

Original Research Article

Evaluation of the Symptoms and Pattern of Impaction of Mandibular Third Molars among undergraduate dental Students from the University of Medical Sciences and Technology (UMST), Sudan

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Abstract: The impaction of the lower third molar; is one of the most common impacted tooth in human dentition, it is associated with a variety of symptoms, that have an adverse effect on the health of the student. The study aimed to assess the prevalence of symptoms and pattern of impaction of third molars teeth, among undergraduate dental students. A prospective cross sectional study among a 50 undergraduate dental student selected randomly from the a total number of 229 student, during the period of October 2015 to February 2016, data were collected by an Ortho Panorama view, which was taken for each student and a questionnaire containing questions about the symptoms and treatment done of impacted lower third molar. Comparison between variable by Chi-Square Test with the level of significant set at P value ≤ 0.05 . The commonest age group among studied population was 19-20 year, no gender predilection was found in relation to the symptoms or the pattern of impaction, but extraction of lower third molar was more among males than females. Mesioangular impaction was commonest (49%) followed by horizontal then vertical. Symptoms associated with impacted third molar were more among those who didn't remove the tooth, The most common symptoms was pain followed by headache and limited mouth opening. Analgesics were commonly used for relieving symptoms, with statistical significance difference between visiting the dentist to relieve the symptoms and the use of analgesics. Based on the results of this study it was concluded that the most common pattern of impaction was mesioangular, all impacted third molars were associated with symptoms, use of analgesic and visiting the dentist were the most relieving factors. Dental check-up and OPGs are recommended at admission stage for the university to avoid any future problems arise from the third molar teeth.

Keywords: headache, impaction, mandibular third molar, mesioangular impaction, UMST Sudan

INTRODUCTION:

Third molar or wisdom tooth is one of the three molars per quadrant of the human dentition. It is the most posterior (most distal) of the three molar teeth. Wisdom teeth generally erupt between the ages of 17 and 25 [1]. Most of the adults have four wisdom teeth, but it is possible to have fewer or more, in which case the extras are called supernumerary teeth. Impaction is a condition in which a tooth fails to erupt to the normal functional position within the expected time due to lack of space or physical barriers for example excessive soft tissue (operculum). Third molar is the most commonly impacted tooth in the oral cavity and accounts for 98% of all impactions [2]. The most common symptom when wisdom teeth communicate with the mouth is localized pain, swelling and bleeding of the tissue overlying the tooth. This over growth of gingiva named operculum

and the state of inflammation called pericoronitis [3]. Pain from operculum infection can radiate to the ear, temporomandibular joint and posterior submandibular region. As a complication trismus (limited mouth opening) can occur. Food particles and bad oral hygiene can predispose to caries, due to the presence of the semi impacted tooth and the distal surface of the tooth is the most common site affected. Radiographic examination for the wisdom teeth are made to help assess the positions, shapes and sizes of the crowns and roots, the surrounding bone and the nerve, which usually runs below the roots of the teeth. Associated diseases can be also identified by X-rays, such as cysts and tumors in relation to the teeth [4, 5]. Impacted mandibular third molar may present with various positions in the bone, the classic positions of the tooth, depending on the direction of the crown or the angulation of the tooth,

are (according to Archer 1975; Kruger 1984), mesioangular, distoangular, vertical, horizontal, buccoangular, linguoangular, and inverted. Impacted teeth may also be classified according to their depth of impaction, their proximity to the second molar and in relation to the ramus of the mandible. Problems arise when third molars impacted, may interrupt university students from their daily duties and activities, which increase their rate of absentees that may affect their intended learning outcomes.

The main objective of this study was to evaluate the prevalence of symptoms and pattern of impaction of the lower third molars among undergraduate dental student from the University of Medical Science and Technology. Specific objectives were to assess the relationship between gender, pattern of impaction and frequency of symptoms.

MATERIALS AND METHODS:

A Prospective Cross sectional study among undergraduate dental students from the University of Medical Sciences and technology (UMST) between the periods from October 2015 to February 2016. The sample size was determined according to the total number of 229 students from the first, second, third, fourth and fifth year, and the following formula was used:

$$n_0 = p (1 - p) z^2/d^2$$

$$n_0 = .043(1 - 0.043)1.962^2/0.052 = 63.23427$$

$$n = n_0 / (1 + (n_0 - 1)/N)$$

$$n = 63.23427 / (1 + 62.23427/229)$$

$$= 49.721 \approx 50.$$

Participants were selected by systematic random sampling from the five classes. Self-administered questionnaire composed of closed ended questions including demographic data, presence of symptoms from third molar tooth, use of analgesic and visiting a dentist. An OPG X ray view was taken for each participant at the department of the dental radiology by single one trained radiologist for all the participants. Pattern of impaction was assessed from the x-ray using x-ray viewer according to Shiller technique [6].

To achieve the objectives of the study and to answer the questions, the use of statistical methods were the following: graphic formats, Frequency distribution of the answers and Percentages. Comparison between variables by Chi-square test with the level of significant set at P value ≤ 0.05 . The study was approved by Ethical committee of the University of Medical Sciences and Technology. Eligible participants were requested to participate voluntary and they signed informed written consent. Data was kept confidential and only used for the purposes of the study.

RESULTS:

Descriptive statistic of the results as displayed from table (1- 3) and figure (1-3). Fifty (50) Males and females undergraduate dental students from the University Medical Sciences and Technology selected randomly from the total number of 299 regular attendee students and registered for the year 2015-2016 in the faculty of dentistry. Table (1) revealed the age distribution and if the mandibular third molar tooth was extracted or not. There was no statistical significant difference between the age groups and the extraction or not of that tooth with the P value =0.293.

Table 1 : distribution of the participants according to extracted and non-extracted lower third molar according to age

Age	Participant extracted the lower third molar		Participant did not extracted the lower third molar		p-value
	Frequency	Percent	Frequency	Percent	
18	2	15%	0	0%	0.293
19	3	23%	9	24%	
20	3	23%	6	16%	
21	3	23%	8	22%	
22	2	15%	7	19%	
23	0	0%	4	11%	
24	0	0%	2	5%	
25	0	0%	1	3%	
Total	13	100%	37	100%	

Males to female are distribution according to the extraction or non-extraction of the lower third molars as displayed in fig (1).

Symptoms associated with the impaction of lower third molar were assessed and it was found that the main symptom was pain among both participant who

extracted and not extracted their lower third molar as shown in fig (2).

The symptom of pain that associated with the lower third molar tooth among the participants was relieved by the use of analgesic (78%) followed by visiting the dentist (66%) as shown in fig-3.

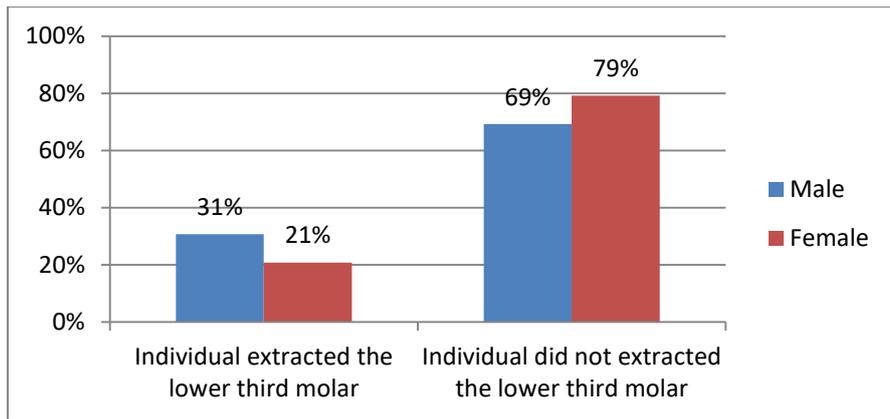


Fig 1: Student gender difference according to the presence or extraction of lower third molar

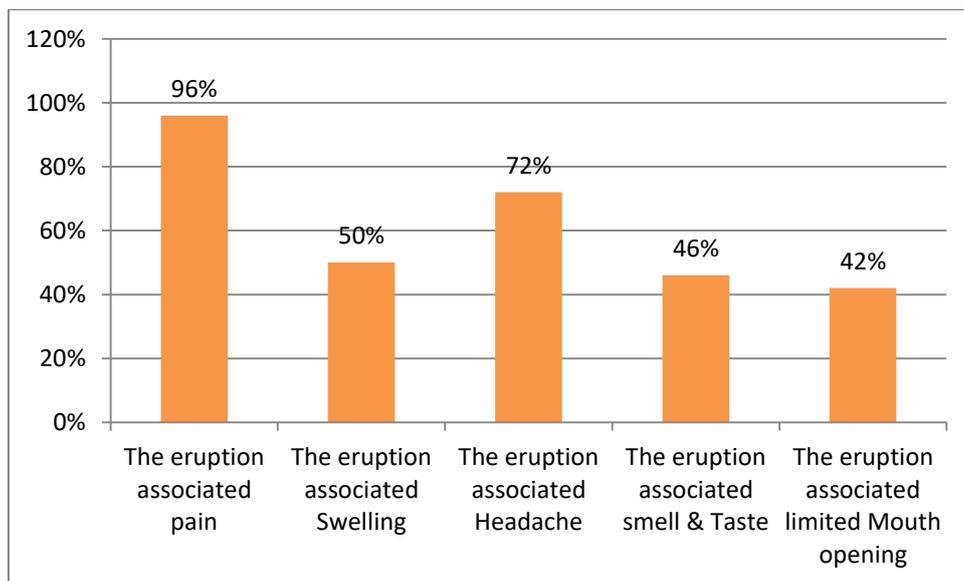


Fig 2: Symptoms associated with impaction of lower third molar tooth.

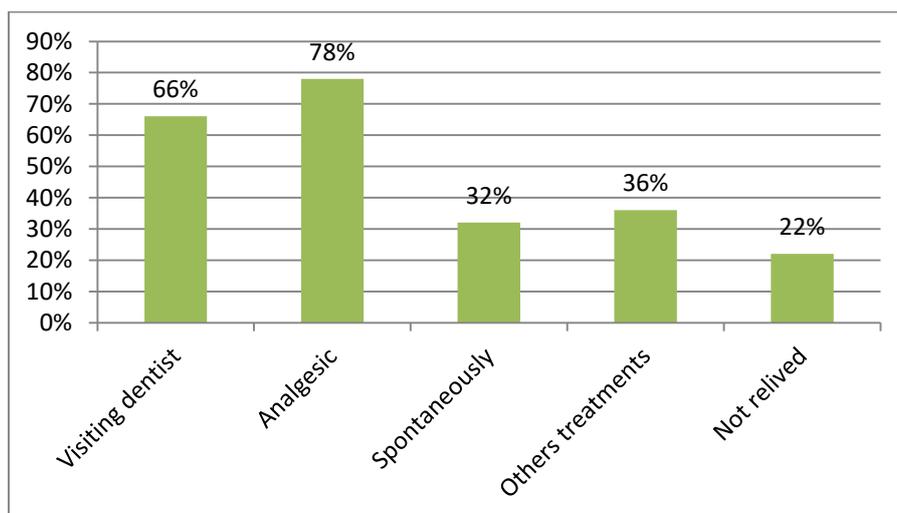


Fig 3: The relieving factors for the impaction of the lower third molar

According to the pattern of impaction of the mandibular third molar; the most common type of impaction was mesioangular (49%) followed by horizontal (27%) then vertical (24%) on the right lower third molar, while on the left lower third molar was displayed in table (2).

Table (3) revealed the level of statistical significance differences according to the variables; gender and symptoms, use of analgesics, symptoms and right/left mandibular third molar, and right/left mandibular molar impaction and gender.

Table 2: Radiographic examination of impaction according to angulation

Pattern of impaction	Right		Left	
	Frequency	Percent	Frequency	Percent
Mesioangular	18	49%	17	46%
Distoangular	0	0%	0	0%
Vertical	9	24%	5	14%
Horizontal	10	27%	15	41%
Inverted	0	0%	0	0%
Total	13	100%	37	100%

Table 3: Statistical significant differences between gender and right/left mandibular third molar impaction

Title	p- value
Gender and symptom	0.293
Right lower third molar Impaction and gender	0.858
Left lower third molar impaction and gender	0.861
Symptoms and Left lower third molar impaction	0.581
Symptoms and Right lower third molar Impaction	0.546
Symptoms relieve and visiting the dentist	0.046
Symptoms relieve and use of analgesic	0.01

DISCUSSION:

Tooth eruption is a natural physiological growth of a part in our body and dentist use history, clinical examination and radiological imaging to diagnose and detect its normality and abnormality. Although it is a normal physiological process in the primary and permanent teeth; but in case of third molar, the possibility of partial or complete impaction may be associated with symptoms of pain and discomfort duo to inflammation. The presence of such inflammation may accompanied by systemic manifestations that necessitate analgesic, antibiotic and bed rest. Dental students in specific are requested to attend daily to their schools duo to the nature of the science of dentistry that includes not only cognitive domain, but an important is psychomotor skills, which is gained through demonstration and direct supervision. The absentees of the students may influence their performance, and objective learning outcomes. The eruption of third molars is common among the age group of the university students, so their prevalence and pattern of eruption is crucial to early management, so as to avoid complications and consequences of their absentees. Generalization of the result is possible, because selection proses was well designed, sample was representative of study population and data was easy to analyzed, constant precise and reliable.

The mean age of extraction of the third molar in our study was similar to the result of study by Wowern *et al.*; [7], as their results showed that the age was 20; this consistency maybe due to the fact that

eruption of third molars takes time and clear symptoms may become worth describing at this age as agrees with others [8, 9]. No correlation was found between gender and the impaction of the lower third molar, while the result by Quek *et al.*; showed a significantly higher frequency among females than males [10].

The results of the present study showed that the most common pattern of impaction was mesioangular, which agreed with others [8, 10, 11-14], but disagreed with Kumar *et al.*; result, where distoangular was the most common type [15]. In our study the pain was the most common symptom answered by the students, followed by headache that required analgesics to relive the symptoms, this indicating that students use counter disk medicine instead of going to a dentist. Although use of analgesics associated with relieve of symptoms, but visiting a dentist is important to treat the undermined case rather than relieving pain only.

Regardless of the pattern of the impaction; majority showed symptoms, but similar to result obtained by Akarslan & Kocabay [16], there was no association between the process of lower third molar eruption with any symptoms according to the angulations either on the right or on the left side. In case of a few asymptomatic impacted third molars in our study, another study by Marciiani; suggests that patients, who elect to retain their impacted teeth, should have regular periodic clinical and radiographic

examinations to detect disease before it becomes symptomatic [17].

CONCLUSION

Mesioangular impaction was a common type; there is no correlation between males and females in association with the impaction and the symptoms. Pain was found to be the most common symptom followed by headache and limited mouth opening. The use of analgesic followed by visiting the dentist was the methods for treatment of symptomatic impaction. Regardless of the regular dental check-up that should be done every 6 month, an OPG should be taken for each student as one of the university entrance prerequisites.

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