UNIVERSITI SAINS ISLAM MALAYSIA

Bridging Faith and Science

Dental Fiqh and Professional Practice

1st Edition

Edited By:

Norlela Yacob, Nadia Halib, Zulfahmi Said, Azrul Hafiz Abdul Aziz, Aspalilah Alias

DENTAL FIQH AND PROFESSIONAL PRACTICE: BRIDGING FAITH AND SCIENCE

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Dental Fiqh and Professional Practice: Bridging Faith and Science.

This book presents research and advances in the fields of dentistry and current issues related to Islamic guidelines and values in terms of advancement technology, application of Fiqh, and Islamic value of the current practice of dentistry. It offers new knowledge, methodologies, interdisciplinary approaches, and case studies to illustrate real-world applications of Islamic jurisprudence with dental cases and scientific achievements in medicine.

The journal delves into a broad spectrum of topics that include digital dentistry, dental education, biomaterials, microbiology, public health innovations, and advanced clinical practices. It also offers insights into the integration of technology in improving diagnostic accuracy, treatment outcomes, and healthcare accessibility. The results of rigorous research, academic collaboration, and a dynamic exchange of ideas. This volume will serve as a reference guide for future innovations in the fields of oral care and healthcare-related sciences.

This book is intended for researchers, clinicians, educators, students, and policymakers in the fields of dental, medical, and Islamic studies. It is especially useful for those seeking to stay informed about technological advancements in dentistry within the Islamic scope.

Proceeding of the International Conference of Fiqh Dentistry 2026: Dental Fiqh and Professional Practice: Bridging Faith and Science.
(ICOFD 2026), Nilai, Negeri Sembilan, Malaysia, 8-9 August 2026.

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PREFACE

It is with great pleasure that we present the book entitled Dental Fiqh and Professional Practice: Bridging Faith and Science. It is a compilation of all the proceedings presented in The International Conference of Fiqh Dentistry 2026: (ICOFD 2026), held on 8-9 August 2026, at the Universiti Sains Islam Malaysia, Nilai, Negeri Sembilan, Malaysia.

With the theme “Dental Fiqh and Professional Practice: Bridging Faith and Science", this conference brought together a diverse group of researchers, academics, practitioners, and students to explore the latest dental issues & research, innovations, challenges, and breakthroughs in the fields of dentistry, as well as digital technology and Artificial Intelligence. The format of this year’s conference allowed a wider participation from all over the world, including Asean countries, the Middle East and Europe.

The contributions compiled in this book reflect the depth and breadth of current research, presenting original studies, case reports, and reviews that span a wide range of topics within dental specialities, dental education, and prophetic practice. Each abstract has undergone a peer-review process, ensuring the quality and relevance of the work presented.

We express our sincere appreciation to all authors, reviewers, speakers, and participants whose enthusiasm and dedication have made this event a success. Special thanks are also extended to the editorial and scientific committees for their tireless efforts in preparing these proceedings.

We hope that the insights shared in this volume will inspire further research and foster ongoing academic collaboration, contributing meaningfully to the advancement of dental and Islamic research.

Nilai, August 2026
Associate Professor Dr Aspalilah Alias
Chairperson, ICOFD 2026.

ACKNOWLEDGEMENT

We would like to extend our deepest gratitude to the Dean, Dr Ainuddin Yushar Yusof, Faculty of Dentistry, Universiti Sains Islam Malaysia, for their unwavering support, guidance, and encouragement throughout the preparation and execution of the International Conference of Fiqh Dentistry 2026: Dental Fiqh and Professional Practice: Bridging Faith and Science. (ICOFD 2026).

The authors extend their deepest appreciation to TT Laboratory, the main Sponsor of this conference, for its generous contribution and strong commitment. We also appreciate the support of our additional sponsors: Omegaden Dental Solution Sdn. Bhd., USIM Healthcare Sdn Bhd (UHSB), Sofea Group of Companies, and Q Sinar 32 Suppliers (Qstar). Contributions have supported the successful organisation of this conference and its academic and professional activities. Thank you for your valued support and partnership.

We thank all speakers for generously sharing their valuable knowledge, professional experience, and expertise throughout this conference. We also sincerely thank all participating institutions in Malaysia, Indonesia and international participants for their valuable contributions, collaboration, and active involvement in ICOFD 2026. Participation has greatly enriched the scientific discourse and helped foster a spirit of academic exchange and innovation.

We express our deepest gratitude to the dedicated organising committee led by Assoc. Prof Dr Aspalilah Alias and the teams for their untiring efforts and flawless execution in making this conference a success. Your meticulous planning, excellent leadership, and commitment to ensure an enriching experience for all participants.

This conference would not have been possible without the collective efforts and dedication of each institution and individual involved. We are truly grateful.

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PART 1: ISLAMIC ETHIC, SHARIAH AND DENTAL PRACTICE

S1

1.1 Between appearance and function: Determination of the justification of treatment according to Islamic Shariah.

Professor Dr Wan Abdul Fattah Bin Wan Ismail
Professor, Faculty of Syariah and Law, Universiti Sains Islam Malaysia (USIM)

This lecture examines the determination of the justification of medical treatment by assessing the balance between appearance and function according to Islamic Shariah through Fiqh, Shariah clinical approaches, as well as legal considerations and fatwas. Based on the principle that the human body is the trust of Allah SWT, discussions focused on any intervention on the body cannot be evaluated solely based on aesthetic requirements, but must be centred on the need for treatment, prevention of harm, and the preservation of human dignity. The basics of Fiqh related to treatment are discussed in the basics of Fiqh, including the prohibition of altering Allah's creation without a recognised need, including the prohibition of altering Allah's creation without a recognised need, including the prohibition of altering Allah's creation without a recognised need, as well as the application of Fiqh methods such as *al-umūr bi maqāsidihā, al-ḍarar yuzāl dan al-ḍarūrāt tubīḥ al-maḥẓūrāt*. At the same time, the discussion emphasised the priority of clinical function as the basis of Shariah assessment, distinguishing between treatments aimed at restoring the original functions of the body and interventions that only enhance appearance. From the point of view of fatwa, this lecture emphasises the need for consistent, disciplined, and based on *Maqasid Shariah* to ensure that decisions related to treatment are in line with the interests of individuals and Shariah interests in general.

1.2 Integration of Maqasid Shariah and Ethics in Dentistry.

Prof. Emeritus Dato' Dr. Wan Mohamad Nasir Wan Othman
Professor Emeritus, Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM)
Felo Budi, Universiti Sain Islam Malaysia (USIM)

Ethics comprise virtues and moral principles that govern individual and professional conduct, guiding judgments of right or wrong actions, and of good or bad intentions. It is essential in person-centred care as it improves patient satisfaction and promotes collaborative partnership. The adoption of the *Maqasid Shariah* principles, from an Islamic perspective, enriches the relationship between practitioners and patients. The *Maqasid Shariah* is considered as the objectives of Islamic legal principles that safeguard human welfare through the promotion of benefits and prevention of harm. This paper explores the relationship between the *Maqasid Shariah* and ethical principles to improve person-centred oral healthcare. It also examines how these frameworks contribute to the development of morally grounded, God-conscious dental practitioners. The content is based on a review of relevant literature and experiences gained from teaching ethics to undergraduate dental students. The *Maqasid Shariah* based on five core essential pillars (*daruriyyat*) is protection of religion (faith and practices), life (physical and mental health), progeny (lineage and social stability), intellect (knowledge and education) and wealth (fair acquisition). Ethics, on the other hand, are virtues or moral principles that govern the character and conduct of an individual group. It includes beneficence (do good), nonmaleficence (first, do not farm), autonomy (empowerment), justice (fairness and equity), and veracity (truthfulness). The *Maqasid Shariah* and ethics are complementary. While *Maqasid Shariah* provides a focus on purpose, a value-based framework orientated toward higher objectives, ethics emphasises on practise that translates values into practical professional conduct.

1.3 Contemporary Dental Practice According to Islamic Ethics: Challenges and Opportunities.

Datuk Dr. Zulkifli Mohamad Al-Bakri
Former Mufti of Federal Territories

The development of modern dental technology and practices today is giving a new dimension to oral health treatment. Various questions of Islamic Fiqh and ethics that cross daily clinical practice are intense topics discussed. This lecture explores contemporary dental practices through the perspective of Islamic ethics and principles to guide dentists in Malaysia to face the challenges of current reality. It is not just about treating patients, but also the challenges of facing the needs and wants of patients, including the task of educating patients about dental treatment. This session is expected to provide practical guidance and a thorough understanding of Fiqh to dental professionals so that every clinical action taken not only achieves optimal medical standards but also coincides with the requirements of sharia for the well-being of patients in this world and the future.

1.4 Halal & Taharah Status in Dental Materials/Equipment

Professor Dr. Irwan Mohd Subri
Professor, Faculty of Syariah and Law, Universiti Sains Islam Malaysia (USIM).

In the context of modern dental treatment, a variety of materials are used such as composite resins, amalgams, fillings, implants, and adhesive materials, some of which potentially contain elements from animal sources or synthetic materials that raise legal questions. Therefore, this presentation aims to analyse the halal status of these ingredients based on the principles of *fiqh al-halal wa al-haram* as well as the concept of taharah in Islam. The focus is on the assessment of material sources (animal-based, plant-based, synthetic), production processes, and the possibility of faeces or contamination in the production chain. In addition, this presentation also discussed the views of *madhhab fuqaha*, and contemporary fatwas related to the concepts of *istihalah* (change of substance) and *darurah* (urgent need) in determining the law on the use of certain dental materials. From a practical point of view, this presentation also suggested the need for halal guidelines specifically in the field of dentistry, as well as collaboration between Shariah experts and dental practitioners. The implications of this presentation are important to ensure that dental care is not only safe and effective, but also conforms to sharia principles, thus increasing the confidence of muslim patients in dental health services in Malaysia.

1.5 The Use of Biomedical Materials and Their Development for Halal Dental Service

Dr. Zizi Azlinda Binti Mohd Yusof
Lecturer, Faculty of Syariah and Law, Universiti Sains Islam Malaysia (USIM).

The development of modern dental technology and the use of biomedical materials often pose ethical and Islamic jurisprudential dilemmas for Muslim patients and healthcare professionals. This paper examines various contemporary dental problems based on several fatwas, particularly in Muslim-majority nations like Malaysia and Indonesia. In addition to that, researchers' effort to develop halal product in dentistry is also embedded. Real-world challenges in the clinic, such as the legality of the use and development of animals-based materials, cosmetic and aesthetic medical treatments, and guidelines for dental procedures for Muslim patients, require attention. This understanding is expected to empower researchers to produce halal products, and dentists to make appropriate, medically safe, and sharia compliant clinical decisions, while providing peace of mind for Muslim patients in receiving treatment.

Keywords: Biomedical Materials, Halal products, Dental Services

1.6 Maqasid Al-Shariah and oral hygiene: A thematic analysis of prophetic hadith on preventive healthcare

Assoc. Prof. Dr. Ahmad Sanusi Azmi

Assoc. Prof. Faculty of Quranic and Sunnah, Universiti Sains Islam Malaysia (USIM)

This session examines prophetic traditions on oral hygiene through the framework of Maqasid al-Shariah, with particular emphasis on preventive healthcare. Although contemporary dentistry highlights the importance of oral hygiene for general health, Islamic teachings have long emphasised cleanliness and oral care, especially through practices such as siwak. However, systematic analyses that integrate hadith studies with maqasid-based health perspectives remain limited. Using a qualitative thematic approach, this session analyses selected prophetic hadiths related to oral hygiene, including traditions on siwak, halitosis prevention, and etiquette in communal worship. Primary data were derived from the major hadith collections, supported by classical commentaries and contemporary scholarly work. The selected traditions were examined in terms of authenticity, thematic patterns, and ethical implications. The findings indicate that the prophetic guidance on oral hygiene reflects the core maqasid principles, particularly the preservation of religion (*hifz al-din*), life (*hifz al-nafs*), human dignity (*hifz al-'ird*), and social harmony. These traditions promote preventive health behaviour, social responsibility, and personal discipline. In addition, the study demonstrates a significant convergence between Islamic ethical teachings and modern preventive dentistry.

1.7 Faith, Aesthetic and Necessity: The Debate on Orthognathic Surgery and Aesthetic Surgery from Muslim Perspective

Dr. Firdaus Hanafiah

Oral & Maxillofacial Consultant in Avisena Specialist Hospital, Shah Alam.

The relationship between faith, physical appearance, and surgical intervention has long been a topic of thoughtful discussion within the Muslim community. As modern maxillofacial and aesthetic sciences advance, Muslims increasingly seek clarity on whether procedures such as orthognathic surgery and facial aesthetic interventions align with Islamic principles. This abstract presents a favourable and faith-conscious perspective, demonstrating that when properly indicated and ethically applied, these treatments not only comply with Islamic guidelines, but also uphold the higher objectives of Shariah (Maqasid al-Shariah), particularly the preservation of dignity, health, and psychological well-being.

Orthognathic surgery, by its very nature, is based on functional necessity. Patients with dentofacial deformities often experience significant difficulties in mastication, speech, breathing, and occlusion. These functional impairments can have long-term physical and psychological consequences, including chronic pain, obstructive sleep problems, social anxiety, and decreased self-esteem. In Islam, alleviation of hardship and the pursuit of health are not only permissible but encouraged. Numerous scholarly opinions maintain that correcting deformities, whether congenital, developmental, or acquired, is a form of treatment (ilaj), which is halal and even praiseworthy. When orthognathic surgery restores function and improves quality of life, it is clearly within the sphere of necessity and compassion endorsed by Islamic jurisprudence.

The discussion becomes more nuanced with facial aesthetic surgery, which is sometimes misinterpreted as altering Allah's creation in a prohibited manner. However, Islamic scholarship distinguishes between tadabbur (restorative treatment) and taghyir khalqillah (unnecessary alteration). Procedures aimed at restoring normalcy, correcting defects, or treating features that cause psychological distress or social harm are considered permissible. Aesthetic interventions that help individuals regain confidence, social function, and emotional stability fall into the category of alleviating harm (daf' al-darar). In the modern context, aesthetic

surgery, when performed ethically, can be viewed as part of holistic health - addressing not only the physical but also the emotional and psychosocial domains of patient well-being.

For Muslims living in diverse societies, appearance plays an important role in social interaction, professional opportunities, and self-expression. Islam recognises beauty (jamal) as a blessing and encourages one to present himself with dignity and confidence. When aesthetic procedures improve a person's psychological equilibrium, prevent self-loathing, or correct features that lead to social isolation, they serve a meaningful purpose aligned with the Islamic principle of removing hardship.

Thus, orthognathic and appropriate aesthetic surgeries should not be viewed as vain pursuits, but rather as therapeutic interventions that respect both the physical and emotional health of individuals. When guided by the proper intention (niyyah), professional ethics, and Islamic values, these treatments represent a harmonious integration of faith, science, and human necessity. Muslims can confidently seek such interventions with the understanding that Islam advocates the well-being, restoration, and preservation of human dignity.

1.8 Neglect of Children's Dental Care: A Clinical Case Study Based on the Perspective of the Pedodontic Triangle and Fiqh Law

Drg. Faisal Rizki
Lecturer, Faculty of Dentistry, Bakhti Wiyata Institute of Health Sciences, Indonesia.

The Indonesian Health Survey 2023 shows that the severity of tooth decay in children aged 3 to 5 years according to the DMFT index is high. Clinical cases of paediatric dental caries in health facilities are generally related to a history of not brushing the teeth properly, high sugar consumption, drinking bottled milk until falling asleep, bringing children in during toothache and multiple caries and signs of infection. This condition will have an impact on the quality of life, growth and development of children. One of the causes of dental caries is the neglect of dental care by parents. This neglect is characterised by the lack of basic care and treatment, the lack of awareness of maintaining dental and oral health, and the assumption that tooth decay is an inevitable natural occurrence. This clinical study aims to analyse the neglect of children's dental care from the perspective of the peadodontic triangle and the law of Fiqh. The peadodontic triangle describes the cooperation, interaction, and understanding of the child, parents, and dentist. Children, as the end of the triangle, are the focus of the dental and oral health of parents and dentists. Parents play a role in maintaining children's dental and oral health. Dentists seek disease prevention and clinical treatment. The perspective of the Fiqh law on the occurrence of child tooth decay is a form of non-fulfilment of elements in *Maqasid al Shariah*. Children are fully dependent on their parents and cannot be responsible independently, so they are entitled to protection of religion, soul, intellect, heredity, and property. The role of parents is trust, ma'uliyyah, and territory. The role of dentists is effort, *nashihah*, and *maslahah*. Thus, the peadodontic triangle approach and the Fiqh law emphasise that children's dental health is not limited to clinical problems but a sharia mandate that involves shared responsibility between children, parents, and dentists.

1.9 From Rules to Values: Embedding Ethics in Professional Responsibility

Dr. Nurul Syakirin Abdul Shukur
Secretary of the Malaysian Dental Council, Ministry of Health (MOH), Malaysia.

Professional responsibility in dentistry involves both adherence to regulatory requirements and the application of ethical values in professional practice. Guided by the Malaysian Dental Council's Code of Professional Conduct 2022, principles such as integrity, respect, accountability and patient-centred care underpin professional judgement in clinical and professional settings. While rules establish minimum standards of conduct, ethical values support decision-making in complex situations where professional discretion is required. Core responsibilities include respect for patient rights, maintenance of confidentiality, informed consent and the upholding of professional standards. Consideration of ethical and moral principles in healthcare practice supports responsible decision-making and contributes to patient welfare and sustained public trust in the dental profession.

1.10 Artificial Intelligence and Digital Dentistry According to an Islamic Perspective.

Assoc. Prof. Dr. Asma AlHusna Abang Abdullah
Lecturer & Orthodontist, Faculty of Dentistry, Universiti Sains Islam, Malaysia

Artificial Intelligence (AI) and digital dentistry have brought significant transformations in modern dental practice, particularly in the aspects of diagnosis, treatment planning, and clinical efficiency. However, these developments also raise questions of ethics, professional responsibility, and legal implications from an Islamic point of view. This presentation discusses the application of AI and digital technology in dentistry and assesses its use based on the principles of *Maqasid Sharia*h, including the preservation of life, intellect, property, dignity, and religion. The issues of patient data security, reliance on technology, and algorithmic fairness will also be discussed. In conclusion, AI and digital dentistry can be used as a beneficial executor, if used ethically, trustworthily, and in line with Islamic values.

PART 2: ARTIFICIAL INTELLIGENCE, DIGITAL DENTISTRY AND DENTAL EDUCATION

PP4

2.1 Advancements and Prospects of Tele-Dentistry in Orthodontic Practice During The COVID-19 Pandemic: A Literature Review

Yusuf Muhammad Firdaus Ooi
Klinik Pergigian Bandar Tasek Mutiara, Simpang Ampat, 14120 Pulau Pinang, Malaysia.

Introduction: The advancement of information and communication technology (ICT) has improved dental care accessibility and information dissemination. Traditionally reliant on in-person treatment, dental practices turned to virtual consultations during the COVID-19 pandemic, leading to the rise of tele-dentistry. This method has proven to be effective and cost-efficient in delivering care. This research reviews orthodontic treatment outcomes during the pandemic, comparing results from traditional approaches of using tele-dentistry.

Methodology: Conducted through Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines for systematic review and assess the various prospects of tele-dentistry in terms of its usage, ethical issue, advantage and disadvantages. This review comprises articles that conduct the study in relation to tele-dentistry with focus area on tele-orthodontics.

Results: Of the 187 articles initially identified, 55 were included according to relevance to 2026 technological and policy developments. The findings reveal that tele-dentistry now includes AI-assisted diagnosis, remote orthodontic monitoring, telerehabilitation for patients with oral cancer, and virtual interdisciplinary care. The review also addresses ethical and legal challenges related to data security, licensure, and reimbursement. In particular, tele-dentistry is recognised for its potential to reduce oral health disparities by improving access for rural, elderly, and underserved populations.

Conclusion: Tele-dentistry is better than in-person visits for orthodontics, serving as a modern method for delivering dental care with significant future growth potential in various specialities. In addition, improved long-term communication that improves communication between dentists and patients.

Keywords: Tele-Dentistry, Tele-orthodontics, Virtual, Rural, Pandemic

2.2 Bridging Faith and Science in Dental Education: A Conceptual Framework for Artificial Intelligence-Supported Workplace-Based Assessment

Siti Nadia Rahimi[1], Norlela Yacob[1], Faezah Rokhani[2]
[1]*Department of Conservative Dentistry and Prosthodontics, Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM), Kuala Lumpur, Malaysia*
[2]*Department of Oral Pathology and Oral Medicine, Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM), Kuala Lumpur, Malaysia*

Introduction: Workplace-based assessment (WPBA) is an important component of competency-based dental education, enabling learners to be assessed in authentic clinical settings through the Mini-Clinical Evaluation Exercise (Mini-CEX), Direct Observation of Procedural Skills (DOPS), and clinical logbooks. However, WPBA implementation is often challenged by fragmented assessment records, inconsistent narrative feedback, manual administrative processes, and limited utilisation of assessment data for learner development. In an Islamic dental education context, assessment should also nurture amanah, ethical responsibility, accountability, and patient-centred care.

Methodology: A conceptual approach was used to develop an artificial intelligence (AI)-supported WPBA framework based on literature related to competency-based dental education, workplace-based assessment, AI in health professions education, and Islamic professional values. Common WPBA challenges were identified and aligned with potential AI-supported functions to illustrate how digital innovation may support assessment, feedback, and values-based learner development.

Results: The proposed framework comprises three interconnected domains: Assessment, Artificial Intelligence, and Values-Based Learning. Educators remain responsible for direct observation, competency judgement, entrustment decisions, and final feedback. AI functions as a decision-support tool to assist with structured feedback generation, assessment data integration, competency mapping, and longitudinal learner tracking. Values-Based Learning links assessment to learner reflection, ethical conduct, professional accountability, and continuous competency development.

Conclusion: This framework offers a foundation for future development of digital assessment systems that support competency-based dental education while preserving Islamic ethical principles, human judgement, accountability, and professional responsibility.

Keywords: Artificial Intelligence; Workplace-Based Assessment; Dental Education; Islamic Values; Professionalism

2.3 Comparative Effectiveness of Built-in Cameras in Smartphones for Dental Photography Among Undergraduate Dental Students

Nur Alya Hanim Nor Zamani[2], Wan Nur Athirah Wan Nassir[2], Siti Nur Farhanah Mohd Desa[1], Mohamed Hisham Mohamed Jali @ Yunos[2], Ahmad Dzulfikar Samsudin[2]

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[2]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Universiti Sains Islam Malaysia.*

Introduction: Smartphone cameras are increasingly used in dental training and clinical documentation because they are portable, fast, and readily available. However, measurement accuracy may vary by device and capture settings. Furthermore, model-specific evidence under standardised protocols remains limited in undergraduate clinical contexts. The purpose of this study was to compare the accuracy of intraoral and extraoral photographic measurements obtained using smartphones at standardised magnification–distance settings, using DSLR camera measurements as a reference.

Methodology: In this experimental study (n = 33), intraoral and extraoral photographs were captured using the iPhone 14 Pro, the Samsung Galaxy Note20 Ultra, and a reference DSLR under standardised capture conditions at 2×/50 cm, 3×/80 cm, and 4×/110 cm. Linear measurements were obtained from calibrated photographs using repeated reading measurement software. Data were summarised as mean ± SD and analysed using one-way ANOVA.

Results: Most extraoral measurements showed comparable values between devices under standardised capture conditions**.** However, the incisal width consistently differed between the two smartphones in all magnifications, with the iPhone producing larger measurements than Samsung. For incisal height, the iPhone also tended to produce higher values than the DSLR reference at specific settings. Among extraoral measures, an inter-orbital measure (Or–Or) differed at the highest magnification, which shows that Samsung produces values larger than the DSLR reference. In contrast, several other intraoral and extraoral parameters generally did not show significant differences between devices' settings.

Conclusion: Smartphone photographs generally provided measurements comparable to those of DSLR in standardised settings**.** Significant differences occurred for the incisal width at all magnifications (iPhone > Samsung) and the incisal height (iPhone > DSLR at 2× and 4×). Or– Or differed at 4× with Samsung > DSLR. Smartphones are suitable for routine dental documentation but require caution for precise measurement-based analysis.

Keywords: Dental Photography, Smartphone Camera, DSLR, Measurement Accuracy

PP10

2.4 Comparison Between Colour Staining On 3D-Printed Retainers and Vacuum-Formed Retainers

Muhammad Ikhwan, Nur Aisyah Munirah and Azrul Hafiz Abdul Aziz
Faculty of Dentistry, Universiti Sains Islam Malaysia, Malaysia.

Introduction: Clear orthodontic retainers are popular due to their aesthetic advantages. Vacuum-formed retainers (VFRs) are widely used, while three-dimensional (3D) printed retainers are increasingly introduced through digital workflows. However, information on their colour stability remains limited. This study aimed to compare the staining of the colour between vacuum-formed retainers and 3D-printed retainers after exposure to common staining solutions.

Methodology: In this study, 36 retainers (n=36) were evaluated, comprising 27 vacuum-formed retainers (Erkodent, Dentp and Essix; n=9 each) and 9 3D-printed retainers fabricated using NextDent Ortho Flex. Each group was divided into three subgroups and immersed in tea, coffee, or distilled water (control) at 37°C for 14 days. Colour measurements were taken at baseline and after immersion using an app colorimeter with standardised measurement based on the CIELAB system. The colour changes (ΔE*) were calculated and converted to units of the National Bureau of Standards for clinical relevance.

Results: 3D-printed retainers demonstrated significantly greater colour staining compared to vacuum-formed retainers. Tea caused the greatest discolouration, followed by coffee, while minimal changes were observed in the control group. Vacuum-formed retainers showed better overall colour stability, although variations between brands were noted.

Conclusion: 3D-printed retainers were more susceptible to colour staining than vacuum-formed retainers, indicating that material composition and fabrication method influence colour stability.

Keywords: Colour Staining, 3D Printed Retainers, Vacuum-Formed Retainers

PP22

2.5 The Assessment of Suturing Skills of USIM Dental Undergraduates in Oral Surgery

John Chong Keat Hon[1], Siti Nur Farhanah Mohd Desa[2], Muhammad Taufiq Zahiruddin[1], Nur Irdina Khairudin[3]

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Introduction: Proper suturing techniques are essential for wound healing after minor oral surgery. Universiti Sains Islam Malaysia (USIM) dental undergraduates must demonstrate suturing proficiency, particularly for impacted third molar removal. This study aims to evaluate the quality of the sutures performed by USIM Year 4 and Year 5 dental students immediately after the operation and one week after surgery.

Methodology: This cross-sectional study included 36 Year 4 and Year 5 USIM dental students who performed suturing after minor oral surgery from February to December 2024. Their suturing skills were assessed by a supervising oral surgeon using the Detailed Suture Placement Checklist (DSPC) and the Objective Structured Assessment of Technical Skills (OSATS). Data were analysed with SPSS version 26 using descriptive statistics.

Results: For OSATS scores (range 5–35), 16.7% of participants scored 21, while 41.75% achieved full marks (16) on the DSPC. Half (50%) of the students demonstrated good suturing skills, indicated by intact sutures one week postoperatively, while the remaining 50% showed poor skills, with no sutures intact during follow-up.

Conclusion: This study highlights the variability in suturing skills among USIM Year 4 and Year 5 dental students after minor oral surgery. DSPC and OSATS assessments revealed that a significant proportion of students scored below optimal levels, with only a few demonstrating

proficiencies. These findings emphasise the need for improved training in suturing techniques to ensure consistent wound healing outcomes.

Keywords: Minor Oral Surgery, Suturing Skills, Suture Intact.

PP26

2.6 Virtual Bracket Removal: Evidence Interpreted Through Itqan

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Introduction: Orthodontic retainers are often fabricated after the removal of a fixed appliance. Virtual bracket removal (VBR) allows clinicians to remove fixed appliances from digital scans, creating a bracket-free dental model ready for retainer fabrication prior to removal of the fixed appliance. However, errors in VBR can compromise the accuracy of the dental model and consequently, the fit of downstream appliances. This scoping review systematically maps the existing evidence on the techniques and precision of VBR.

Methodology: Electronic searches were performed on PubMed, Scopus, ScienceDirect, ProQuest, and Google Scholar for articles evaluating VBR according to the PRISMA-ScR framework. Articles were screened for eligibility by two independent reviewers, disagreements resolved through discussion. Data for workflows, software platforms, and accuracy outcomes were charted using an Excel spreadsheet and synthesised descriptively.

Results: This review includes nine articles published between 2019 and 2025 that demonstrate varying study designs. The VBR techniques differed, performed manually or using artificial intelligence. Although VBR generally achieved acceptable surface deviations, reported accuracy varied according to technical, anatomical, and bracket-related factors. The clinical evaluation was limited. A study did not find a correlation between the accuracy measured and clinical performance.

Conclusion: The limited number of studies identified shows that the accuracy of VBR remains insufficiently investigated. Current evidence demonstrates that VBR can achieve accuracy, as established mainly through technical validation studies. However, accuracy should be regarded as purpose-dependent, in alignment with the Itqan concept, which prioritises clinically

meaningful outcomes. More clinically orientated research is needed to support the reliable integration of VBR into digital orthodontic workflows.

Keywords: Virtual Bracket Removal, Digital Orthodontics, Intraoral Scans, Accuracy, Itqan

OP1

2.7 AI in Diagnostic Dentistry: Technology and Islamic Ethical Compliance

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Introduction: Artificial Intelligence (AI) has advanced in dental diagnostics, improving accuracy, efficiency, and clinical decision-making through Machine Learning (ML) and Deep Learning (DL). However, ethical concerns, particularly from an Islamic perspective, remain inadequately explored.

Methodology: A structured, non-systematic narrative was conducted using a two-stream literature search. The first stream identified peer-reviewed studies on AI applications in dental diagnostics. Meanwhile, the second stream explored Islamic ethics, bioethics, and jurisprudential sources relevant to healthcare technologies. Building on this, searches used predefined keywords, with inclusion restricted to English language full-text articles, primarily published between 2015 and 2025. Consequently, relevance of titles, abstracts, and full-text availability was screened.

Results: Although AI demonstrates high diagnostic performance in various dental fields, it faces ethical challenges related to data quantity, quality, bias, transparency, generalisability, and clinical integration. In line with this, Islamic ethical principles, particularly the purpose of Islamic law (Maqa ṣ id al-Shariah and Al-Masadir al-Aqliyya), can serve as the primary basis for the applicability of AI in dentistry.

Conclusion: Integrating Islamic ethical values into AI-driven dental diagnostics promotes a human-centred, accountable, and ethically robust approach, ensuring that rapid technological expansion aligns with patient safety, social justice, and moral respectability.

Keywords: artificial intelligence, diagnostic dentistry, ethical, Islamic perspectives, dental fiqh.

OP2

2.8 Amanah in Digital Dentistry: The Role of Post-Processing in Ensuring Safe 3D-Printed Orthodontic Appliances

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Introduction: The use of 3D printing in orthodontics has expanded rapidly, especially for removable dental appliances. However, post-processing is often overlooked, despite its critical role in removing residual resin, maintaining strength, and ensuring biocompatibility. From an Islamic perspective, amanah (trust and responsibility) obliges clinicians to provide safe and reliable appliances for patients.

Methodology: A structured narrative review examined post-processing in digital orthodontics, focusing on washing, UV curing, and print orientation, with ethical considerations. The literature was identified using predefined keywords, limited to full-text English articles published mainly between 2015 and 2025.

Results: Post-processing significantly influences the physical and biological performance of 3D-printed orthodontic appliances. Effective washing removes residual monomers, while proper UV curing enhances strength and stability. The orientation of the print affects the accuracy and drainage of the resin. Errors may compromise safety. In order to maintain amanah, clinicians must follow evidence-based protocols to ensure safe, effective, and ethically responsible patient care.

Conclusion: Post-processing is not just a technical step; it is also an important step in ensuring that 3D-printed orthodontic appliances are safe and work well. Practising digital dentistry with precision and care thus embodies the principle of amanah, strengthening the clinician's duty to protect the patient's well-being while providing high-quality treatment.

Keywords: mechanical properties, post-curing, printing orientation, three-dimensional (3D) printed orthodontic appliances, washing

OP4

2.9 Can 3D Digital Dentistry Support Islamic Principles in Forensic Human Identification?

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Introduction: Accurate human identification is essential in forensic investigations and disaster victim identification. In Islamic practice, identifying the deceased preserves dignity and supports proper medical-legal procedures. Advances in digital dentistry have enabled three-dimensional (3D) approaches to forensic identification. Although features such as palatal rugae, lip prints, and enamel rod patterns have been studied, the uniqueness of tooth occlusal surface morphology remains largely unexplored. Determine the uniqueness of the occlusal surfaces of the first and second maxillary premolars (PM1 and PM2) using 3D dental scans.

Methods: Maxillary PM1 and PM2 of 90 dental casts were selected following the inclusion and exclusion criteria. Dental casts were digitised to 3D dental scans**.** The occlusal surfaces of PM1 and PM2 were cut off from the remaining dental cast scan and then duplicated. Original and duplicate sets of scans were decoded by examiner A modifying antemortem and post-mortem dental records. Two hundred and fifty pairs of matched and unmatched scans for each tooth type were made and superimposed using Cloudcompare software. Paired t-test was performed for the statistical analysis. The decision for the pairs was based on the calculated root mean square (RMS) values.

Results: Significant differences were found between the RMS values of matched and unmatched pairs. Using RMS threshold values, all scan pairs were correctly identified, demonstrating 100% uniqueness of the PM1 and PM2 occlusal surfaces.

Conclusion: Maxillary premolars exhibit unique 3D occlusal topography that highlights the potential of digital dental innovation to support accurate and ethical forensic identification of humans.

Keywords: Occlusal table, superimposition, maxillary teeth, 3D, uniqueness

2.10 Digital Post Treatment Instructions in Dental Care Clinics: Patient Acceptance, Sociodemographic Correlates, and the Application of the Islamic Legal Maxim *La Darar wa La Dirar*

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Introduction: Based on the Islamic legal maxim *La Darar wa La Dirar* (harm shall neither be inflicted nor reciprocated), providing clear and effective post-treatment guidance is an essential part of patient care to prevent avoidable harm caused by non-adherence to dental instructions. Digital tools such as QR code-enabled materials offer a contemporary solution, but evidence on patient acceptance in Malaysian primary dental care remains limited. This study evaluated patient feedback and acceptance of a digital poster delivered by QR code and its association with sociodemographic factors.

Methodology: A cross-sectional survey was conducted among 32 dental patients using a structured self-administered questionnaire. Descriptive statistics and Fisher's Exact Test were applied to assess associations between sociodemographic factors and the acceptance level.

Results: All 32 respondents completed the questionnaire. Most were female (78.1%), Malay (96.9%), aged 30–49 years (56.3%), degree's holders (50.0%). The most common treatment received was dental filling (31.3%). High acceptance of digital instructional materials was reported by 75.0% (n = 24). 96.9% of participants accessed the digital poster via QR code and 96.9% expressed preference for digital posters as a supplement to verbal advice. Across all Likert items, the majority rated comprehension (84.4%), confidence in adherence (81.3%), poster clarity (81.3%), and overall rating (87.5%) at the highest score. Fisher's Exact Test revealed no statistically significant associations between all sociodemographic factors ($p > 0.05$) and acceptance of digital materials.

Conclusion: Patients showed universally high acceptance of QR code-delivered dental instructions regardless of sociodemographic background, supporting digital instructional tools as an effective, equitable, and ethically grounded supplement aligned with *La Darar Wa La Dirar* to verbal post treatment counselling.

Keywords: Digital dentistry, Islamic legal maxim, patient acceptance, post-treatment instructions.

OP15

2.11 Patients' Perspectives on Artificial Intelligence-Based Remote Monitoring in Orthodontics: A Cross-Sectional Electronic Questionnaire Study

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Introduction: This study aimed to evaluate patients' perspectives on the use of artificial intelligence for remote monitoring in orthodontics. The evaluation was divided into three domains: (a) patient experience and impressions of remote monitoring, (b) perspectives on oral hygiene reminders, and (c) perceptions of the frequency of treatment visits.

Methodology: This non-randomised cross-sectional study used an 18-item validated electronic questionnaire. The survey was distributed through the push-notification function of a smartphone application (Dental MonitoringTM). The responses were recorded using a 5-point Likert scale. Participation was voluntary and the survey was conducted in three countries: the Republic of Ireland, Australia, and New Zealand. A total of 343 responses were collected and analysed.

Results: The majority of the respondents reported positive experiences and perceptions of Dental MonitoringTM. In general, 86.88% rated their experience as either "good" or "very good" (42.57% and 44.31%, respectively). Similarly, 85.13% considered the application "useful" or "very useful" (37.61% and 47.52%, respectively). No statistically significant differences in patient experience scores were observed between males and females, across geographic locations, or among different age groups.

Conclusion: Remote monitoring using artificial intelligence is generally well received by orthodontic patients, demonstrating high levels of satisfaction and perceived usefulness. Patients reported that remote monitoring reduced the need for in-office visits, while personalised reminders contributed to improved oral hygiene.

Keywords: Artificial intelligence, remote monitoring, teledentistry, patients' perspective, orthodontics.

PART 3: CLINICAL DENTISTRY, AESTHETICS AND CASE MANAGEMENT

PP1

3.1 3D-Printed Denture, A Story: Case Report

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Introduction: Tooth loss is a public health issue, especially in low-income countries. Dentures are less costly than their alternative and improve associated problems with tooth loss. They are prescribed to improve patient function, speech, and comfort. 3D-printed denture revolutionised the denture construction, however, it comes at a price. Conventionally made dentures that require six visits can now be compressed up to 3 visits by using the 3D-printed digital technique. This case report explores the construction of a 3D-printed denture using a modified flow, and patients reported feedback after three weeks after delivery.

Methodology: 3D-printed dentures were constructed using the modified flow for digital denture construction. Findings during the review visit after two weeks of denture wearing, including overall patient satisfaction and changes in the 3D-printed denture, were recorded.

Conclusion: This case series reported the use of modified flow for the construction of 3D-printed dentures and the patient's immediate feedback on the effect of the constant use of 3D-printed dentures after two weeks.

Keywords: 3D-Printed Complete Denture, Complete Denture, Edentulous, Digital Dentistry

3.2 A Clinical Evaluation of Herpes-Associated Erythema Multiforme with Concurrent Oral Lichenoid Lesions and Fellatio-Associated Erythema: A Case Report

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Introduction: Tooth loss is a public health issue, especially in low to middle-income countries. Dentures are less costly compared to their alternative and improve associated problems with tooth loss. They are prescribed to improve patient function, speech, and comfort. Erythema multiforme (EM) is an acute immune-mediated mucocutaneous disorder, most commonly triggered by infections, particularly Herpes Simplex Virus (HSV), and is then termed Herpes-Associated Erythema Multiforme (HAEM). The coexistence of additional oral lesions, such as oral lichenoid lesions (OLL), and trauma-induced conditions such as fellatio-associated erythema, can complicate clinical interpretation and pose significant diagnostic challenges. The objective of this study was to describe the clinical complexity, diagnostic considerations, and therapeutic outcomes of a rare concomitant presentation of HAEM, OLL, and fellatio-associated erythema within the oral cavity.

Case Report: A 43-year-old female presented with multifocal oral lesions. Diagnostic procedures included a detailed clinical examination, risk factor assessment, and haematological investigations. A multimodal treatment approach was implemented consisting of topical corticosteroids, antiseptic agents, and systemic antiviral therapy, followed by longitudinal monitoring. Clinical evaluation revealed erosive-ulcerative lesions in the labial mucosa consistent with HAEM, keratotic plaques in the bilateral buccal mucosa suggestive of OLL, and diffuse palatal erythema likely secondary to mechanical trauma. Serological findings confirmed previous HSV-1 infection (IgG positive). A stepwise management approach resulted

in complete resolution of HAEM and OLL, with gradual remission of the palatal lesions, indicating a favourable therapeutic response.

Conclusion: This case underscores the importance of integrative diagnostic reasoning in the management of overlapping oral mucosal conditions. Recognition of multifactorial aetiologies that include viral, immunological, and mechanical factors is essential for establishing an accurate diagnosis and achieving optimal clinical outcomes.

Keywords: Erythema Multiforme, Herpes Simplex Virus Type 1, Oral Lichenoid Lesion, Trauma-Induced Oral Lesion, Fellatio-Associated Erythema.

PP7

3.3 Case Series of Aesthetic Crown Lengthening for Excessive Gingival Display: Islamic Ethical Analysis

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Introduction: Excessive gingival display (EGD) can adversely affect smile aesthetics and psychosocial well-being, with altered passive eruption (APE) being a common underlying cause. Although aesthetic crown lengthening is a predictable treatment modality, its permissibility among *Muslim* patients warrants ethical consideration. This case series aims to describe the clinical management of EGD and evaluate its implications from an *Islamic* ethical perspective.

Methodology: Two healthy female patients with EGD associated with APE underwent aesthetic crown lengthening involving gingivectomy with osseous recontouring in the anterior sextants. Clinical outcomes, including gingival margin stability and clinical crown length, were assessed over a three-and six-month postoperative follow-up, alongside oral health-related quality of life (OHRQoL) using validated domains. Islamic ethical analysis was conducted based on Quranic verses, Hadith, Maqasid Shari'ah, Islamic legal maxims (qawa'id fiqhiyyah), and contemporary scholarly opinions.

Results: Both cases demonstrated stable gingival margins, increased clinical crown length, and uneventful healing with no postoperative complications or relapse throughout follow-up. OHRQoL scores showed marked improvement, particularly in psychological and social domains, reflecting reduced self-consciousness and enhanced confidence. From an Islamic ethical point of view, the procedure is deemed permissible when performed to alleviate

psychosocial distress, guided by the principles of harm reduction (*raf' al-darar*), valid intention (*niyyah*) and necessity (*hajah*).

Conclusion: Aesthetic crown lengthening is an effective treatment for managing EGD and can significantly improve quality of life. Within the framework of Islamic medical ethics, the procedure is permissible when it is undertaken to address legitimate psychosocial harm rather than to provide a purely cosmetic enhancement.

Keywords: Aesthetic Crown Lengthening, Altered Passive Eruption, Excessive Gingival Display, *Islamic* Medical Ethics, *Maqasid Shari'ah*

PP11

3.4 Composite resin restoration on a growing teenager with hypodontia and microdontia: A case of patient's right in making treatment option.

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Introduction: A growing teenager with anterior teeth affected by size and form anomalies leads to the patient having challenges in fulfilling their daily routine and affects their ability to socialise well due to the difference in the appearance of their teeth**.** This situation, if not addressed earlier, will compromise the patient's confidence level and further affect their ability to progress in life. Both the patient and the clinician are responsible for improving this condition and preventing further harm to the patient.

Case Report: A 13-year-old girl (SI) was unhappy with the appearance of her small anterior teeth with a general space between them**.** She lost confidence and refused to socialise to avoid people asking about her teeth. She was diagnosed with hypodontia and microdontia of multiple permanent teeth. The build-up of composite resin was done onto the upper anterior teeth of SI. Tooth 13 was built-up to mimic the shape of tooth 12. Teeth 11, 21, and 22 had composite build-ups to improve their size and appearance. She was reviewed every 6 months for two consecutive years and was reviewed annually after that. After 6 years, all composite build-ups in SI teeth were intact. She declined other options of restorative materials as replacement of composite resin because she did not prefer treatment that needed to trim the structure of the teeth. Therefore, composite resin build-ups on her upper anterior teeth were retained and reviews are continued annually.

Conclusion: Replacement of compromised teeth involved options of different kinds of updated materials that are durable, aesthetically approved, and established to be long-lasting. When a patient declines the options offered, this does not mean that a physician cannot assist them in improving their quality of life. Thorough discussions, including outcomes and disadvantages, help both both patient and the clinician to reach agreement and proceed with beneficial patient management.

Keywords: Composite Resin, Microdontia, Hypodontia

PP15

3.5 Management of Homogenous Leukoplakia in a Non-Smoking Patient: A Case Report

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Introduction: Leukoplakia is one of the most common Oral Potentially Malignant Disorders (OPMD) in the oral cavity. This lesion has the potential for malignant transformation and therefore requires a comprehensive diagnostic evaluation and histopathological confirmation to determine the biological character of the lesion and the degree of epithelial dysplasia.

Case Report: A 39-year-old patient presented with a painless white patch on the ventral tongue for one month. Clinical examination revealed a single white plaque that measured approximately 13x8mm with clear borders and could not be scrapped. The pharmacological treatment in this case was the administration of a 1% povidone iodine antiseptic mouthwash. As these patients showed no identifiable cause, a biopsy should be performed. Current case is categorized as small leukoplakia lesions in a favourable location, therefore excisional biopsy is often the optimal approach due to its diagnostic and therapeutic benefits. Supporting examinations were carried out as follows; VELscope, Fine Needle Aspiration Biopsy (FNAB), and excisional biopsy with histopathological examination. VELscope examination and FNAB results showed non-specific chronic inflammation without signs of malignancy. Histopathological examination showed mild epithelial dysplasia limited to the basal third of the epithelium. Discussion: In this case, the patient did not have a habit of smoking or consuming alcohol. However, it is assumed that the patient has a history of passive exposure to cigarette side-stream smoke. Apart from side stream smoke, it is suspected that there is chronic mechanical irritation (CMI) trauma or continuous mechanical irritation of the oral mucosa which leads to excessive and persistent production reactive oxygen species (ROS) and reactive nitrogen species (RNS/NOS) as a reactive mediator inflammation. Causes oxidative stress which is destructive to tissue and widespread

accumulation of DNA damage in mucosal epithelial cells. A dual-function biopsy simultaneously identifies the pathology of a lesion and provides immediate and definitive treatment.

Conclusion: A comprehensive diagnostic approach with histopathological confirmation is crucial in establishing a diagnosis of leukoplakia, as well as in determining long-term management and monitoring to prevent lesion progression.

Keywords: Leukoplakia, Oral Potentially Malignant Disorder, VELscope, Excisional Biopsy, Epithelial Dysplasia

PP16

3.6 Management of Oral Ulcer as a Clinical Indicator for Tuberculosis Diagnosis: A Case Report

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Introduction: Tuberculosis (TB) remains a major global health concern, with Indonesia ranking second in the burden of cases. Oral manifestations are rare (0.05–5%) but clinically significant, as they may mimic traumatic ulcers, infections, or malignancies.

Case Report: A clinical examination was performed on a 48-year-old male who presented a persistent ulcer in the right buccal mucosa for three months, accompanied by odynophagia, cough, hoarseness and weight loss. Conventional therapies (antiseptics, antifungals, antivirals, and analgesics) failed to resolve the lesion. Clinical examination revealed an irregular ulcer with a granulomatous base and indurated margins. Laboratory findings showed anaemia, lymphopenia, and elevated ESR, while microbiology was negative for pathogens. Referral to a pulmonologist confirmed systemic TB. Traumatic ulcers usually heal within 10–12 days after the cause is removed. Persistence despite conventional therapy requires consideration of systemic disease or malignancy. Differential diagnoses include traumatic ulcerative granuloma with stromal eosinophilia, oral squamous cell carcinoma, histoplasmosis, and oral TB. The patient showed marked improvement following systemic anti-TB therapy (rifampicin, isoniazid, pyrazinamide, ethambutol), with intraoral lesions healing in scar tissue. Local care with povidone iodine and chlorine dioxide provided a supportive benefit.

Conclusion: Persistent oral ulcers unresponsive to standard therapy should raise suspicion of TB, particularly in endemic regions. Systemic eradication remains the cornerstone of treatment, while local therapy supports healing and patient comfort. Persistent oral ulcers unresponsive to standard therapy should raise suspicion of TB, particularly in endemic regions. Systemic eradication remains the cornerstone of treatment, while local therapy supports healing and patient comfort.

Keywords: Tuberculosis, Oral Ulcer, Diagnosis, Infection, Granulomatous

PP17

3.7 Methicillin-Resistant *Staphylococcus aureus* Infection Manifesting as a Labial Abscess in an Adolescent: A Case Report

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Introduction: Community-associated Methicillin-Resistant *Staphylococcus aureus* (CA-MRSA) has emerged as a significant cause of skin and oral soft tissue infections in otherwise healthy children. The empirical use of betalactam antibiotics often fails, delaying effective treatment, particularly in community-acquired cases.

Case Report: An 11-year-old adolescent, a competitive swimmer, presented progressive swelling of the lower lip and purulent discharge that did not respond to amoxicillin prescribed by the primary health centre three days prior to admission to Universitas Airlangga Dental Hospital. Clinical examination revealed a single pustular lesion with marked edoema on the vermilion border. Culture identified Methicillin-Resistant Staphylococcus aureus resistant to betalactams, which explained the failure of amoxicillin. Management included local debridement with antiseptic, oral clindamycin, and topical gentamicin, leading to complete resolution in 10 days.

Conclusion: This case highlights the critical role of microbiological testing in persistent paediatric labial abscesses, underscoring the growing challenge of antimicrobial resistance.

Keywords: Methicillin-Resistant Staphylococcus aureus, Labial Abscess, Paediatric athlete, Antimicrobial Resistance, Dentistry

PP19

3.8 Self-Removal of Fixed Orthodontic Appliance: A Case of Periodontic-Orthodontic Disharmonisation

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Introduction: Fixed orthodontic appliances are recognised as plaque-retentive factors that alter the periodontal environment by facilitating biofilm accumulation and compromising oral hygiene maintenance. Interruption of orthodontic treatment without professional supervision can further predispose patients to periodontal complications, particularly when appliances are removed independently.

Case Report: A systemically healthy 27-year-old smoker requested the removal of retained orthodontic brackets and residual composite following incomplete orthodontic treatment. The patient reported abrupt discontinuation of treatment after the treating clinic became inaccessible, following which the fixed appliances were removed by the patient self-removed without professional assistance. Clinical examination demonstrated retained orthodontic components, residual bonding material, generalised swelling, and gingival inflammation with visible plaque and calculus accumulation. The plaque and bleeding scores were 62.07% and 68.75%, respectively, consistent with generalized plaque-induced gingivitis. Additional findings included caries on tooth 27 and 36. Initial periodontal therapy comprised oral hygiene reinforcement, selective manual scaling, full-mouth ultrasonic debridement, polishing, removal of retained orthodontic components, and elimination of residual composite material. Smoking cessation counselling was provided, and restorative management of identified carious lesions was scheduled.

Conclusion: This case highlights the periodontal implications of interrupted orthodontic treatment and emphasises the importance of continuous professional supervision during orthodontic care. Early periodontal intervention remains essential to prevent the progression of inflammation associated with retained orthodontic components and plaque accumulation.

Fortunately, for aesthetic reasons, the patient came to seek early advice and his periodontal condition and orthodontic predicament were immediately treated.

Keywords: Orthodontic Appliances, Plaque Retention, Calculus, Gingivitis, Disharmonisation

PP27

3.9 Young Patients' and Operators' Perception in Using Novel Attractive Needle Cover (ANC) Compared to Conventional Method in Reducing Dental Anxiety During Local Anaesthesia Administration

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Introduction: Many young patients have dental anxiety, especially during local anaesthesia (LA) administration**.** This study introduced ANC to be used with LA as part of the management of non-pharmacological behaviour. This study aims to test the effectiveness of ANC in reducing anxiety among young patients. This study also assesses the operator's satisfaction with using the needle cover.

Methodology: Patients were approached with conventional LA and LA with ANC at different dental visits by their operator. Two sets of questionnaires were designed to assess the perceptions of patients and operators in using ANC using the Modified Child Dental Anxiety Scale (MCDAS).

Results: Overall, about 75% of patient has reduced anxiety while using the ANC and about 66.7% of patients preferred using the ANC compared to the conventional syringe. Meanwhile, 57.1% of the operators agreed that the ANC helped reduces patients' anxiety, however only 23.8% feels easy using the ANC.

Conclusion: ANC helps significantly reduce anxiety in young patients during local anaesthesia administration. Nevertheless, the ANC design can be improved for smooth operator handling.

Keywords: Local Anaesthesia, Attractive Needle Cover, Dental Anxiety (MCDAS), Young Patients' Perception

OP6

3.10 Dental Care in Schizophrenia: A Case Report with Islamic Ethical Reflections

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Introduction: Patients with mental disorders such as schizophrenia might face challenges in maintaining oral health due to poor communication with the dentist, caregiver dependence, and side effects of medications. Therefore, this condition can compromise oral hygiene since cleanliness (taharah) is one of the daily practices of Islam. Patients and physicians are responsible for the preservation of health and the prevention of harm.

Case Presentation: A 38-year-old Malay male diagnosed with schizophrenia currently on Paliperidone presented with a fractured upper anterior crown constructed by a non-dental practitioner also known as 'fake crown'**.**

Discussion: Intra oral examination shows generalised gingival inflammation, high plaque score, supragingiva calculus, pulp necrosis of tooth 21 related to the fake crown. For behaviour, the patient was anxious and needed the help of parents for better communication. The treatment plan includes cessation of smoking, oral hygiene instruction to use an electronic toothbrush, scaling with debridement of the root surface, extractions, restoration, and root canal therapy, followed by rehabilitation with prosthodontics.

Conclusion: This case became complex because there are challenges associated with schizophrenia and the presence of a fake crown constructed that led to poor oral hygiene and disease progression. In Islamic jurisprudence, the principle of *la ḍarar wa la dirar* ("Do not harm yourself or others," Hadith Ibn M ājah) emphasises that a harmful intervention must be avoided. Hence, reinforce oral hygiene with replacement of the fake crown and proper

treatment aligns with both clinical and Shariah principles, ensuring preservation of health (*ḥif ẓ al-nafs*) and protecting patient oral health.

Keywords: Fake crown, oral hygiene, schizophrenia, taharah.

OP11

3.11 Guided Tissue Regeneration of a Periodontally Hopeless Tooth: A Case Report Through the Lens of *Ḥifẓ al-Nafs*

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Introduction: A periodontally hopeless tooth with advanced attachment loss, deep pocketing, and infrabony defects is conventionally extracted. However, retaining natural dentition through regenerative therapy aligns with *ḥifẓ al-nafs* (preservation of self and bodily integrity) as the body is an amanah (trust) of Allah. Guided tissue regeneration (GTR) using xenogeneic bone substitutes can salvage such teeth, but the animal origin raises permissibility questions, especially for Muslim patients. This case report discusses periodontal regenerative management of a compromised maxillary central incisor as a clinically and ethically justified intervention consistent with *hifz al-nafs.*

Methodology: A 40-year-old healthy female presented a left central incisor treated with root canals showing a depth of 9mm probing and was associated with an infrabony defect of approximately 70% vertical bone loss. GTR was performed via a modified papilla preservation flap with a vertical releasing incision. Granulation tissue was curetted, the defect disinfected and occlusion adjustment was performed. A deproteinised bovine (xenogeneic) bone graft was grafted and secured with collagen membrane. The tooth was splinted to adjacent teeth with flowable composite. Outcomes were assessed at 3 and 6 months post-operatively.

Results: Healing was uneventful with a significant reduction in probing depth, clinical attachment gain, filling of radiographic defects, and tooth stability**.** Salvaging the natural tooth aligns with *ḥifẓ al-nafs* by preventing premature loss and its functional consequences (*al-ḍarar yuzal*). Applying Islamic legal reasoning (*ijtihad*) used in Malaysian healthcare that emphasises necessity (ḥajiah), public interest (*maslahah*) and removal of harm (*raf' al-ḍarar*) supporting

the use of a bovine xenograft in this case when clinical need is clear, alternatives are limited, and informed consent is obtained.

Conclusion: GTR with a xenogeneic graft is a predictable alternative to extraction, embodying the maqaṣid principle of *ḥifẓ al-nafs* when grounded in necessity and sound intention.

Keywords: Guided tissue regeneration, *Ḥifẓ al-nafs*, *Maqaṣid al-shariah*, Xenogeneic bone graft, Islamic medical ethics.

OP13

3.12 Pathological Tooth Migration (PTM): Clinical Management and Ethical Reflection in Fiqh Dentistry

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Introduction: Pathologic tooth migration (PTM), defined as tooth displacement due to loss of periodontal structures (gum and supporting bone), is a recognised periodontitis complication adversely affecting oral function, aesthetics, and quality of life**.** Its management extends beyond clinical intervention, involving ethical considerations within the Fiqh Dentistry framework and patient-centred care.

Methodology: A 57-year-old Malay female presented anterior tooth displacement, gingival bleeding, and dissatisfaction with the dental appearance**.** The clinical and radiographic evaluation revealed generalised periodontitis, characterised by inflammation of the supporting structures, loss of periodontal attachment, and resorption of the alveolar bone. Non-surgical periodontal therapy (NSPT), involving the professional removal of plaque and calculus from the surfaces of the teeth and root, was performed with instruction in oral hygiene and behaviour modification. In collaboration with her physician, amlodipine was replaced with perindopril.

Results: A significant improvement in plaque control and gingival inflammation was observed after therapy**.** Interestingly, a slight spontaneous correction of tooth displacement occurred after periodontal stabilisation. The replacement of amlodipine with perindopril resulted in a further improvement in gingival enlargement. This case demonstrates the effectiveness of NSPT's in controlling periodontal disease and supporting natural improvement in tooth alignment after resolution of inflammation.

Conclusion: From a Fiqh Dentistry perspective, management reflects the principle of maslahah (wellbeing) while accommodating individual limitations (hajah), highlighting ethically grounded patient-centred care that integrates clinical and psychosocial considerations. Effective management of PTM requires evidence-based periodontal therapy and ethical clinical decision-making. Long-term supportive periodontal care is essential to maintain stability in treatment and support overall oral health outcomes.

Keywords: Pathologic tooth migration, periodontitis, non-surgical periodontal therapy, fiqh dentistry, maslahah.

PART 4: DENTAL MATERIALS, HALAL STATUS AND SHARIAH COMPLIANT PRACTICE

PP9

4.1 Comparative Efficacy of Animal-Derived vs. Synthetic and Autologous Interventions in Palatal Graft Harvesting: A Systematic Review of Pain and Morbidity Outcomes

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Introduction: The harvesting of the palatal graft frequently causes significant postoperative pain. Although animal derived biomaterials are traditional hemostatic choices, their analgesic efficacy and ethical/cultural acceptability are increasingly scrutinised. This study systematically quantifies the use of animal-based interventions and evaluates their impact on morbidity compared to autologous, synthetic, and light-based alternatives.

Methodology: A systematic review of 69 clinical trials (2,447 participants) was conducted in five electronic databases and the grey literature up to June 2025. The interventions were categorised as: Animal-derived (collagen/gelatin, chitosan, bee products), Autologous (PRF/PRP) and Synthetic/Physical (cyanoacrylate, stents, laser). The primary outcome was pain intensity via the Visual Analogue Scale (VAS) over seven days. Quality was assessed using the RoB 2.0 tool.

Results: Animal-derived products appeared in 31.9% of trials. Of these 22 studies, xenogeneic collagen/gelatin predominated (17), followed by chitosan (3), bee products (3), and other biologicals (2). Although effective for hemostasis, animal-based products yielded higher pain scores (Day 7 VAS: 28.1) than autologous PRF (Day 7 VAS: 16.7). Autologous and synthetic interventions offered superior pain modulation, with PRF and laser therapy reducing peak pain more effectively during the first 72 hours than passive animal-derived scaffolds.

Conclusion: Animal-derived biomaterials are less effective than autologous and synthetic alternatives in mitigating postoperative pain and morbidity. Given the cultural and ethical limitations of xenogeneic products, clinicians should prioritise autologous PRF or synthetic alternatives. These interventions provide superior analgesic results and ensure an inclusive, patient-centred approach that respects diverse religious and ethical values.

Keywords: Palatal Muscles/surgery, Biocompatible Materials, Pain, Postoperative, Bioethics

PP18

4.2 Patient-Reported Experiences and Outcomes on using Three Orthodontic Thermoplastic Retainer Cleansing Agents: A Randomised Controlled Trial

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Introduction: Islam encourages cleanliness "Purification is half of faith" yet evidence regarding patient-reported experiences with orthodontic thermoplastic retainer cleansing agents remains limited. This study aimed to assess patient-reported experiences and perceived outcomes after the use of three orthodontic thermoplastic retainer cleansing agents over a 12-month retention period.

Methodology: This three-arm parallel randomised controlled trial was registered in the ISRCTN Registry Database**.** Thirty adult patients (20 females, 10 males) who met the inclusion criteria were randomly assigned to one of three groups of cleansing agents that included Colgate toothpaste (Group A, n=10), Retainer Brite tablet (Group B, n = 10) and tap water (Group C, n = 10). n=10). Patients received the assigned cleansing materials, written instructions and video demonstrations according to the assigned protocol. A newly developed and validated assessment form with the Likert scale comprising 6 items assessed perceptions of freshness, cleanliness, taste, smell, time allocation, and compliance was administered via Google Form. Data were obtained at 6-months (T1) and 12 months (T2) after retention. Descriptive statistics and Fisher's exact test were used for data analysis.

Results: All 30 patients completed the study. No statistically significant differences were observed between the 3 groups for any of the 6 assessed items ($p > 0.05$).

Conclusion: After a year of follow up-period, cleaning the thermoplastic retainer with Colgate toothpaste (Group A), Retainer Brite tablet (Group B) and tap water (Group C) was equally acceptable in terms of patient-reported experiences and perceived results on freshness, cleanliness, smell, taste, time allocation, and compliance associated with the orthodontic thermoplastic retainer.

Keywords: Compliance, Orthodontic Thermoplastic Retainer, Patient Reported Experiences and Outcomes

4.3 Shariah-Compliant in Dental Practices: A Comprehensive Framework

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Introduction: Today, the demand for Shariah-compliant health services, including dentistry, is increasing as Muslim patients seek healthcare that corresponds with Islamic guidelines. This paper explores the essential elements and standards for establishing and operating a Shariah-compliant dental practice.

Methodology: Papers on traditional Muslim beliefs and practices, including clinical care, management, and ethical principles in dental practice, were identified through a literature search and review.

Results: Six key elements were retrieved: Halal products, ethical clinical conduct, safe workplace and environment, gender interaction and modesty, shariah-compliant finance and ethical communication and advertising**.** Dental practices must ensure that all materials are free of prohibited substances and sourced from halal-certified origins. Clinical decisions on the type of treatment should consider Islamic rulings on altering creation (*fitrah*) and should be justified by the patient's well-being. Proper disposal of medical waste according to taharah (cleanliness) should be practiced and prayer break time should be considered. Adequate boundaries between genders among patients and staff and modesty during dental treatment are recommended. Costing and financial management should avoid *Riba* (interest), *Gharar* (uncertainty), and *Maisir* (gambling). Marketing strategies and information transmission to consumers must be truthful, avoiding false claims and edited imagery that mislead patients.

Conclusion: Implementing and practicing Shariah elements in dental clinics and services allows dental practitioners to become culturally competent, providing a viable and competitive alternative to conventional practices that meets both physical and spiritual needs of Muslim patients.

Keywords: Dental Practice, Shariah-Compliant, Halal Dental Products, *Maqasid Al-Shariah*, Muslim Patient Care

4.4 Understanding the Perception of Complementary and Alternative Medicine in Treating Cancer Among the Malaysian Muslim Community

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Introduction: The use of complementary and alternative medicine (CAM) has become a growing trend, with cancer patients frequently utilising it as a supportive treatment to eliminate symptoms and reduce the side effects of conventional medicine. This study aimed to determine the prevalence of CAM use among the Malaysian Muslim community, explore the factors associated with its use, and investigate the perception of CAM in the community of the treatment of cancer.

Methodology: A cross-sectional study was conducted involving 259 Malaysian Muslims aged 18 years and older**.** Data were collected from July 2022 to November 2022 through dual-language online questionnaires distributed via social media platforms using a combination of simple random and snowball sampling techniques. The data collected was then analysed using descriptive analysis and Chi-Square tests via IBM SPSS Statistics Software.

Results: The prevalence of CAM usage was highest among females. (75.5%), individuals of Malay descent (73%), and young adults aged 18 to 29 (73%). Participants were primarily drawn to CAM due to environmental influences such as family, friends, and mass media and the desire to improve physical and emotional well-being. Additionally, more than three-quarters of current CAM users indicated they would likely consider using CAM if diagnosed with cancer in the future.

Conclusion: CAM usage is highly prevalent in the Malaysian Muslim community, particularly among females with higher education levels. Although most users report improved health and consider CAM a valuable complement to conventional care, a substantial portion of users do

not realise that CAM can be associated with delayed cancer diagnosis and treatment. Increased awareness is necessary to ensure that patients do not delay critical conventional treatments due to unrealistic expectations of CAM therapies.

Keywords: Contemporary Alternative Medicine, Cancer, Muslim

OP3

4.5 An Islamic Jurisprudential Evaluation of Non-Halal Biomaterials in Clinical Dentistry: Interrogating the Principles of *Darurah* and *Istihalah*.

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Introduction: Many of these biomaterials are derived from porcine or non-halal bovine**.** The use of sophisticated biotechnology has led to the widespread use of animal-derived biomaterials in restorative and regenerative dentistry. These materials have shown good clinical efficacy, but pose significant ethical and religious problems for Muslim practitioners and patients. This study aims to evaluate the permissibility of these substances by combining clinical needs with the principles of Islamic jurisprudence.

Methodology: The study is qualitative and interdisciplinary. It includes a comparative analysis of classical Islamic legal maxims (Al-Qawa'id al-Fiqhiyyah) and modern bioethical fatwas. The study deals with the intersection of materials science, particularly the chemical treatment of collagen and bone grafts, and the legal concepts of Darurah (necessity) and Istihalah (biochemical transformation).

Results: The results showed that the use of Darurah is based on the analysis of harm and benefits (Maslahah), where the lack of a halal alternative that is permissible and the threat of severe physiological damage are justifications for using forbidden items. In addition, the study also discusses the threshold of Istihalah, where the extent of molecular changes during the manufacturing process is an important factor in the determination of whether a substance is purified from the perspective of Sharia law. However, the different schools of thought (Madhahib) have different opinions about the validity of transformation in animal-derived proteins.

Conclusions The study concluded that although Islamic jurisprudence offers flexible mechanisms to accommodate medical advances, a robust Halal-by-Design framework is vital in dental material science. This study is a significant guide for clinicians on how to approach bioethical adherence without compromising standards of care for patients, while advocating for more transparency in material sourcing and the creation of synthetic or plant-based alternatives.

Keywords: Islamic Jurisprudence, Dental Biomaterials, Halal Bioethics, Darurah, Istihalah, Porcine- derived Materials, Clinical Dentistry.

OP5

4.6 Clinical Effectiveness and Halal Analysis of Intracanal Medicaments: Systematic Review

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Introduction: Root canal treatment requires optimal elimination of microorganisms; however, the limitations of mechanical preparation and irrigation require the use of intracanal dressings**.** Calcium hydroxide, as the primary material, has limitations against *Enterococcus faecalis*. In addition, the halal aspect of dental materials remains underexplored. The purpose of this study is to identify the types of intracanal dressing materials and to analyse their potential halal status based on composition and source of ingredients.

Methodology: This study is a systematic review conducted in accordance with the PRISMA 2020 guidelines. Literature searches were performed in PubMed and ScienceDirect, yielding 14 articles that met the inclusion criteria. Qualitative analysis was conducted, including an evaluation of the halal aspects of the materials.

Results: Intracanal dressing materials have evolved from conventional substances to combinations, herbal agents, antibiotics, and nanotechnology-based materials. Nanoparticle- and antibiotic-based materials demonstrated higher effectiveness, whereas herbal materials exhibited greater biocompatibility. From a halal perspective, mineral, synthetic, and plant-based materials are categorised as low concern, while antibiotics, nanoparticles, and chitosan are classified as uncertain

Conclusion: The development of intracanal dressing materials demonstrates significant progress toward more effective antimicrobial strategies in endodontic treatment, particularly through the incorporation of antibiotics and nanotechnology-based materials. Nevertheless, beyond clinical performance, the halal status of dental materials has become an important consideration in contemporary dental practice.

Keywords: Intracanal medicament, calcium hydroxide, endodontic materials, halal analysis, root canal treatment.

OP12

4.7 Islamic Jurisprudence on Aesthetic Dental Treatments in Contemporary Practice: A Systematic Content Analysis of Fatwas, Ethical Guidelines, and Maqasid Shari'ah

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Introduction: Aesthetic dental treatments ranging from simple tooth whitening to complex surgery interventions have experienced a significant surge in demand due to increased aesthetic value in life. This trend has shifted the clinical focus from traditional functional restoration to appearance enhancement. In Muslim-majority societies like Malaysia, balancing modern clinical advances with religious obligations is paramount, yet a prominent knowledge gap persists regarding the formal Shari'ah guidelines governing cosmetic dentistry. This study presents a comprehensive content analysis exploring the ethical boundaries, contemporary practices, and jurisprudential rulings (hukm) of aesthetic dental treatments through an integrated lens of knowledge of Aqli (scientific) and Naqli (revealed).

Methodology: A qualitative content analysis design was used, systematically examining primary Islamic jurisprudential sources including the Quran, hadith, classical fiqh literature, scholarly consensus (ijma ') and contemporary international and Malaysian fatwa rulings related to aesthetic dental procedures. The ethical and legal dimensions of each treatment category were cross-examined against three foundational frameworks: Maqasid Shari'ah (Objectives of Islamic Law), the Darurah principles (necessity) and the patient intention principle (niyyah).

Results: The findings indicate that contemporary Islamic jurisprudence classifies aesthetic dental treatments into distinct categories based on the underlying indications. Procedures aimed at restoring congenital deformities or trauma-induced defects (e.g., cleft orofacial surgery)

align closely with the need (Hajiyyat or Daruriyyat) and are widely acceptable. Conversely, treatments executed purely for superfluous vanity or altering the creation of Allah (Taghyir Khalq Allah) without valid medical or psychological justification fall into the category of mere embellishments (Tahsiniyyat) and face stricter prohibition

Conclusion: This study concludes that the bridge between faith and science in professional dental practice requires a robust, evidence-based applied Dental Fiqh framework. The outcomes provide dental practitioners with explicit ethical guidelines to manage Muslim patients responsibly, ensuring clinical interventions optimise patient centred care without compromising religious principles.

Keywords: Aesthetic dental treatments, fiqh dentistry, content analysis, Maqasid Shari'ah, ethical guidelines, patient-centred care.

OP18

4.8 Platelet-Rich Fibrin (PRF) in Periodontology from Fiqhiy and Fatwa Perspectives

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Introduction: Platelet-rich fibrin (PRF), blood-derivative product which is originally classified as impure from the *fiqhiy* perspective, is used widely to enhance wound healing and regeneration. This study aimed to ascertaining the *Shariah* ruling on PRF usage in periodontology and implantology.

Methodology: A qualitative *fiqh*-based analysis on the usage of PRF was conducted by reviewing indicants (*dalil*) from Qur'anic verses and Prophetic reports. Official legal opinions (*fatwa)* from several sources were referred to. Further analysis was conducted by drawing reference to several Islamic legal maxims (*al-qawa'id al-fiqhiyyah*).

Results: PRF is used widely for therapeutic purposes. In treating intrabony defect, PRF may enhance clinical attachment gain and defect resolution, which is aligned with *al-darar yuzal* (harm elimination). In implantology, PRF can enhance osseointegration and reduces clinical complications, which supported by *al-darar yuzal* and *al-mashaqqah tajlib al-taysir* (hardship begets facilitation) maxims. PRF application in periodontitis was justified by the principles *al-darurat tubih al-mahzurat* (necessity permits the forbidden) and *al-asl fi al-ashya' al-ibadah* (the original status of things is permissible). The concept of *istiḥālah* mitigates concerns of *najāsah* due to transformation from liquid blood into fibrin scaffold. Therefore, contemporary *fatwa* allows platelet-derived therapy for clinical indications under safety and necessity conditions, while putting restriction for aesthetic purpose.

Conclusion: PRF application is conditionally permissible (*halal bi al-shurut*). This regulation is supported by Qur'anic and Prophetic guidance, while drawing upon major Islamic legal

maxims. By considering Shariah ruling in periodontology and implantology decision making, it may provide an Islamic ethical framework for Muslim doctors and patients in clinical practices.

Keywords: Platelet-rich fibrin, periodontal regeneration, fatwa, implant therapy, fiqh.

OP20

4.9 Shariah Framework for Gelatine Dental Adhesives: Performance, Safety, and Halal Verification

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Introduction: The application of gelatine in dental adhesive systems raises critical concerns regarding material sourcing, biological safety, and Shariah compliance. Despite its favourable biocompatibility and functional properties, the halal status of gelatine depends on its origin and processing methods in accordance with Islamic jurisprudence. Current assessments reveal the absence of an integrated framework linking Shariah requirements with scientific standards in dental material development.

Methodology: This study aims to establish Shariah-based parameters for gelatine-based dental adhesives by integrating jurisprudential analysis, biocompatibility evaluation, and halal verification mechanisms. The methodology involves a structured synthesis of literature on key fiqh principles, including *istihalah* and *darurah,* alongside safety assessment based on biomedical standards and supply chain analysis incorporating advanced authentication techniques such as proteomics.

Results: The findings highlight a significant gap between legal rulings and technical evaluation, potentially leading to inconsistencies in halal determination. This study proposes an integrated assessment framework aligning Shariah principles with functional and safety requirements.

Conclusion: The proposed framework provides a foundation for developing halal standards in dental materials and strengthening consumer confidence in clinical applications.

Keywords: Halal dental materials, gelatine, dental adhesives, Islamic jurisprudence, Shariah compliance.

PART 5: PREVENTIVE DENTISTRY, PUBLIC HEALTH AND PATIENT CENTRED CARE

PP2

5.1 Ablution as a Behavioural Scaffold for Frequent Siwak Use: A Framework for Periodontal Disease Prevention

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Introduction: Periodontal diseases are initiated by dental biofilm and to maintain long-term oral hygiene behaviours remains challenging. In Islam, ritual ablution is performed before each prayer, creating a structured practice that occur at least five times daily. Coupled with the Prophetic encouragement of siwak use, ablution presents a unique opportunity to reinforce preventive periodontal behaviours. This study was conducted to propose a fiqh-informed behavioural framework that utilises ritual ablution as a recurring cue for frequent siwak use to support periodontal disease prevention.

Methodology: This conceptual framework integrates principles of periodontal science, behavioural psychology and Islamic health practices. Drawing on habit-stacking and behavioural cueing theories, the framework embeds siwak use within the established sequence of ablution. Beyond increasing frequency, the model incorporates the Islamic principle of intentional and thorough practice, reframing siwak use as a purposeful act of biofilm disruption rather than routine oral cleansing.

Results: The proposed framework positions ablution as a naturally occurring high-frequency behavioural platform for repeated mechanical plaque control. By linking siwak use to a deeply ingrained religious practice, the model may enhance the consistency of dental biofilm disruption while promoting behavioural adherence and sustainability. The framework aligns contemporary periodontal prevention strategies with Islamic values of intentionality and conscientious practice.

Conclusion: Integrating siwak use into the routine of ablution offers a practical approach to periodontal disease prevention. By embedding dental biofilm control within an established religious practice, this culturally appropriate strategy has the potential to improve periodontal health among Muslim populations.

Keywords: Ablution, Siwak, Periodontal Disease, Prevention

5.2 Betel Chewing Characteristics And Oral Mucosal Lesions Among Elderly Karonese Women: Findings From Batukarang Village, North Sumatra, Indonesia

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Introduction: Betel chewing remains an important sociocultural practice among elderly Karonese women in North Sumatra, Indonesia. However, prolonged exposure to betel quid constituents has been associated with oral mucosal lesions and oral potentially malignant disorders. This study investigated the association between chewing frequency, duration, and quid composition with oral mucosal lesions.

Methodology: A cross-sectional study was conducted among 96 elderly Karonese women in Batukarang Village, Karo Regency, Indonesia. Data on age, chewing duration, frequency, and quid composition were collected through structured interviews. Oral examinations identified mucosal lesions. Associations were analysed using Chi-square tests, odds ratios (OR), and multivariate logistic regression.

Results: Oral mucosal lesions were found in 67 participants (59,4%), with betel chewer's mucosa being the most common lesion (67,2%). High chewing frequency showed an increased risk of lesions (Adjusted OR = 3.203; 95% CI: 1.061–9.668; p = 0.039). Quid containing betel leaf, calcium hydroxide, gambier, areca nut, candlenut, and tobacco had the highest risk (Adjusted OR = 40.876; 95% CI: 3.808–438.805; p = 0.002). Age and chewing duration were not independently associated with lesion occurrence.

Conclusion: High chewing frequency and specific quid composition are the main independent risk factors for oral mucosal lesions among elderly Karonese women. Culturally appropriate

oral health education and early screening are needed to reduce the risk of oral potentially malignant disorders.

Keywords: Betel Quid Chewing, Oral Mucosal Lesions, Quid Composition, Elderly Women, Logistic

PP12

5.3 Decision-Making and Expectations among Adults Orthodontics Patients: A Multi-Centre Qualitative Study

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Introduction: The growing interest among adults in orthodontic treatment can be attributed to awareness of dental health and its impact on overall well-being. With the advent of treatment, adults find it easier to integrate orthodontic care into their lifestyles. Factors affecting decision-making and expectation of adults in orthodontic treatment need to be explored. Understanding these dynamics is essential for healthcare providers to align treatment plans with patient expectations, enhancing the effectiveness of clinical outcomes and patient quality of life.

Methodology: A qualitative study using a semi structured interviews were conducted in four orthodontic practices consisted of a government practice, two private practices and a government university in Malaysia. A purposive convenience sampling was conducted for adult patients prior fixed appliances treatment. Data collection completed once data saturation achieved. Data were transcribed using both conventional and artificial intelligence (AI). Data were analyzed using conventional and AI method.

Results: A total of 13 subjects (4 males and 9 females) were interviewed, with a mean age of 25.7 years old. Factors involved in decision-making ranges from aesthetic enhancement and self-confidence, functional and dental health corrections, social influences and life transitions. Issues of challenges and expectations were explored including physical discomfort and dietary restrictions, rigorous oral hygiene with time management and logistical commitment.

Conclusion: Adult patients are driven to seek orthodontic treatment for better aesthetic appearance, viewing orthodontic treatment to accomplish psychosocial empowerment and

increase self-confidence. Despite significant physical discomfort, dietary restrictions and demanding daily routines, these patients are fully prepared to endure rigorous treatment process to obtain their functional and aesthetic goals.

Keywords: Decision-Making, Motivation, Expectations, Orthodontics, Multi-Centre

PP13

5.4 Development and Content Validation of a KAP-B Questionnaire for Prosthodontic Management of Periodontitis Patients in Malaysian Private Dental Practice

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Introduction: The prosthodontic management of periodontitis patients requires integration of periodontal and prosthodontic principles. Private dental practitioners face unique clinical and business challenges where clinical ideas clash with business sustainability. However, no tool currently exists to evaluate how business-related concern affects clinical procedures and ethical decision-making (amanah) in prosthodontic care. This study aimed to develop and content-validate a KAP-B (Knowledge, Attitudes, Practices, Barriers) questionnaire for private dental practitioners on the prosthodontic management of periodontitis patients.

Methodology: A sequential exploratory mixed-methods design was employed. In the qualitative phase, in-depth interviews were conducted with 30 private dental practitioners in Kelantan and Terengganu using purposive sampling. Thematic analysis was performed using ATLAS.ti version 25. Items were generated from identified themes and subthemes. In the quantitative phase, content validation was conducted by a panel of 10 experts from Periodontics, Prosthodontics, and Dental Public Health. Experts rated each item for relevance, clarity, simplicity, and ambiguity using a 4-point Likert scale. Item-level Content Validity Index (I-CVI) and Scale-level Content Validity Index (S-CVI/Ave) were calculated.

Results: Thematic analysis revealed four themes: Knowledge, Attitudes, Practices, and Barriers. Based on these findings, a 51-item draft questionnaire (Version 1.0) was constructed across five sections: Sociodemographic Profile (4 items), Knowledge (15 items), Attitudes (8 items), Practices (13 items), and Barriers (11 items). Content validation was conducted by 8 out of 10 experts, yielded S-CVI/Ave scores of 0.97 for Knowledge, 0.99 for Attitudes, 0.98 for Practices, and 0.97 for Barriers, indicating excellent content validity. Following expert feedback, items were refined, merged or removed, resulting

in a final 47-item KAP-B questionnaire (Version 2.0).

Conclusion: A 47-item content-validated KAP-B questionnaire was successfully developed, demonstrating excellent content validity. This instrument addresses a critical gap by providing a baseline tool that promotes ethical practice alongside clinical decision-making in the prosthodontic management of periodontitis patients in Malaysian private practice settings.

Keywords: Periodontitis, Prosthodontics, Private Dental Practitioners, KAP Questionnaire, Malaysia

PP14

5.5 Highly Active Antiretroviral Therapy (HAART) Duration and CD4+ Count as Determinants of Oral Manifestations in People Living With HIV: A Study at Mahameru Foundation Surabaya

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Introduction: The progressive depletion of CD4+ T cells and an imbalance in their homeostasis are hallmarks of HIV infection. In 2023, there were 10,671 newly recorded HIV cases in East Java, with 29,467 PLHIV, 1,171 of whom were receiving ART treatment throughout the entire region. 1,171 of the 1,260 new cases that were reported in Surabaya during 2023 were already undergoing ARV treatment. According to studies conducted in a number of nations, 60–90% of HIV/AIDS patients have at least one oral symptom. Depending on how long the treatment is administered, ARV treatment can dramatically raise CD4+ cells. The prevalence of HIV-related oral lesions has significantly decreased after the introduction of HAART. The aim of this study is to analyse the correlation between the duration of HAART usage and oral lesions in PLHIV at Mahameru Foundation Surabaya.

Methodology: This study employed a cross-sectional design and an analytical observational method. 34 patients on HAART underwent a blood sample collection process for CD4+ count and oral cavity examination to detect the existence of HIV oral manifestations

Results: The duration of HAART was significantly correlated with CD4+ levels, with a significance value of $0.024 < 0.05$, the increase in CD4+ counts due to the use of HAART directly resulted in the absence of oral HIV manifestations in 34 participants.

Conclusion: There is a positive relationship between the duration of HAART and HIV-related oral manifestations in PLHIV at the Mahameru Foundation Surabaya.

Keywords: HIV, HAART, CD4, Oral Manifestations, Oral Medicine

PP23

5.6 The Association between Parent Feeding Style and Eating Pattern Habit on Pre-school Oral Health Status

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Introduction: Early childhood is a critical stage for the development of various habits, including those related to eating behaviours and oral health. Among the many factors influencing childhood health, dental caries (cavities) is one of the most common chronic conditions affecting children worldwide. This study seeks to explore the relationship between Caries Index Score (Def-T) and several key factors: parental feeding styles, children's eating behaviours, parent's education, and parent's occupation, in preschool-aged children aged 4-5 years.

Methodology: A total of 401 children at the age of 3-5 years with their parent participate in this study. A questionnaire consist of two parts about Parent Feeding Style and Eating Pattern Behaviours was distributed offline and we also conduct def-t screening for pre-school children. Statistical analysis was Multilogistic Regression to indicate the significant risk factor for high score def-t.

Results: The factor associated with high score def-t that have significant value is Children Eating Pattern Behaviour (p: 0,000), Parent Feeding Style (p: 0,000) and Parent Occupation (p: 0,007).

Conclusion: By examining how parental feeding styles and children's eating behaviours influence the development of dental caries, this study provides a comprehensive understanding of the socio-behavioural factors contributing to oral health problems in preschool children.

Keywords: Parent Feeding Style, Eating Pattern Habit, Pre-school Children, Oral Health, Caries Index Score

5.7 Video Assessment of Toothbrushing Behaviours Among Children Attending Islamic Preschools in Terengganu

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Introduction: Toothbrushing with fluoridated toothpaste is widely promoted as a key strategy for caries prevention. However, evidence on children's actual toothbrushing skills remains limited. Direct video observation provides a better understanding of children's toothbrushing behaviours and helps identify specific technique gaps to inform oral health promotion strategies. This study aimed to explore video-observed toothbrushing behaviours among children aged 5 to 6 years attending Islamic preschools in Terengganu.

Methodology: A cross-sectional study was conducted among children aged 5 to 6 years attending private Islamic preschools in selected districts in Terengganu. Toothbrushing sessions were recorded using a standardised setup of a portable sink, mirror, and a smartphone mounted on a tripod. Videos were coded by two trained and calibrated independent raters. Observed parameters included toothpaste type, toothpaste amount, toothbrushing duration, stroke type, toothbrushing pattern, grip type, and post brushing rinsing.

Results: A total of 147 children were recorded. Most children (84.4%) used fluoridated toothpaste. More than half of the children (66.0%) brushed for less than 1 minute. Approximately 35.4% used half-length toothpaste, while 88.4% demonstrated horizontal strokes. A non-systematic brushing pattern was observed in all children. Most children used a single grip, with the distal oblique grip being the most common (34.7%). Following brushing, 60.5% of children rinsed multiple times.

Conclusion: Video analysis revealed gaps in toothbrushing behaviours, particularly in brushing duration, technique, and rinsing behaviour. Continuous efforts are needed to address these skills gap through practical guidance and supervised brushing.

Keywords: Oral Health, Preschool Children, Toothbrushing Behaviour, Video Observation

5.8 Dental Mission for Cambodian Children: Integrating Islamic Values in Oral Health Education

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Introduction: Dental caries remains the common oral health problem among children. The percentage of caries increases especially in the area that limited access to dental care. In Islam, the importance of hygiene and health is highly recommended as a part of the general wellbeing. This study aimed to assess the status of dental caries among Cambodian children and to improve their awareness of oral hygiene through basic dental health education.

Methodology: 175 Cambodian children including 99 females and 76 males were selected from two educational centres**.** Dental charting was performed among the children, and the number of caries was documented. The children were taught proper tooth brushing technique and toothbrushes were given to all children to encourage daily oral hygiene practice.

Result: The result did not show a significant difference between male and female, even female (7.23 ± 3.71) reported higher mean caries compared to male (6.91 ± 3.43) with $p>0.05$. The number of caries ranged from 0 to 16 carries. In addition, basic oral health, instruction on the tooth brushing technique, and distribution of brushes and toothpaste were given to the children to increase awareness of oral hygiene.

Conclusion: Maintaining oral cleanliness reflects Islamic teachings on hygiene, prevention of harm, and preservation of health**.** Early screening, dental brushing education, and preventive care are practical scientific measures to reduce dental disease. This mission shows the

importance of continuing dental awareness programmes for children in underserved communities.

Keywords: Dental caries, Cambodian children, dental mission, oral health awareness. dental fiqh.

OP9

5.9 Exploration of Islamic Tradition and Current Practices for the Disposal of Extracted Teeth: A Qualitative Study

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Introduction: The disposal of extracted teeth represents an intersection between biomedical waste management practices and Islamic ethical principles, particularly within Muslim populations. While clinical guidelines prioritise infection control and environmental safety, Islamic teachings emphasise the preservation of human dignity and the respectful handling of separated body parts. This study aimed to explore the current practice of disposal tooth after teeth extraction of among dental practitioners and Islamic scholars. It also aimed to triangulate current practices for the disposal of extracted teeth with the views of dental practitioners and Islamic religious guidelines.

Methodology: A qualitative study was conducted using semi-structured interviews involving five dental practitioners and three Islamic scholars. The data were analysed through thematic analysis, and triangulation was employed across both participant groups.

Results: Dental practitioners predominantly classified extracted teeth as clinical waste and favoured incineration in accordance with standard biomedical waste management protocols. In contrast, Islamic scholars emphasised the preservation of human bodily dignity and recommended burial as the most respectful method of disposal. Both groups agreed that extracted teeth remain the property of the patient, that informed consent is necessary for their use in research, and that clear guidelines on their disposal are currently lacking. Nevertheless, Islamic scholars acknowledged the conditional permissibility of incineration when required to prevent harm.

Conclusion: Biomedical ethics and Islamic perspectives on the disposal of extracted teeth are complementary, as both emphasise patient dignity, autonomy, and informed consent. Therefore, Shariah-compliant disposal guidelines can be developed through collaboration between health authorities and Islamic scholars.

Keywords: Medical waste disposal; Islamic bioethics; tooth extraction; qualitative research.

5.10 Green Dentistry: Evaluating the Material Sustainability and Disposal Dilemma of Orthodontic Aligners

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Introduction: Orthodontic clear aligners offer an aesthetically appealing alternative to conventional braces; however, their increasing widespread use raises environmental concerns due to their single-use thermoplastic composition and disposal challenges. This study aims to assess the use of orthodontic clear aligner treatment, compare level of awareness of current disposal protocols for the orthodontic aligners and analyze current dental practice protocols for the disposal of orthodontic clear aligners among orthodontists and general dental practitioners in Klang Valley, Malaysia.

Methodology: A quantitative cross-sectional study is employed using an adapted and validated questionnaire distributed via Google Form to orthodontists and general dentists actively involved in aligner therapy. Data is analyzed using SPSS version 29 with descriptive statistics, independent t-tests and Mann-Whitney U test to compare differences between this two groups.

Results: A total of 32 respondents comprising 18 orthodontists (56.3%) and 14 general dentists (43.8%) took part in the survey. There was only one significant difference with p value < 0.05. (p = 0.034) observed between the two groups, which is the level of experience in handling orthodontic clear aligners. No statistically significant difference was found between orthodontists and general dentists for level of awareness, attitudes, and perceptions regarding use and disposal of orthodontic clear aligners.

Conclusion: Orthodontists shown significantly greater experience than general dentists in managing patients using orthodontic clear aligners, while awareness, attitudes and perceptions towards environmentally responsible aligner disposal were similar in both groups. Thus, this highlights a general need for standardised protocols on environmentally responsible aligners disposal across dental practitioners.

Keywords: Orthodontic aligners, environmental impact, disposal practices, orthodontists.

OP14

5.11 Patient Perceptions of Dental Marketing on Social Media: A Preliminary Study from an Islamic Ethical Perspective

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Introduction: Social media has changed how dental practitioners communicate with the public and can significantly influence patients' decisions about dental treatment. However, its use also raises ethical concerns, including misleading advertising, commercialization, and unrealistic treatment expectations, while guidance from an Islamic ethical perspective remains limited. The study aims to evaluate patients' perception on dental marketing through social media content and to introduce a practical Islamic ethical framework for dental advertising on social media.

Methodology: This cross-sectional survey consisted of six sections of questionnaire including three items regarding "Patient Perceptions of Dental Marketing from an Islamic Ethical Perspective" developed with content validated by four experts. Descriptive statistical analysis was performed on the data.

Results: Most participants agreed that dental marketing should be trustworthy and non-misleading (67.0% strongly agreed; 29.6% agreed). Furthermore, 94% perceived ethical dental marketing as a reflection of excellence and good character within the profession. The highest level of agreement (99%) was observed for the statement that dental marketing should provide sincere advice that benefits patients. From the patients' perspective, ethical dental social media marketing aligns with Islamic values. Accordingly, an adapted framework based on Maqasid Shariah was proposed, consisting of three domains: intention (al-qasd), approach (al-ada'), and implications (al-ma'al). The framework emphasizes educational and patient-centered intentions, truthful communication, patient privacy protection, avoidance of exaggerated claims, and consideration of long-term consequences.

Conclusion: The adapted framework offers a practical ethical guide for dental practitioners to navigate social media advertising responsibly, uphold professional integrity, and align with Islamic values.

Keywords: Social media, dentistry marketing, ethical advertising, patient perception, Islamic perspective.

OP16

5.12 Perception, Attitude and Challenges of General Dentists in Orthodontic Referral: An Islamic Ethical Perspective

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Introduction: Referral to an orthodontist by a general dentist is a collaborative action in healthcare, ensuring optimised patient care and building trust between professionals**.** The objectives of this narrative review were to determine the perception, attitude, and challenges faced by general dentists when referring orthodontic cases to the Islamic perspective.

Methodology: The search for this narrative review was carried out using specific keywords from two sources from the ProQuest database and the Google Scholar database. The article selected was from 2020 to 2025 according to the inclusion criteria of recent and relevant studies.

Results: Most of the respondents agree on the importance of referral, but a significant proportion report feeling inadequate to make such a decision. In countries, more general dentists practice orthodontics and clear aligners were the highest appliance used in treatment. Factors influencing the referral to an orthodontist are the complexity of the case, the proximity to the clinic, patient feedback, and communication between orthodontists and the general dentist. From an Islamic ethical perspective, clinical governance, medical ethics, and patient's care are the priority section in providing shariah- compliant healthcare services.

Conclusion: Although there is general recognition of the importance of referral and professional responsibility, challenges such as communication barriers and financial constraints persist. Addressing this issue through targeted education and fostering collaborative culture among dental professionals is essential to improve patient outcomes and commitment to shariah-compliant services. Future research should explore the long-term impact of enhanced referral practices on patient satisfaction and treatment success, within the context of Islamic ethical framework.

Keywords: Orthodontic referral, medical ethics, Shariah-compliant healthcare.

OP17

5.13 Phonetic Precision in Ibadah: Quantifying the Impact of Localized Tooth Loss on Quranic Makhraj

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Introduction: Traditional views in dental fiqh often simplify oral health to the presence or absence of teeth. However, the complex biomechanics of Quranic Arabic articulation (makhraj) demand a more nuanced investigation into how minor oral abnormalities alter sacred phonetics. To evaluate the severity of *makhraj* distortion caused by localized edentulism and assess whether a full dentition guarantees phonetic precision.

Methodology: Recitations of 12 target letters under 4 vowel modulations (*sukun, dhomah, fatha, kasrah*) were recorded from 40 calibrated participants. The cohort comprised 20 fully dentate (FD) individuals and 20 missing teeth (MT) individuals divided by jaw quadrant. Recordings were anonymized and audited by an expert Quranic scholar.

Results: Missing Upper Anterior (MUA) teeth demonstrated the most severe detriment to recitation accuracy, with 40% of cases scored as poor-to-moderate. Unexpectedly, no statistically significant difference ($p > 0.05$) was found between the aggregate scores of the fully dentate (2.37 ± 0.813) and missing teeth groups (2.20 ± 0.632). Expert evaluation unmasked critical confounding variables within the "healthy" control group, including dental decay, pathologic tooth wear, and spacing.

Conclusion: This research ground breaks a new finding in clinical dentistry and Islamic law. It empirically demonstrates that missing teeth distinctly impair *makhraj*, while proving that subtle, untreated dental diseases are just as detrimental to sacred recitation as missing teeth. These findings pave the way for novel *fiqh* rulings regarding the religious necessity of preventative and restorative dental therapies.

Keywords: Tooth loss, quranic makhraj.

5.14 Primary Cilia Incidence And Length In Primary Human Periodontal Ligament Fibroblasts: A Preliminary In Vitro Study

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Introduction: Primary cilia (PC) are solitary, antenna-like organelles found in most cells, regulating key intracellular signalling pathways for tissue homeostasis. Although defective primary cilia cause craniofacial and dental abnormalities, their role in periodontal ligament fibroblasts (PDLFs) remains largely unexplored. The aim of the study is to determine the frequency and length of PC in PDLF cells obtained from healthy and periodontitis-compromised teeth.

Methodology: Using the explant method, PDLF cells were isolated from extracted teeth with healthy (n=3; H1, H2 & H3) and periodontitis (n=1; D1) periodontium. Cells were characterised by immunofluorescence staining for vimentin. Cells were serum-starved for 24, 48, and 72 hours to induce ciliogenesis. The occurrence and length of PC were assessed by co-immunofluorescence staining for Arl13b and γ-tubulin.

Results: No significant differences in the percentage of ciliated cells across H1, H2, H3, and D1 at any time point, or between healthy and diseased groups. However, PC length in the disease group was significantly shorter at 24 h (2.910 μm vs 3.603 μm) and 48 h (3.397 μm vs 3.823 μm). At 24 h, D1 (2.910 μm) had a shorter PC length than H1 (3.172 μm), H2 (3.933 μm), and H3 (3.736 μm). A similar pattern was observed at 48 h, with D1 (3.397 μm) compared to H1 (3.348 μm), H2 (4.089 μm), and H3 (4.019 μm). At 72 h, D1 (3.821 μm) had a shorter PC length than H2 (4.309 μm) and H3 (4.290 μm), but longer than H1 (3.355 μm).

Conclusion: Periodontitis might alter ciliary length in PDLF cells, underscoring a possible role during periodontal inflammation.

Keywords: Primary cilia, periodontal ligament fibroblast, periodontitis.

PP21

5.15 Synergistic Potential of Low-Level Laser Therapy (LLLT) and Topical Vitamin D in The Healing of Oral Ulcerative Lesions: A Narrative Review

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Introduction: Oral ulcerative lesions, including recurrent aphthous stomatitis and oral mucositis, are immune-mediated inflammatory conditions characterized by excessive cytokine activation, mucosal breakdown, and delayed healing. Despite their high prevalence, current therapies remain largely symptomatic and fail to address underlying immune dysregulation. This review evaluates the synergistic immunomodulatory potential of combining Low-Level Laser Therapy (LLLT) and topical vitamin D to enhance healing of oral ulcerative lesions.

Methodology: A narrative review was conducted using PubMed, Scopus, and Web of Science. English-language animal and clinical studies on low level laser therapy, photobiomodulation, vitamin D, and oral ulcerative lesions were included, whereas review articles, conference abstracts, duplicates, and irrelevant studies were excluded.

Results: LLLT modulates immune responses via photobiomodulation by enhancing mitochondrial activity and inducing controlled reactive oxygen species (ROS) signalling. This reduces pro-inflammatory cytokines (TNF-α, IL-1β, IL-6), activates MAPK and PI3K/Akt pathways, and promotes macrophage polarization toward a pro-healing M2 phenotype. Vitamin D, through activation of the vitamin D receptor (VDR), suppresses NF-κB signaling, reduces inflammation, enhances regulatory T cell activity, and induces antimicrobial peptides such as cathelicidin, strengthening mucosal defence. Together, these mechanisms indicate a synergistic effect, where LLLT enhances cellular responsiveness while vitamin D stabilizes the immune microenvironment, restoring immune balance and accelerating tissue repair. This is the first narrative review to highlight and focus on this immunological synergy.

Conclusion: The combination of LLLT and topical vitamin D represents a novel, mechanism-based strategy targeting immune dysregulation. Further well-designed clinical trials are required to confirm efficacy and establish standardized protocols.

Keywords: Low-Level Laser Therapy, Photobiomodulation, Vitamin D, Oral Ulcerative Lesions

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