

Knowledge and Perception Regarding Impacted Teeth Among Dental and Medical Students in Malaysia: A Comparative Cross-Sectional Study

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Abstract

Impacted teeth are common developmental dental conditions that may cause pain, pericoronitis, dental caries, periodontal disease, root resorption, and odontogenic cysts. Early diagnosis and referral depend partly on healthcare professionals' knowledge and perceptions. This study compared knowledge and perception regarding impacted teeth among dental and medical students in Malaysian universities. A comparative cross-sectional survey was conducted among 202 undergraduates, including 101 dental and 101 medical students. Data were collected using a structured self-administered questionnaire and analyzed with IBM SPSS version 22.0. Frequencies and percentages were calculated, and associations were assessed using the Chi-square test, with significance set at $p < 0.05$. Dental students demonstrated significantly better knowledge of the definition, clinical features, eruption age of third molars, associated pathology, and treatment options than medical students. Both groups generally recognized the importance of early diagnosis and appropriate management, although misconceptions were more common among medical students. The findings indicate that dental students possess greater knowledge because of broader undergraduate oral health training. Strengthening oral health education within medical curricula may improve early recognition, referral practices, interdisciplinary collaboration, and patient care.

Keywords: impacted teeth, oral health knowledge, perception, dental students, medical students, cross-sectional study
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Introduction

Impacted teeth are defined as teeth that fail to erupt into their normal functional position within the dental arch because of physical obstruction, abnormal eruption pathways, insufficient arch space, or developmental disturbances.¹ Third molars are the teeth most frequently affected, followed by maxillary canines, premolars, and supernumerary teeth. Although many impacted teeth remain asymptomatic for prolonged periods, others may produce significant oral complications that negatively affect oral health and quality of life.² The prevalence of impacted teeth varies considerably among different populations because of genetic, environmental, and anatomical factors. Previous epidemiological studies have reported that third molar impaction affects approximately 20–30% of young adults worldwide, making it one of the most common developmental dental anomalies.³ In Malaysia, impacted third molars are frequently encountered in routine dental practice, particularly among adolescents and young adults, emphasizing the need for early diagnosis and appropriate management.⁴ These findings highlight the need for healthcare professionals to possess adequate knowledge regarding the diagnosis, complications, and treatment of impacted teeth.

Failure to recognize impacted teeth may result in numerous pathological consequences. Common complications include recurrent pericoronitis, dental caries involving adjacent teeth, periodontal destruction, root resorption, odontogenic cyst formation, and, less frequently, odontogenic tumors.⁵

Delayed diagnosis may increase treatment complexity and contribute to unnecessary morbidity. Consequently, early clinical assessment supported by appropriate radiographic examination, particularly panoramic radiography and cone-beam computed tomography (CBCT) when indicated, plays an essential role in identifying impacted teeth and facilitating appropriate treatment planning.⁶ Healthcare professionals serve as the first point of contact for many patients seeking medical or dental care. While dentists are directly involved in diagnosing and managing impacted teeth, medical practitioners also encounter patients presenting with facial pain, swelling, infection, or other oral complaints that may require dental referral. Therefore, both professions should possess sufficient knowledge to recognize common oral diseases and appreciate the importance of timely referral to dental specialists. Interprofessional collaboration between medical and dental practitioners has been shown to improve patient outcomes through earlier diagnosis, coordinated management, and enhanced health promotion.⁷

Despite their complementary roles, dental and medical students receive substantially different levels of oral health education during undergraduate training. Dental curricula provide comprehensive instruction in oral anatomy, tooth development, oral pathology, radiographic interpretation, and oral surgery, whereas medical curricula generally allocate limited teaching time to oral diseases.⁸ These educational differences may influence students' knowledge, confidence, and clinical decision-making regarding impacted teeth. Previous studies investigating oral health knowledge among healthcare students have consistently demonstrated superior performance among dental students compared with medical students, although significant knowledge gaps have been identified in both groups.^{9,10} Knowledge and perception are important determinants of future professional behavior. Adequate knowledge enables healthcare professionals to identify clinical abnormalities, provide accurate patient education, and facilitate timely referral when specialist intervention is required. Conversely, misconceptions regarding impacted teeth may contribute to delayed diagnosis, inappropriate reassurance, or unnecessary postponement of treatment. Improving oral health literacy among future healthcare providers therefore represents an important strategy for enhancing interdisciplinary healthcare delivery and reducing preventable oral complications.¹¹

Although several studies have examined general oral health awareness among healthcare students, relatively few have specifically investigated knowledge and perception regarding impacted teeth, particularly within the Malaysian context. Moreover, comparative evidence between dental and medical

students remains limited. Identifying educational differences between these two groups may help educators evaluate existing curricula and identify opportunities for strengthening oral health education within medical training.

Therefore, the present study aimed to compare the knowledge and perception regarding impacted teeth among dental and medical students enrolled in Malaysian universities. It was hypothesized that dental students would demonstrate significantly greater knowledge because of their more comprehensive oral health education, while both groups would maintain generally positive perceptions regarding the importance of early diagnosis and appropriate management. The findings of this study may provide valuable evidence for curriculum development and support greater interdisciplinary collaboration between future dental and medical practitioners, ultimately contributing to improved patient care and oral health outcomes.

Materials and Methods

This comparative cross-sectional study was conducted to assess and compare the knowledge and perception regarding impacted teeth among undergraduate dental and medical students enrolled in Malaysian universities. A cross-sectional design was chosen to evaluate participants' current knowledge and perceptions at a single point in time without intervention. Undergraduate dental and medical students from recognized Malaysian universities were eligible to participate. Students who provided informed consent were included, whereas those not enrolled in the respective programmes, submitted incomplete questionnaires, or had received additional formal training in impacted tooth management beyond the standard undergraduate curriculum were excluded. The minimum sample size was calculated according to the recommendations of Israel (1992), assuming a 95% confidence level and a 5% margin of error. Based on an estimated undergraduate dental and medical student population of approximately 33,000, the minimum required sample size was 194 participants. To account for possible non-response, 202 students were recruited, comprising 101 dental and 101 medical students.

Data were collected using a structured, self-administered online questionnaire developed following an extensive literature review. The questionnaire consisted of three sections: demographic information, knowledge regarding impacted teeth (definition, clinical features, complications, diagnosis, and management), and perception towards their treatment and management. Participation was voluntary, anonymous, and confidential. Ethical approval was obtained

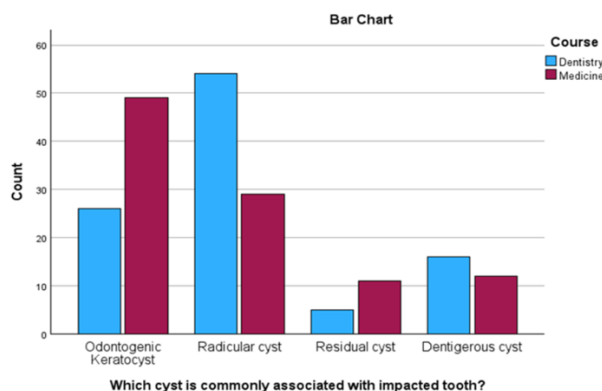
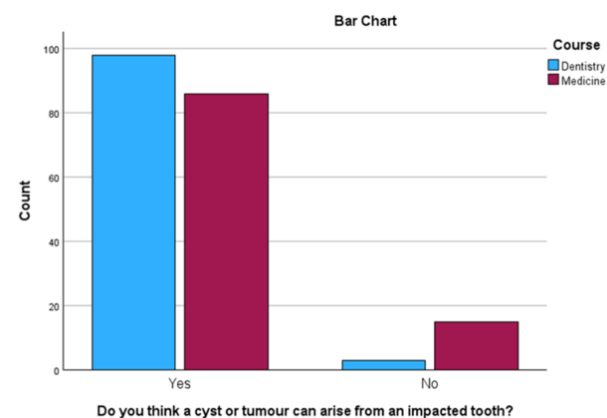
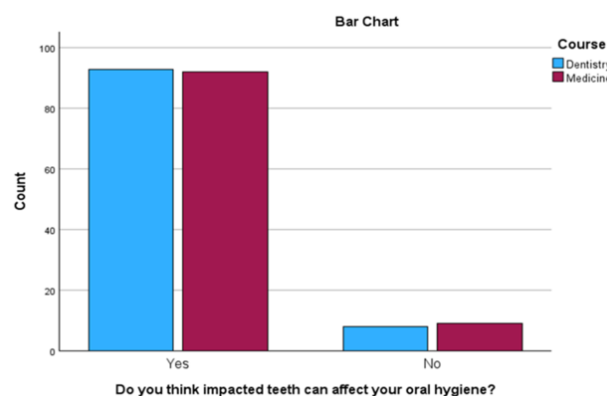
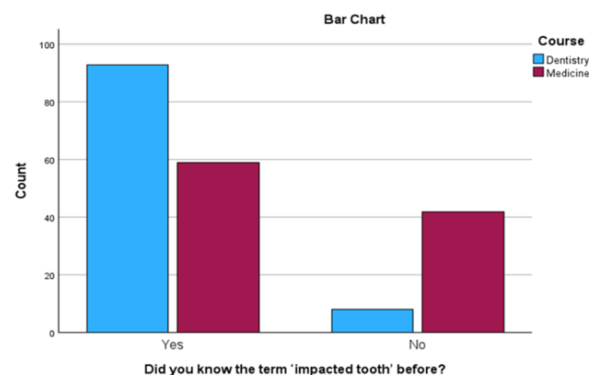
before data collection, and informed consent was secured electronically from all participants. Completed questionnaires were screened for completeness before data entry. Data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were presented as frequencies and percentages. Associations between the participants' field of study and their responses were evaluated using Pearson's Chi-square test. A p-value of <0.05 was considered statistically significant.

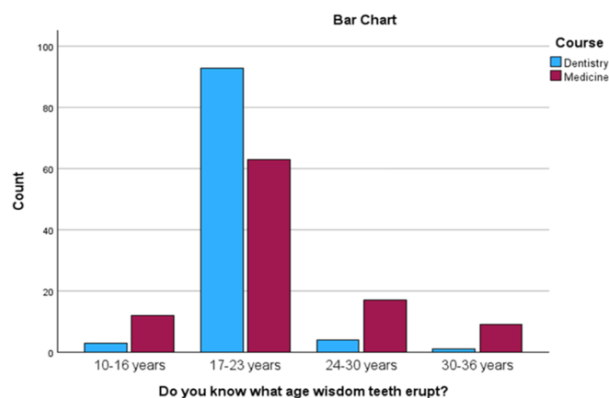
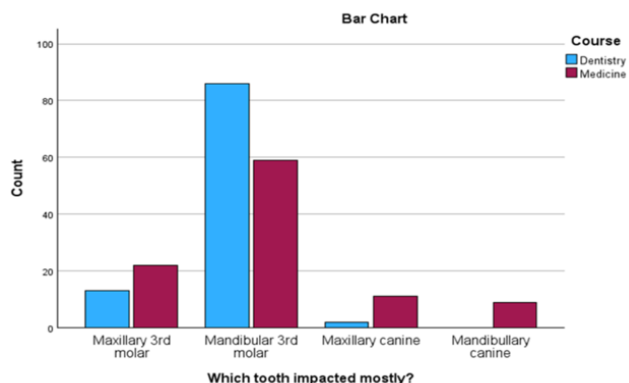
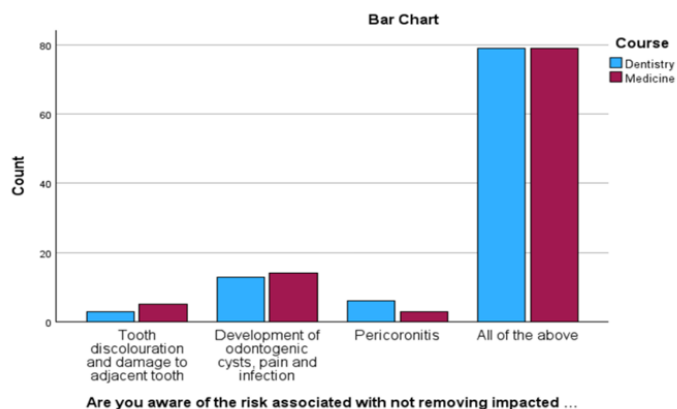
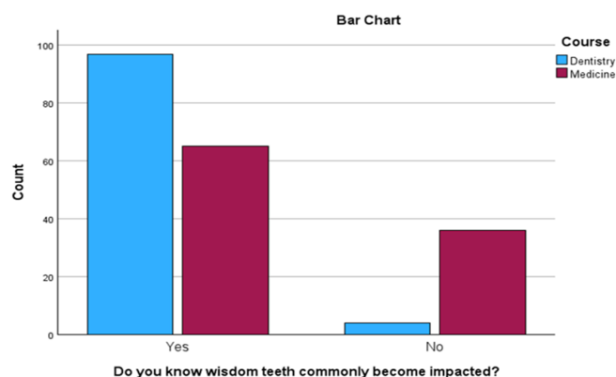
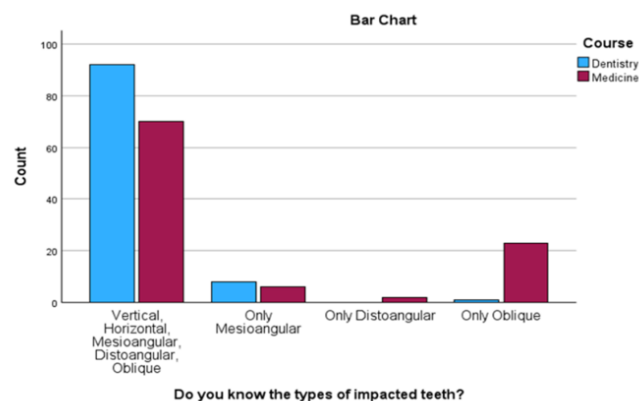
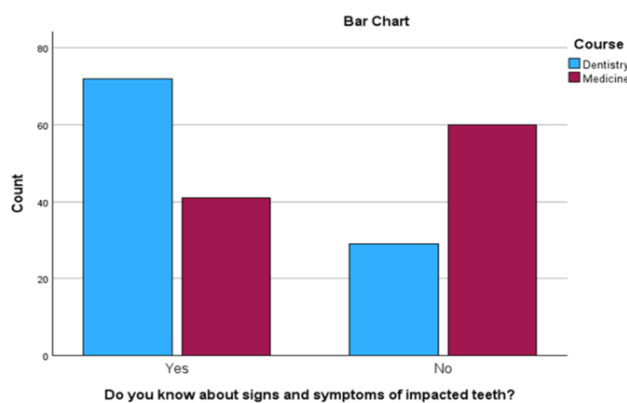
Results

A total of 202 undergraduate students participated in the study, including 101 dental students and 101 medical students, providing an equal representation from both disciplines. The response rate was satisfactory, and all completed questionnaires fulfilled the study inclusion criteria.

Knowledge Regarding Impacted Teeth

Dental students demonstrated significantly higher levels of knowledge regarding impacted teeth than medical students across most questionnaire items. Nearly all dental students reported familiarity with the term "impacted tooth," whereas substantially fewer medical students recognized the term. This difference was statistically significant ($p < 0.001$). Most participants from both groups correctly recognized that impacted teeth could adversely affect oral hygiene, and no statistically significant difference was observed between the two groups ($p = 0.800$). This finding suggests that awareness of the relationship between impacted teeth and oral hygiene is generally well established among healthcare students regardless of academic programme. Dental students also demonstrated superior knowledge regarding the pathological consequences of impacted teeth. A significantly larger proportion correctly recognized that impacted teeth may give rise to cystic or tumorous lesions compared with medical students ($p = 0.003$). Furthermore, dental students showed better understanding of the signs and symptoms associated with impacted teeth, while many medical students reported uncertainty regarding these clinical manifestations ($p < 0.001$). Regarding eruption characteristics, dental students more accurately identified mandibular third molars as the teeth most frequently affected by impaction and correctly recognized the usual eruption age of wisdom teeth. These differences were statistically significant ($p < 0.001$), indicating a stronger understanding of tooth development among dental students.



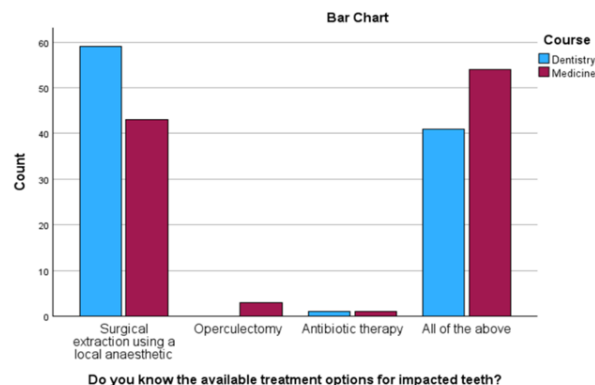
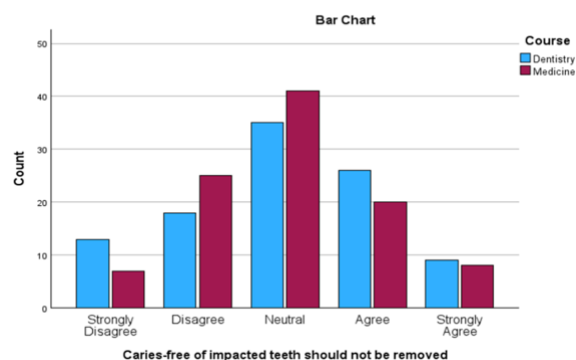
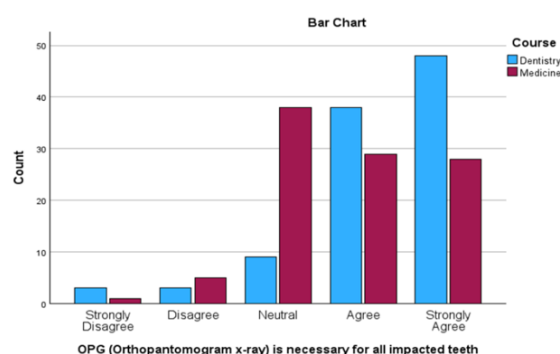
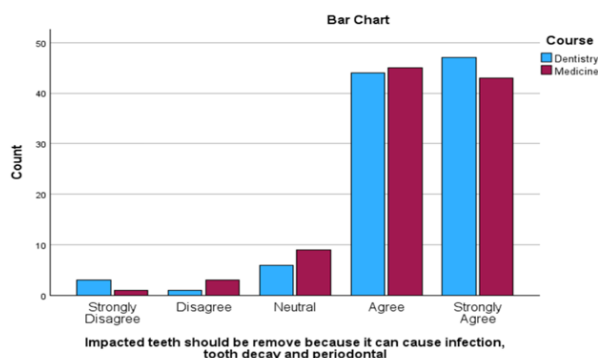


Overall, the findings consistently demonstrated that undergraduate dental students possessed significantly greater knowledge regarding impacted teeth than medical students, reflecting differences in undergraduate educational exposure and clinical training.

Perception Regarding Impacted Teeth

Although knowledge differed considerably between the two groups, participants generally demonstrated positive perceptions regarding the importance of appropriate management of impacted teeth. Most respondents agreed that impacted teeth should be managed appropriately to prevent complications such as infection, dental caries, and periodontal disease. The majority also acknowledged the importance of radiographic examination in treatment planning and accepted that symptomatic impacted teeth require professional assessment rather than delayed treatment. These findings indicate a generally favourable attitude toward early diagnosis and intervention among both groups. Nevertheless, several misconceptions remained more common among medical students. A greater proportion believed that asymptomatic impacted teeth never require removal or that maintaining good oral hygiene alone eliminates the need for treatment. These perceptions may

reflect limited exposure to oral surgery and oral pathology during undergraduate medical education.



Overall, dental students demonstrated more evidence-based perceptions regarding impacted teeth, although both groups

recognized the importance of timely diagnosis and interdisciplinary management. The observed differences support the need for strengthening oral health education within undergraduate medical curricula to improve awareness, facilitate appropriate referral, and promote collaborative patient care.

Discussion

This study compared the knowledge and perception regarding impacted teeth among undergraduate dental and medical students in Malaysia. Dental students demonstrated significantly greater knowledge than medical students across most domains, whereas both groups generally exhibited positive perceptions regarding early diagnosis and management. These findings highlight the influence of discipline-specific education on oral health knowledge and support the study hypothesis. Dental students showed superior understanding of the definition, clinical manifestations, complications, and management of impacted teeth. This finding is expected because dental curricula provide extensive training in oral anatomy, pathology, radiology, and oral surgery, whereas medical curricula offer comparatively limited exposure to oral health. Similar findings have been reported by,^{8,9} who concluded that comprehensive dental education significantly enhances oral health knowledge and clinical decision-making.

The present study also found that dental students were more knowledgeable about complications associated with impacted teeth, including cyst formation, tumors, and periodontal disease. Early recognition of these complications is clinically important, as delayed diagnosis may result in extensive bone loss, root resorption, and more complex surgical procedures.^{2,5} Furthermore, dental students more accurately identified mandibular third molars as the most commonly impacted teeth and correctly recognized their usual eruption age. These findings agree with previous epidemiological studies demonstrating that mandibular third molars are the most frequently impacted teeth because they erupt last and often lack sufficient space within the dental arch.^{3,4} Interestingly, no significant difference was observed regarding awareness that impacted teeth can adversely affect oral hygiene, indicating that this concept is generally recognized by both groups. Despite differences in knowledge, participants from both disciplines demonstrated positive perceptions toward timely diagnosis and treatment. However,

misconceptions regarding the management of asymptomatic impacted teeth were more common among medical students.

Current clinical guidelines recommend individualized assessment because pathological changes may develop even in asymptomatic impacted teeth.¹³

These findings underscore the need to strengthen oral health education within undergraduate medical curricula to improve early recognition, appropriate referral, and interdisciplinary collaboration. Better oral health literacy among future healthcare professionals may enhance patient education, facilitate timely intervention, and ultimately improve oral health outcomes.^{7,11} This study benefited from equal representation of dental and medical students and the use of a standardized questionnaire. Nevertheless, its cross-sectional design and reliance on self-reported responses may limit causal inference and introduce response bias. Additionally, the findings may not be generalizable beyond Malaysian universities. Future multicenter and longitudinal studies are recommended to evaluate the effectiveness of educational interventions in improving knowledge and perceptions regarding impacted teeth.

Conclusion

This study demonstrated that dental students possessed significantly greater knowledge regarding impacted teeth than medical students, particularly in relation to diagnosis, complications, eruption patterns, and management, reflecting their more comprehensive dental education. Although both groups showed positive perceptions toward early diagnosis and appropriate management, misconceptions were more common among medical students. These findings highlight the need to strengthen oral health education within undergraduate medical curricula to improve awareness, early recognition, and timely referral of patients with impacted teeth. Enhanced interdisciplinary collaboration between dental and medical professionals may ultimately improve patient care. Further multicentre studies are recommended to validate these findings.

Ethical Approval: The study was conducted in accordance with the ethical approval obtained by ethical committee Lincoln University College, Malaysia (LUCFD2024RPA27).

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