

Knowledge and Awareness About Tooth Impaction among Medical Students Pursuing their Internship in Pondicherry, a Cross-Sectional Study

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Abstract

Context: Wisdom teeth (third molar) is the last tooth to develop and most prominent tooth to get impacted. During our ancestor's tough diet habits, their wisdom teeth were able to emerge in ease with adequate spaces in the dental arch. As we evolve to new lifestyle and experience a change, there is no need for these wisdom teeth to erupt in its sequence.

Aims: The main objective of this study was to find the level of knowledge of internship medical Students and the consequences associated with impactions.

Settings and Design:

Minimum: 384

The awareness about impaction was assumed to be 50%,

$\alpha = 0.05$ and with precession of 5%,

The sample size was calculated by using the formula

$$X = Z (1-\alpha/2) ^2 * p * (1-p) / d^2$$

Hence, $n = 384$

Methods and Material: We randomly selected 384 Internship medical students in Pondicherry.

A questionnaire with 20 questions with Demographic details of the study subjects to assess the knowledge of the internship medical students.

Statistical analysis used: Data was analysed by the SPSSv-19 Statistical Package Software for the Social Sciences (SPSS Inc., Chicago, IL, USA).

Results: High percentage of the study population was aware of Wisdom tooth impaction and its consequences.

Conclusions: The present study has depicted that most of the Medical Students were aware of third molar impaction. In present time, knowledge and awareness about wisdom tooth and its impact on the quality of life is understood and maintained to prevent future problems.

Keywords: Impacted Maxillary and Mandibular 3rd Molar; Swelling; Lack of Space; Pericoronitis; Cyst or Tumour

Introduction

Impaction is a condition in which there is an obstruction or failure of teeth to attain normal functional position. Mandibular 3rd molar is the most frequently affected teeth in the dental arch. Sometimes canine and premolar may also involve. Third molars are the last teeth to erupt, which can get complicated due to lack of space in the dental arch. Wisdom tooth impaction is one of the most common dental procedures done in the dental clinic. Common surgical procedure referred by oral and maxillofacial surgeon is removal of wisdom tooth which are located in the upper and lower back tooth region.

Then, why should they be removed?

Once they start to erupt, we feel it can be quite painful and an uncomfortable process. During a childhood period, we definitely don't remember the pain of teething (process of eruption of teeth). It is a similar experience we will face, while our wisdom teeth erupt.

Few of its early symptoms are pain, swelling, headache and restricted mouth opening. Then tissue overgrowth on the molar is called Operculum and in the state of inflammation, the condition is termed as pericoronitis.

Mesioangular impaction was commonest (49%) followed by horizontal then vertical impaction. Presence of radiating pain to ears and TMJ (Temporomandibular joint) region. Radiographic examination plays a major role in finding the type, size and position of impacted tooth and to detect other abnormalities related to that tooth like cyst or tumours. Removal of these impacted teeth will prevent future problems.

Teeth that are impacted may evolve into non-functional, abnormal or pathological conditions. This will be a descriptive questionnaire study aimed at assessing the level of knowledge of Medical Students.

Subjects and Methods

This questionnaire study was carried among Medical Students pursuing their internship, Pondicherry. Questioner's validations with experts. IRB review done and project registered. No: ECR/290/Indt/PY/2018.

A random selection of 384 medical students pursuing internship in Pondicherry during the study period (2018-2020) was taken. The study subjects will be assured of the confidentiality of the gathered data. Verbal consent was taken before starting the study.

The data was collected using a pre-validated, structured, self-administered close ended questionnaire comprising of 20 questions. It is designed with the aim of collecting information from MBBS CRRRI population about the impaction of wisdom teeth, related symptoms and complications. The questionnaire will comprise socio-demographic details such as name, age, gender, address, education, etc. The students were requested to fill and return the questionnaire then and there itself. Percentage distribution of responses to questions will be calculated and the final result will be acquired. Data was analysed by the SPSSv 19 Statistical Package Software for the Social Sciences (SPSS Inc., Chicago, IL, USA). Descriptive statistics such as mean, median, standard deviation and percentage was used. Comparison of frequencies was done using Chi-Square test.

Inclusion criteria

This study included

- All the medical students pursuing their internship in Pondicherry.
- Medical students who are willing to take part in the study.
- Medical students who give their informed concern in the study.

Exclusion criteria

The medical students who are not willing to give their informed concern and to take part in the study.

Results

A total of 384 students (female-214 and male-170) were involved in the study (Pie chart-1). More than half of the students participated have past dental visit (Pie chart 2). Based on the finding that 335 students were aware about the impacted tooth (Pie chart 3). The students experienced tooth impaction was estimated at 38.8% (Pie chart-4). A total of 384 students, 264 students know that the impaction is due to lack of space followed by 64 students believe it's due to obstruction by bone or gums (Pie chart 5). The most common symptoms said by the 226 students were pain followed by redness over the surrounding areas by 190 students, swelling by 185 students and others (Bar chart 1). Mandibular 3rd molar (200,52.1%) were more frequently impacted followed by maxillary canine (36.2%,139), maxillary 3rd molar (23.2%,89) and others (Bar chart 2). Most common complications faced after post impaction surgery was damage of adjacent teeth (43%,165) followed by tooth fragments displacement into soft tissues and bleeding (37.2%,143) and others (Bar chart 3). About 229 students (59.6%) has no history of tooth extraction in single sitting followed

by 86 students (22.44%) got single tooth extracted, 48 students (12.5%) experienced extraction of two teeth and 13 students (3.5%) got three tooth extracted in single sitting (Pie chart-6). 217 students (56.5%) were aware of horizontal type of impaction followed 192 students (50%) aware of vertical type of impaction, 144 students (37.5%) aware of mesial impaction, 100 students (26%) were aware of distal type of impaction and 90 (23.4%) of students were not aware about the type of impaction (Bar chart 4). Merely 284 students (74%) family members had visited the dentist for extraction of impacted tooth (Pie chart 7). 185 (48.2%) students out of 384 said that 20-29 years were the correct age to experience impacted tooth followed by 17-25 years were the correct age to get impacted said by 142 (37%) students, 35 (9.1%) students don't know the correct age to assess the impacted tooth, 15 (4%) students said 12-16 years were the correct age and 7 (1.7%) students said 6-11 years are the correct age to assess about the impacted tooth (Pie chart-8). 269 students (70.1%) said tooth impaction affect oral hygiene (Pie chart 9). 245 students (63.8%) experienced redness and bulging over the impacted tooth (Pie chart-10). 270 students (70.3%) aware of tooth getting impacted in case of inadequate arch size (Pie chart-11). About 187 students (48.7%) were not aware that all 3rd molars which are clinically visible doesn't need surgical procedure Followed by 91 students (23.7%) were aware about it and 106 students (27.6%) refuse that all 3rd molars which are visible doesn't require surgical procedures (Pie chart 12). 174 students (45.3%) experienced caries to the adjacent tooth due to improperly erupted 3rd molar followed by 157 students (40.9%) experienced food lodgment, 127 students (33.1%) experienced cheek biting and 95 students (24.7%) were not aware about the problems due to improperly erupted 3rd molar (Bar chart-5). 57% of the participants think that any cyst or tumor arise from the impacted tooth (Table 1)

Pie chart 1: Past dental visit?

Pie chart 2: Are you aware of tooth impacted?

Pie chart 3: Have you experienced tooth impacted?

Pie chart 4: Tooth impacted is due to.

Pie chart 5: How many impacted tooth have you got extracted in single sitting?

Pie chart 8: Does tooth impacted affect your oral hygiene?

Pie chart 6: Do any of your family members/friends ever visited dentist for extraction of impacted tooth?

Pie chart 9: Have you ever observed radness ang bulging over implicated tooth?

Pie chart 7: What is the correct age to assess that you have implicated tooth?

Pie chart 10: Are aware of tooth getting impacted in case of inadequate arch size?

Pie chart 11: Do you think that all the 3rd molar which are visible does not require surgical procedures?

Bar Chart 2: Which is the most common tooth to get impacted (Multiple answers possible).

Pie chart 12: Do you think any cyst or tumor arise from the impacted tooth?

Bar Chart 3: What are the Complications have you faced post implication surgery? (Multiple answer Possible).

Bar Chart 1: What are the symptoms of implication? (Multiple answer Possible).

Bar Chart 4: What is the type of implication you were aware of? (Multiple answers possible).

Discussion

This study was conducted to explore the awareness about tooth impaction among Medical Students pursuing their internship in Pondicherry. 87.2% Participants were aware of tooth impaction. The partial or completely impacted might be associated with symptoms of pain and swelling. 38.8% had experienced tooth impaction.

According to the study, 68.8% had tooth impaction due to lack of space followed by obstruction by bone or gums (16.7%) and others. Richardson ER, *et al.* [1] noted that 3rd molar eruption is more related to the width of mandibular 3rd molar and lack of space

Bar Chart 5: Have you had any of these problems due to improperly erupted 3rd molar? (Multiple answers Possible).

Sl.NO	Concept/Description	No. of responses	No. of responses	Percentage	Percentage
1	Gender	Female- 214	Male- 170	Female-55.7%	Male-44.3%
2	Past dental visit	Yes - 213	No- 171	Yes-55.5%	No-44.5%
3	Are you aware of tooth impaction?	Yes- 335	No- 49	Yes-87.2%	No-12.8%
4	Have you ever experienced tooth impaction?	Yes- 149	No-235	Yes-38.8%	No-61.2%
5	Tooth impaction is due to	Obstruction of bone and gums- 64	Lack of space- 264	Obstruction of bone and gums-16.7%	Lack of space-68.8%
		Others - 15	I don't know- 41	Others -3.8%	I don't know-10.7%
6	what are the symptoms of impaction?	Swelling-185	Pain-226	Swelling-48.2%	Pain-58.9%
		Redness over the surrounding areas-190	Damage to adjacent teeth-184	Redness over the surrounding areas-49.5%	Damage to adjacent teeth-47.9%
		Reduced mouth opening-100	I don't know-32	Reduced mouth opening-26%	I don't know-8.3%
7	Which is the most common tooth to get impacted?	Mand 3 rd molar-200	Max 3 rd molar-89	Mand 3 rd molar-52.1%	Max 3 rd molar-23.2%
		Max 2 nd premolar-19	Max 1 st premolar-16	Max 2 nd premolar-4.9%	Max 1 st premolar-4.2%
		Max canine-139	I don't know-52	Max canine-36.2%	I don't know-13.5%
8	What are the complications have you faced post impaction surgery?	Mandibular fracture-53	Tooth fragments displacement into soft tissues and bleeding-143	Mandibular fracture-13.8%	Tooth fragments displacement into soft tissues and bleeding-37.2%
		I don't know-119		I don't know-31%	
		Damage of adjacent teeth-165	Inferior alveolar and/or lingual nerve injury-75	Damage of adjacent teeth-43%	Inferior alveolar and/or lingual nerve injury-19.5%

9	How many impacted tooth have you got extracted in single sitting?	One- 86	Two- 48	One-22.4%	Two-12.5%
		Three- 13		Three-3.5%	
		Never- 229	More than that- 8	Never-59.6%	More than that-2%
10	What is the type of impaction you were aware of?	Horizontal impaction-217	Mesial impaction-142	Horizontal impaction-56.5%	Mesial impaction-37.5%
		Vertical impaction-192		Vertical impaction-50%	
		Distal impaction-100	I don't know-90	Distal impaction-26%	I don't know-23.4%
11	Do any of your family members/friends ever visited dentist for extraction of impaction tooth?	Yes - 100	No - 284	Yes -26%	No -74%
12	What is the correct age to assess that you have impacted tooth?	17-25years- 142	12-16years- 15	17-25years-37%	12-16years-4%
		20-29years- 185		20-29years-48.2%	
		6-11years- 7	I don't know- 35	6-11years-1.7%	I don't know-9.1%
13	Does tooth impaction affect your oral hygiene?	Yes - 269	No - 115	Yes -70.1%	No -29.9%
14	Have you ever observed redness and bulging over your impacted tooth?	Yes- 245	No - 139	Yes-63.8%	No -36.2%
15	Are you aware of tooth getting impacted in case of inadequate arch	Yes- 270	No - 114	Yes- 70.3%	No -29.7%
16	Do you think that all the 3rd molars which are visible does not require surgical procedure	Yes - 91	No - 106	Yes -23.7%	No - 27.6%
			I don't know - 187		I don't know -48.7%
17	Have you had any of these problems due to improperly erupted 3rd molar?	Cheek biting-127	Food lodgement- 157	Cheek biting-33.1%	Food lodgement-40.1%
		Caries to adjacent tooth-174	None of the above-95	Caries to adjacent tooth-45.3%	None of the above-24.7%
18	Do you think any cyst or tumor arise from the impacted tooth?	Yes- 219	No- 61	Yes - 57%	No -15.9%
			I don't know- 104		I don't know-27.1%

Table 1: Knowledge and awareness about tooth impaction among medical students pursuing their internship in Pondicherry.

only. He observed, in certain cases, Mandibular 3rd molar impaction despite adequate space.

The most common symptoms of tooth impaction told by participants were pain (58.9%) followed by redness over the surrounding areas (49.5%), swelling (48.2%), damage to adjacent teeth (47.9%), and reduced mouth opening (26%). According to the study by Sara Abdullah Zarrouq., *et al.* [2], the symptoms associated with impaction of the lower third molar were pain (96%), headache, swelling, and limited openings. The symptoms of pain associated with impaction were relieved by the use of analgesics and by visiting the dentist. The study by Krishna., *et al.* [3] also suggests that the frequent symptoms of impaction of third molars are pain and tenderness (78%) followed by swelling (16%) and trismus. During the wisdom tooth eruption, the most common symptoms will be pain, food lodgement, reduced mouth opening and radiating pain to the ear and TMJ. Shital Patel., *et al.* [4] reported that recurrent pericoronitis (33.81%) was the most common indication followed by unrestorable caries in the third molar (24.96%) and unrestorable caries in the 2nd molar (21.12%).

Through this study, the foremost common tooth to urge impacted is Mandibular 3rd molar (52.1%) followed by Maxillary canine (36.2%), Maxillary 3rd molar (23.2%), Mandibular 2nd premolar (4.9%), and Maxillary 1st premolar (4.2%). The study done by Ahmed MA Jan1., *et al.* [5] Mandibular third molars are most ordinarily impaction compared to maxillary third molars. The study conducted by Gissakis Ig., *et al.* [6] also indicates that the third molars (91.6%) are the foremost commonly impacted teeth followed by canine (53%), premolars, and incisors. Farizana Msagati., *et al.* [7] reported that quite 84% of the patients presented with mandibular third molar impactions. Right lower third molar impactions were reported for 44.7% of patients followed by left lower third molar impaction (39.7%). All the four 3rd molars were impacted in 1.3% of the patients. Upper 3rd molar impaction was reported for 69 (7.7%) patients while 2% had upper canine impaction.

Classification of third molar counting on the angulation of the teeth was (according to Archer 1975; Kruger1984) mesioangular, disto-angular, vertical, horizontal, buccoangular, linguoangular, and inverted.

In our study, foremost common tooth impaction type is Horizontal impaction (56.5%) followed by vertical impaction (50%), mesial impaction (37.5%), and distal impaction (26%).

The common pattern of the impacted third molar is mesioangular (49%) followed by horizontal (27%) than vertical (24%) [2]. Maryam-alsadat Hashemipour., *et al.* [8] reported that the foremost common angulation was the mesioangular within the mandible, and therefore the vertical angulation within the maxilla. In impacted mandibular 3rd molars, mesioangular is the common type and in maxillary 3rd molar vertical impaction is that the commonest sort of impaction [5]. Mohammad ishfaq., *et al.* [9] reported that the foremost common impacted mandibular third molar angulation were mesioangular (48%) followed by vertical (35%) and distoangular (10%). Pell and Gregory Class II (55%) and sophistication I (38%) were the foremost common sorts of impacted mandibular third molars. By analyzing the level of eruption, it had been found that Pell and Gregory Class B (59%) and sophistication A (35%) were the foremost common kind of impactions. The foremost common kind of mandibular third molar impactions 738 (76%) were mesioangular type, 87 (8.9%) horizontal type and 69 (7.1%) disto-angular [6]. Muhammad asif Shahzad., *et al.* [10] stated that Mesioangular angulation (45.55%) with class II ramus relation (60.73%) and Position A (54.71%) depth was the foremost frequent pattern of impaction. Mesioangular impaction (48.3%) were the foremost common angulation of impaction within the mandible and vertical impaction (45.3%) were the commonest angulation of impaction within the maxilla [8]. The most common type was mesioangular impactions [15-17]. High incidence of mesioangular lower third molar impaction (33.97%) followed by vertical impaction (27.30%) and disto-angular impaction (21.20%) [4]. Asif Nazir., *et al.* [11] reported that the majority frequent pattern of impaction was mesio-angular (37.6%), with Class II ramus relation (53.2%) and Position A depth (62.8%) followed by vertical (27.6%), disto-angular (21.2%) and horizontal angulation (12.8%). However, some studies show that vertical impaction is the most common [18,19].

After molar extraction, patient's commonest post-extraction complications were Damage to the adjacent teeth (43%), and then Tooth fragments displaced into soft tissues and bleeding (37.2%), Inferior alveolar and/or lingual nerve injury (19.5%), and Mandibular fracture (13.8%). It may be due to their experience (or) own perspective towards the molar extraction. Only 15 (1.8%) had excessive swellings, trismus, and severe pain postoperatively, and just only one patient was reported to possess angle fracture of the mandible sustained during surgical removal of an impacted 48 [7].

More than half the patients (61.2%) indicated for impaction were within the age groups 15-24 years [3]. From participants' aspects of commonest age group to assess that had impaction is between 20-29years (48.2%) and followed by age group between 17-25years (37%). 41.4% of individuals with impaction belong to the 18-30 years aged group followed by 24% within the 31-40 years age group [5]. The very best number of patients were found in the 15-30 years of age group (48.33%) [4]. Third molars are the last to erupt and when properly positioned they emerge between the ages of 18 and 24 years [21].

About 70% of participants think that tooth impaction affects oral hygiene. About 63.8% of participants observed redness and bulging over the impaction. It may be due to food lodgement beneath the tissue overgrowth on molar.

About 70.3% of participants aware of tooth getting impacted just in case of an inadequate arch.

About 23.7% of participants think all the 3rd molars which are visible don't require surgery. If impaction doesn't break the gum line, then surgery is required. If there's no tissue overgrowth on molars and every one cusp are clinically visible, then surgical procedures are needed. 815 (91%) patients with impacted teeth were treated by surgical extraction [7].

Based on the responses, the commonest problems due to improperly erupted 3rd molar are caries to the adjacent tooth (45.3%) followed by food lodgement (40%) and cheek biting (33.1%).The foremost frequent indication was recurrent pericoronitis of the third molar (54%).Caries and pulpitis of the third molar accounted for 22% of the indications, while caries of the second molar were mentioned in 9% of the cases [3].The foremost common pathology associated with the impacted mandibular third molar was a cavity of the third molar (38.89%), followed by pericoronitis (29.01%), periodontitis (14.19%), and a low frequency of cysts and tumour's (3.39%) [10]. Recurrent pericoronitis was found to be most common.

Indication [20]. Pericoronitis was the foremost common pathology (48.5%) followed by caries (26.5%) and periodontal problems (10%) [9]. 405 (45.2%) patients had a carious lesion on one among the impacted teeth while 201 (22.4%) patients had a carious lesion on the adjacent second molar. In 122 (13.6%) patients had both the impacted third molar and caries on the adjacent second molar. The main complaints of 12 pa-

tients were the angle fracture of the mandible associated with impacted 3rd molar [7].The issues and therefore the prevalence evaluated were caries on mandibular 2nd molar (12.6%), caries on impacted lower third molar (5.3%), bone loss at the Impacted lower third molar distal aspect (9.7%), and periodontal tissue damage on an adjacent tooth (8.9%).A complete of 26.5% of all the cases were suffered from any one of the 4 pathologic changes [12].The foremost frequent reason for extraction of the 3rd molar was a cavity in the adjacent 2nd molar or 3rd molar itself (38.53%), followed by pericoronitis (29.36%) and periodontal problem (12.84%) [11].

In our study, 57% of participants think any cyst or tumour arises from the impaction. consistent with the study done by Bruce RA., *et al.* [13] the incidence of cyst and tumour formation related to impacted molar was notably highest (13.3%) within the oldest age bracket (mean age, 46.5 years) and lowest (1.5%) within the youngest age bracket (mean age, 20 years).57% had thought any cyst or tumour arises from the impacted tooth [11].Pathological entities like cysts and tumour's, which are often said to be related to impacted third molars, were rare in frequency (6%). By developing the scientific evidence being unresponsive of prophylactic removal of third molars, we believe that there's a necessity to remember the indications for removal of wisdom teeth [3]. Interestingly, Panagiotis Stathopoulos., *et al.* [14] reported that each individual impacted third molar removal requires careful examination and evaluation. Periodontitis and pocket depth between the impaction and 2nd molar is present, early extraction should be done to scale back the periodontal damage. Extraction of third molars prophylactically should be supported as an estimate of the balance between the likelihood of retained third molars causing problems within the longer term and therefore the risks or advantages of surgery administered earlier compared with later.

Conclusion

The present study has depicted that Medical Students pursuing their internship in Pondicherry are aware of wisdom tooth impaction and also its causes, symptoms and consequences. Mandibular third molars were much more commonly impacted. In present time the knowledge and awareness about wisdom tooth and its impact on the quality of life is understood and maintained to prevent future problems.

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