects with CP. Subjects were allocated into RA (n=49) or non-RA (NRA) (n=55) groups. Subgingival plaque DNA was extracted and sequencing was performed using MiSeq platform targeting the 16s rRNA V3-V4 region. Data analysis was processed in CLC Microbial Genomic Workbench (Qiagen). Alpha diversity estimation (Shannon and Simpson) showed highly diverse communities across groups. The species richness (Chao) in NRA-CP was significantly higher and statistically different when compared to NRA-H (p=0.014). Beta-diversity analysis comparing bacterial communities based on their compositional structures showed that bacterial communities clustered together according to CP conditions. Phyla Firmicutes, Fusobacteria, Bacteroidetes, Actinobacteria, Proteobacteria, Patescibacteria and Epsilonbacteraeota were 99% of the total abundance in non-CP groups. In CP groups, there were higher abundance in phyla associated with CP (Spirochaetes and Synergistetes) and reduction in phyla associated with periodontal health (Actinobacteria and Proteobateria). Genera Neisseria and Prevotella 2 were more abundant in RA groups compared to non-RA groups. Increase in RA disease duration and severe rheumatological data showed positive correlation with healthier subgingival bacterial. Subgingival oral microbiota of RA is similar to non-RA, however, CP conditions in both groups presented with additional taxa. Severe RA will be associated with more anti-inflammatory medications which may explain the correlation with healthier subgingival oral microbiota but with lifelong adverse effects. The effect of subgingival oral microbial dysbiosis on RA warrants further investigation.

DIFFERENTIAL MUCIN EXPRESSION IN SALIVARY GLAND TUMOURS

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Abstract
Varied alterations in types of secreted mucin may affect the regulation of cell growth, immune response and adhesion of cell. These changes may indirectly contribute to the ability of tumour invasion and metastasis. However, the expression of mucins in salivary gland tumours has not been explored in depth. To investigate expressions of mucin in the salivary gland tumour microenvironment and make comparisons between benign and malignant, and minor and major salivary gland tumours. Special stains were used to stain neutral mucin (Periodic acid Schiff), sialomucin (Alcian Blue) and sulfomucin (Aldehyde Fuschin) within tissues from 6 normal salivary glands and salivary gland tumours including 31 pleomorphic adenoma (PA), 27 mucoepidermoid carcinoma (MEC) and 15 adenoid cystic carcinoma (AdCC). Statistical analyses to compare mucin expression in these salivary gland tumours were done using Chi-square tests. Sialomucin was the most expressed mucin in all salivary gland tumours regardless of origin. A significant difference was observed in mucin expression between benign and malignant salivary gland tumours, in which PA showed 3 times significantly higher expression of sialomucin compared to MEC and AdCC (p=0.028). PAs of major gland origin showed 42 times significantly higher expression of sialomucin compared to PAs of minor gland (p=0.000). Alcian blue was the best special stain to visualize mucin elements in salivary gland tumours. Sialomucin content in PA of major glands was vastly increased from that in minor glands. The degree of sialomucin expression may play a role in diagnosis of borderline salivary gland tumours.

CAN POST-TREATMENT ORAL CANCER PATIENTS' CONCERNS REFLECT THEIR CANCER CHARACTERISTICS, HRQOL, PSYCHOLOGICAL DISTRESS LEVEL AND SATISFACTION WITH CONSULTATION?

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Abstract

Oral cancer and its treatment impact patients' post-treatment outcomes, challenging clinicians to manage them optimally. Addressing patients' concerns are central to holistic patient-centred care. This study aimed to determine post-treatment oral cancer patients' concerns and its relationship with patients' clinical characteristics, HRQoL, psychological distress and patient satisfaction during their follow-ups. 85 post-treatment oral cancer patients attending their follow-up reviews were recruited. Malaysian aged 18 years and above, and on follow-ups from one month until five years or more were eligible. Patients completed the PCI-H&N, FACT-H&N v4.0 and Distress Thermometer at pre-consultation and satisfaction questionnaire at post-consultation. The data were analysed descriptively; multiple linear regression and multivariate logistic regression analyses were used to determine possible predictors of patients' HRQoL and psychological distress. 'Recurrence or fear of cancer coming back' (31.8%) was most frequently selected. 43.5% patients selected ≥4 concerns. A significantly high number of concerns was associated with patients of 'one-month to one-year post-treatment' (n=84%; p=0.001). Significant association existed between 'time after treatment completed' and patients' concerns of 'chewing/eating', 'mouth opening', 'swelling', 'weight', 'ability to perform', 'cancer treatment' and 'supplement/diet-related'. 'Chewing/eating' was predicted for low HRQoL (p< 0.0001) followed by 'appearance' and 'ability to perform recreation activities' (personal functions domain). Patients with high psychological distress levels were 14 times more likely to select 'ability to perform recreation activities' and seven times more likely to select 'feeling depressed'. No significant association was identified between patients' concerns and patients' satisfaction with the consultation. Routine follow-up consultations should incorporate the PCI-H&N prompt list to enhance patient-centred care approach as the type and number of patients' concerns are shown to reflect their HRQoL and psychological distress.

ORAL HEALTH-RELATED QUALITY OF LIFE (OHRQOL) FOLLOWING CLINICAL INTERVENTIONS OF ODONTOGENIC INFECTION IN 3-8-YEAR-OLD CHILDREN: A RANDOMISED CONTROLLED TRIAL

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Abstract

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

DESENSITIZING TOOTHPASTE WITH ARGININE REDUCES PAIN PERCEPTION DURING DENTAL SCALING.

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Abstract
Desensitizing toothpaste has been used to reduce tooth sensitivity but its application in dental scaling has not been reported. To investigate the change in pain score before and after application of desensitizing toothpaste with arginine in patients with a history of pain during ultrasonic dental scaling. A pre-post clinical trial was carried out at the dental clinic, School of Dental Sciences, Hospital USM. Patients who complained of pain during dental scaling using an ultrasonic scaler underwent air blast test, and patient who responded and request discontinuation to the test were invited into the study. Consented subjects were subjected to tactile test, air blast test, and ultrasonic scaling as stimulus before and after application of desensitizing toothpaste. The response for each stimulus was recorded using Visual Analogue Scale (VAS). The toothpaste was applied on the sensitive area on tooth surface, and burnished in a 2 consecutive 3 seconds application, using a slowly rotating soft prophylaxis cup. A total of 32 subjects had participated in the study. The difference in VAS mean score (MD = 1.69, P = 0.198) was similar before and after application of desensitizing toothpaste. But there was a significant reduction in the VAS mean score difference for air blast test (MD =14.06, P < 0.001) and ultrasonic scaling (MD = 18.56, 95% CI, P < 0.001). This study suggest that professionally applied desensitizing agent with arginine significantly reduces pain during dental scaling, thus can be used in patients with pain during dental scaling.

APPLICATION OF RECOMBINANT SECRETORY LEUCOCYTE PROTEASE INHIBITOR AMNION MEMBRANE ON INCISION OF RATTUS NORVEGICUS TO THE NUMBER OF TNF- A AND BLOOD VESSEL CELL ON WOUND HEALING PROCESS

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Biomaterials for human body can be used to accelerate the wound healing process such as secretory leukocyte protease inhibitor (SLPI) recombinant derived from amniotic membrane that has several functions are to inhibit the protease, control leukocytes activity, regulate TGF-β, anti-inflammatory, anti-bacterial, anti-retroviral. To know the application of recombinant SLPI on incision wounds of *Rattus norvegicus* in increasing the number of blood vessels and decreasing TNF-α cell on day 4, *Rattus norvegicus* is divided into one control group and 3 groups treated with liquid application of SLPI 0.03 cc, 0.45 cc, 0.060 cc. On the 4th day, histopathology anatomy (HPA) preparation of the wound incision is made using haematoxilin eosin staining (HE) and immunohistochemistry (IHC). Blood vessels and TNF-α cell number is calculated using microscope with 400x magnification. Data is analyzed using one-way ANOVA and Kruskal-Wallis test. One-way Anova test of blood vessel's data obtained significant value of $p < 0.05$ and HSD test shows a significant difference between control group and treatment groups. Kruskal-Wallis test of TNF-α cells data obtained significant value of $p < 0.05$. Mann-Whitney test shows a significant difference of control group and treatment group. The application of SLPI liquid on wound incision of Rattus norvegicus with amount of 0.45 cc and 0.06 cc can decreases the number of TNF-α and increases the number of blood vessels in day 4 with the effective application.

PSYCHOSOCIAL FACTORS AND OHRQOL: STRUCTURAL EQUATION MODELLING

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Abstract

Oral health related quality of life (OHRQoL) reflects the impact of the oral condition on physical, social, and psychological functioning and well-being from an individual's perspective. It is an important health outcome that is influenced by several factors which together are known as the determinants of health. Psychosocial factors are among many other factors that have a crucial role in shaping oral health. The aim is to investigate the relationship of acculturative stress, perceived stress, and social support with the OHRQoL among international graduate students in Malaysian public universities. Data were collected from a sample of 312 international graduate students via a web-based survey. The survey included measures of acculturative stress (ASSIS-36), perceived stress (PSS-4), social support (MSPSS-12), oral health perceptions (global rating item), and OHRQoL (OIDP-8). The hypotheses of the conceptual model were tested by structural equation modelling with the support of SmartPLS software. Twenty-seven percent (27.1 %) of the variance in OHRQoL was explained by acculturative stress, perceived stress, social support, and oral health perceptions. The path coefficients between oral health perception and OHRQoL was the strongest (β = - 0.385, P < 0.001). Acculturative stress directly influenced OHRQoL (β=0.20, P=0.009), and indirectly through perceived stress (β=0.05, P=0.019). Social support mediated the relationship between perceived stress and OHRQoL (β=0.046, P= 0.02). Results indicated that acculturative stress, perceived stress, and social support are among the predictors of OHRQoL. The findings emphasize the potential role of the tested psychosocial factors in relation to OHRQoL. The empirical evidence of this study could facilitate the planning of targeted strategies by incorporating stress reduction and social support enhancement. Such strategies might be a new promising way to improve OHRQoL since these elements can be modified and response to interventions.

METAGENOMIC ANALYSIS OF BACTERIA ASSOCIATED WITH ROOT CANAL INFECTIONS OF PRIMARY TEETH TREATED WITH ANTIMICROBIALS

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

FLUORIDE AND PH LEVEL OF COMMERCIALLY AVAILABLE CHILDREN'S BEVERAGES IN MALAYSIA

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

THE IMPORTANCE OF MAINTAINING A NORMAL ORAL MICROBIOME IN PREGNANT WOMEN: CURRENT PERSPECTIVES

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Abstract

In dysbiosis, the balance of the oral ecosystem is disturbed, allowing disease-causing bacteria to manifest and lead to conditions such as caries, gingivitis, and periodontitis. Pregnancy is a physiological process that causes hormonal changes that cause the microbiome in the mother's oral cavity to experience dysbiosis, so that pregnant women are more prone to oral infections. This study aims to provide up-to-date information on the oral microbiome of pregnant women to discuss its implications for oral health. This was a descriptive observational study with a cross-sectional design. The research subjects were 45 trimester III pregnant women who performed routine examinations at Bhayangkara Hospital and Kendangsari Hospital Surabaya. ELISA test was carried out for saliva sampling to determine levels of proinflammatory cytokines. Swab samples were taken using cotton swabs throughout the oral mucosa and tested using the 16S rRNA Microbiome High-Throughput gene to determine the variation and dominance of the oral microbiome. In addition, dental caries examination, OHI and questionnaires about diet, number of times to brush teeth, etc. were also carried out to support these data. The results showed that there was no significant increase in proinflammatory cytokines in pregnant women. Bacterial variation was more common in the caries-free group than in the caries group. Most of the bacterial species (100%) are *Streptococcal mitis* (88%) were *Streptococcus mutans* strains UA159 and *Streptococcus* sp. C17. *Lactobacillus fermentum* and *Abiotrophia defectiva* were the third bacteria identified in this study. Conclusion, oral health care during pregnancy should be recommended. because of the low variation and predominance of *Streptococcus mutans* strain UA159 which is high indicates susceptibility to dental caries in pregnant women.

CHITOSAN AS A POTENTIAL DRUG NANOCARIER FOR ORAL DISEASE TREATMENT

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Abstract
Oral drug delivery is widely used in the treatment of oral disease. Due to the complexity of the gastrointestinal system, local drug delivery offers a more targeted and attractive alternative to systemic delivery. Recently, nanotechnology has drawn prominent interest in the topical application which can maintain the drug concentrations on the target site. Chitosan (CS) is a natural biodegradable polymer that is commonly used for drug encapsulation. It has a longer half-life and greater drug entrapment efficiency. The size of particle and stability colloidal dispersions are the most critical part in nano-drug delivery. This study aims to determine the effect of chitosan concentration on particle size, polydispersity index (PDI) and zeta potential. The CS nanoparticle was prepared by ionic crosslinking using tripolyphosphate (TPP) in the ratio of 20 CS: 100 TPP. Aqueous TPP was added dropwise into different concentration of CS (1 to 3 mg/mL in acetic acid) under vigorous stirring at room temperature. The mean size, PDI and zeta potential of nanoparticle were measured using dynamic light scattering. Our findings showed that the increase of chitosan concentration at a constant concentration of TPP increased the size of nanoparticles. Furthermore, the particles that were prepared under 1% w/v CS concentration, 1% w/v TPP concentration, and stirring speed at 6000 rpm had the smallest diameter of 198.2±18.62nm. In addition, different concentrations of chitosan exhibited narrow particle size distribution with PDI values approximately 0.4 and zeta potential ranging from 62-69 mV. In conclusion, nanoparticle size can be controlled by adjusting chitosan concentration which can be used in the encapsulation of nanotherapeutic drug. This offers a promising candidate for nanodrug carrier.

CHEMOPREVENTIVE ACTIVITY OF FICUS DELTOIDEA EXTRACT AGAINST ORAL SQUAMOUS CELL CARCINOMA—AN IN VIVO STUDY

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Abstract
The use of natural products have been gaining interest, notably in the area of cancer therapy. The aim of this study is to evaluate the chemo-preventive activity of Ficus Deltoidea (FD), a Malaysian herbal plant, in an animal model induced for oral squamous cell carcinoma (OSCC) using 4-Nitroquinoline-1-oxide (4NQO). Male Sprague-Dawley (SD) rats were randomised into four groups (n=7 per group); Group 1, (untreated group), Group 2, (control cancer group) received 4NQO in drinking water for 8 weeks. Groups 3 and 4 (chemo-preventive) received 4NQO for 8 weeks and were simultaneously treated with FD extract at 250 and 500 mg/kg respectively by oral gavage. All rats were sacrificed after 22 weeks, and the histopathological changes and incidence of oral cancer were microscopically evaluated by a qualified oral pathologist. Immunohistochemical analysis for cyclin D1, a key tumor marker associated with cell cycle progression and other proteins involved in cell adhesion such as β- catenin and e-cadherin were also investigated. The FD extract significantly reduced the incidence of oral squamous cell carcinoma (OSCC) from 100% to 14.3% especially when FD was administered at a higher dose of 500 mg/kg (P<0.05). The immunohistochemical analysis showed that the FD extract had significantly decreased the expression of the tumor marker cyclin D1 (p<0.05) suggesting the positive effect of FD in the preventing tumor growth. The expression of β-catenin and e-cadherin, involved in the E-Cadherin/β-catenin signalling pathway, was observed to be significantly increased (p<0.05) and this would further strengthen the chemo-preventive effect of FD in oral cancer. Our data suggest that FD extract exert chemo-preventive activity in an animal model induced for OSCC using 4NQO, and thus, have the potential to be developed as a chemo-preventive agent.

ANTITUMOR EFFECTS OF ORTHOSIPHON STAMINEUS EXTRACT ON ORAL CANCER

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Abstract
Oral cancer is one of the most common cancers in the world. 90% of the cancers in the head and neck region consists of oral squamous cell carcinoma (OSCC). Orthosiphon Stamineus (OS), a medicinal plant found in Southeast Asian countries have been reported to possess many medicinal properties such as anti-inflammatory, antibacterial and anticancer. The aim of this study is to investigate the anticancer effects of Orthosiphon Stamineus on oral cancer using an animal model induced for oral cancer using 4-Nitroquinoline-1-oxide (4-NQO). A total of 28 healthy Sprague Dawley male rats (SD) aged 8 weeks that weighs around 200-350g were divided into 4 groups (n=7); Group 1 (untreated), Group 2 (control, received 4NQO (20pp) for 8 weeks), Group 3 and 4 (received Orthosiphon Stamineus 250 and 500 mg/kg respectively. Orthosiphon Stamineus extract of 250 and 500 mg/kg were given orally 1 week before the carcinogenic induction and this continued for 1 week after treatment with 4NQO was completed. All rats were sacrificed at week 22 and vital organs of the rats were harvested for further studies. The incidence of OSCC induced by 4NQO in rats treated with Orthosiphon Stamineus at doses 250, and 500 mg/kg was 42.9% and 28.6% respectively. In addition, the tumor volume was also observed to be reduced when compared to the untreated group. However, there is no significant reduction in the mean body weight when compared to the control group. Histological examination of the lymph nodes and distant organs revealed no signs of metastasis. In summary, Orthosiphon Stamineus extract could be developed as an effective chemo-preventive agent against oral cancer.

THE INVOLVEMENT OF TRPV4 IN ANGIOGENESIS OF ORAL SQUAMOUS CELL CARCINOMA: AN IN-VIVO STUDY

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Abstract

The Transient receptor potential (TRP) channel, of the vanilloid subtype 4, TRPV4 has been shown to be involved in angiogenesis of multiple types of tumours. However, in the oral cavity, the role of TRPV4 in angiogenesis of oral squamous cell carcinoma (OSCC) is not known. To elucidate the effect of TRPV4 in angiogenesis of oral tumor by administering TRPV 4 agonist (GSK1016790A), in an animal model induced for OSCC using 4-Nitroquinoline-1-oxide (4NQO). A total of 36 male SD rats were given 4NQO (20 ppm) for 14 weeks. The rats were then divided into 6 groups (n=6); Groups 1 (normal) and 2 (DMSO 1%), Group 3 (negative control), Group 4 (GSK1016790A 10µg/kg), Group 5 (cisplatin 3 mg/kg), and Group 6 (combination of cisplatin and GSK). All rats were sacrificed at week 22 and tumor incidence and tumor volume of the tongue tissues was assessed. RT2 Profiler PCR Array was performed for gene expression analysis of biomarkers involved in tumor angiogenesis; Angpt1, Angpt2, Tie-1, and Tie-2/Tek. Multiplex immunoassay was also performed to detect VEGF, a signal protein produced by cells that stimulates the formation of blood vessels. Combination of cisplatin and GSK1016790A (Group 6) showed reduction in tumor incidence by 16.7% and tumor volume (0.044±0.01) and a reduction in VEGF concentration (0.631±0.13). Concentration of Angpt1 was significantly higher (2.1- fold change) than Angpt2 in the combination (Group 6) while Tie-2/Tek expression also increased significantly compared to Tie-1 (4.5- fold change). This would implicate the binding of Ang-1 to Tie-2 which involved pericytes recruitment to immature vessels. TRPV4 Agonist GSK1016790A, together with cisplatin, suppressed the growth of oral tumor by regulating the Ang-1/Tie2 signaling pathways involved for vessel maturation during angiogenesis.

FLUORESCENCE STUDY ON THE INTERACTION OF CYSTEINE PROTEASE INHIBITOR, ODANACATIB WITH HUMAN SERUM ALBUMIN

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Abstract

Severe periodontitis may cause tooth loss in adult patients as the results of the bone resorption induced by cathepsin K (CstK), an osteoclast-expressed enzyme. Odanacatib (ODN), a selective and potent cysteine protease inhibitor of CstK, decreases bone resorption by selectively inhibiting proteolysis of matrix proteins by CstK, without affecting other osteoclastic activity or osteoblast viability. In view of its effectiveness in reducing bone loss, the interaction study is carried out to understand the ODN binding to human serum albumin (HSA) which is the most abundant transport protein in the blood plasma. The fluorescence results show an increase of fluorescence spectra of HSA with increasing concentration of ODN along with a red shift suggesting the increment of polarity around the microenvironment of the protein's fluorophores. Dynamic enhancement mechanism was confirmed upon ODN interaction to HSA as revealed by increasing values of enhancements constant (K_D), bimolecular enhancement constant (k_B), and binding affinity (K_b) as temperature increase. The k_B values for binding of ODN to HSA were also higher than the maximum k_B of biomolecules in aqueous solution indicating a complex formation was established. A moderate binding affinity was obtained from the ODN binding to HSA with the binding constant (K_b) values of ~10^4. The thermodynamic analysis of ODN-HSA interaction revealed the involvement of an endothermic reaction and the main binding force was hydrophobic interactions along with negative values of free energy change ($\Delta G°$) suggesting the interaction was feasible and spontaneous. These findings provide additional information to understand the interaction properties of ODN to HSA in blood circulation.

COMPARATIVE GENOMIC AND EVOLUTIONARY RELATIONSHIP ANALYSIS IN THE CHARACTERIZATION OF A. NAESLUNDII PROTEINS THAT MAY CONTRIBUTE TO PROBIOTIC PROPERTIES

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Abstract

The genus *Actinomyces* encompasses a diversity of species that inhabit in the human oral cavity. Their roles have come to debate as some claimed to cause oral diseases. In contrast, the others claimed to give benefits, by inhibiting the growth of *Streptococcus mutans* and *Candida albicans*, thus preventing oral diseases. *Actinomyces naeslundii* is claimed to have a potential benefit in the oral cavity. The objective of this study is to identify any potential proteins in *A. naeslundii* that may contribute to the probiotic properties. Here we compared the genome-wide features of *A. naeslundii* with the 25 known-probiotics. From the genome comparison, we found that probiotic of *Bifidobacterium* species has the most similarity with *A. naeslundii* compared to the other probiotics. Thus, sequences of 16s rRNA afford a means to establish phylogenetic tree with the *A. naeslundii*, 25 known probiotics and 33 oral pathogens. This yield of tree provides a view of species evolutionary relationship between *A. naeslundii*, probiotics and oral pathogens. The tree shows that *A. naeslundii* was clustered together with its genus as well as with *Bifidobacterium* sp. EMBOSS Needle was used to interpret the percentage of similarities between *A. naeslundii* potential proteins with probiotics proteins of probiotic properties. InterPro and Biocyc.org software was used to interpret the details function of similar proteins found in the genome comparison between *A. naeslundii* and *Bifidobacterium* sp. From the analysis, nine proteins were shown to have probiotics properties. It demonstrated that proteins chaperonin GroEL and Excinuclease ABC subunit UvrB in *A. naeslundii* have the highest percentage of similarities and predicted to function as the probiotic properties, in response to heat and for DNA repair respectively. This finding clearly justify the benefits of *A. naeslundii* in the host rather than harm.

HISTOPATHOLOGICAL CHANGES ON WISTAR RAT WOUNDS AFTER TOPICAL APPLICATION OF FIG LEAF (FICUS CARICA LINN.) EXTRACTS

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Abstract

The incision in the oral cavity is also performed on the gingivectomy. Fig leaf (Ficus carica Linn.) extract contains compounds of flavonoid, terpenoids and tannins and has anti-inflammatory and anti-oxidant activities. The important markers of wound healing were fibroblast, macrophages and collagen density. To investigate the topical application of fig leaf extracts on Wistar rat wounds on the number of fibroblasts, macrophages and collagen density on day 3 and 7. This research was performed on 24 rats by making incision wounds on the backs of Wistar rats and divided into control and treatment groups. The control group wasn't given fig leaf extract gel and the treatment group was given fig leaf extract gel on the incision wound. Each group was sacrificed on day 3 and day 7. Wound tissue was removed and fixed in 10% formalin solution for histopathological test. Then it was embedded in paraffin, and stained with Hematoxylin–Eosin to observe fibroblast and macrophage. The collagen density was observed by Masson's Trichome staining. Statistical analyses of fibroblast and macrophage were using one-way Anova and Tukeys HSD. Collagen density were analyzed by using Kruskall-Wallis and Mann-Whitney test. There were significant difference among the groups ($p < 0.005$) on the number of fibroblast, macrophage and collagen density on day 3 or day 7. Application of fig leaf extract on Wistar rat wounds could increase the number of fibroblast cells, macrophage and collagen density in the wound healing process.

CONTENT VALIDATION AND RESPONSE PROCESS VALIDATION OF QUESTIONNAIRE ON ACCESSIBILITY OF CHILDREN WITH CEREBRAL PALSY TO ORAL HEALTH CARE SERVICES

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

ORAL HEALTH STATUS AMONG ARABIC PRE-SCHOOL CHILDREN IN KLANG VALLEY, MALAYSIA AND ITS ASSOCIATED FACTORS

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Abstract
Children's behaviour usually follows the trend in the family they grow from. The role of parents is paramount important as they serve as the caregivers of oral health to their children for the period of their first three years in life. This study aims to determine the level of parents' knowledge, attitude and practice of oral health and its association with the oral health status of pre-school children on oral health in Arabic pre-schools in Klang Valley, Malaysia. A cross-sectional study was conducted among pre-schoolers from the selected five Arabic pre-schools. Data was collected using a validated and self-administrated questionnaire. The questionnaire was adapted from a previously published, validated and well-structured study which was intended to assess the parental knowledge, attitude and practice of oral health. Data was analysed using SPSS version 22. Descriptive and inferential statistics were used to measure the distribution and patterns and association for categorical variables using Chi-Square and Fisher's exact test. The final model of the predictor was analysed using binary logistic regression analysis. The prevalence of dental caries was about 40% among pre-school children in Arabic schools in Malaysia. Parental knowledge, attitude and practice of oral health were significantly associated with the parent-reported oral health status of children ($P < 0.05$). Those who started brushing after 2 years of age, children who brush only once a day, children who never visited the dental clinic which is a protective factor and those who go to school in Saudi schools were predictors of poor oral health status of the children. Divorced parents, unemployed mothers, those who do not have accessibility to oral health service and poor parental knowledge of oral health were predictors of poor oral health status among children. There is a need for health promotion programs and interventions among children and parents of these pre-school children.

THE ASSOCIATION BETWEEN PERCEPTION OF IMMUNOLOGY AMONG MALAYSIAN HEALTHCARE PROFESSIONALS AND ACADEMIC QUALIFICATIONS

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Abstract

The aim of this study is to evaluate the association between Malaysian healthcare professional's (HCP) perception of immune mechanisms and their first degree, their highest academic degree, and if they graduated locally or abroad. A cross-sectional questionnaire survey design was used in this study with the participation of 15 government hospitals from Peninsular and East Malaysia. A total of 141 doctors were included in this study. Self-administered questionnaires were used to capture (i) socio-demographics and (ii) HCP's perception on immunology (PIM). Descriptive analysis was performed using SPSS version 21. 54.6% of the participants were medical doctors while 45.4% of the participants were dentists. 92.9% of participants have a first degree as their highest academic qualification while 5.7% of the participants have a postgraduate degree. The majority of the participants obtained their degrees from local institutions. With regards to the participant's PIM, the majority gave more emphasis on alleviating patient symptoms (82.2%) than boosting their immune system (66.7%) in the event of acute illness. 39.7% of participants have a neutral perspective on treating inherited immunocompromised disorders by prescription of medication. 41.8% of participants believe that maintaining and improving the immune system is more important than the development of new medication. Meanwhile, 58.2% of participants agree that vaccine development is more important than development of medication in the fight against infectious diseases. 88.6% of participants are of the opinion that immune dysfunction directly affects other physiological systems of the human body. Finally, 82.3% of participants believe it is important to continue development of antibiotics despite the existence of antibiotic-resistant superbugs. When testing the association between participant demographics and PIM, having a postgraduate degree was found to be significantly associated with PIM ($p<0.05$). Based on these preliminary findings, it appears as though higher education plays a role in influencing a HCP's perception of the immune system.

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