

Level of knowledge of undergraduate students in surabaya city about third molar impaction and management

Haedar Ilhamuddin Kalamullah ^{1,*}, Fayza Devana Wynistilla ¹, Zahra Ghina Afiyah ¹ and David B Kamadjaja ²

¹ Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia.

² Department of Oral and Maxillofacial Surgery, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia.

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Abstract

Background: Dental and oral health issues in Indonesia are among the most, with a prevalence of 25.9% and caries as the main problem reaching 45.3% in 2018. Undergraduate students experience impaction the most because third molars grow at the age of 17-21 years and the roots are complete at 18-25 years. Odontectomy is needed to treat impacted teeth, which if left untreated can cause serious complications such as pain, swelling, caries, pericoronitis, and tumors.

Objective: To create a valid and reliable questionnaire about the knowledge of undergraduate students in Surabaya regarding impaction of third molars and its management.

Methods: This study is a questionnaire study with a descriptive observational approach with cross-sectional study.

Result: The validity and reliability test shows that all 15 questions have r values exceeding 0.361, confirming their validity and reliability. Specifically, the r values for the questions range from 0.462 to 0.577. These results indicate that the questionnaire is effective for assessing the knowledge level of undergraduate students in Surabaya regarding third molar impaction and its management. Each question meets the necessary criteria, making the instrument a reliable tool for the intended evaluation.

Conclusion: This research concludes that the questionnaire assessing the knowledge of Surabaya undergraduate students about third molar impaction is valid, as the calculated r value exceeds the r table value.

Keywords: Knowledge Level; Impaction; Management; Students; Questionnaire

1. Introduction

Issues related to dental and oral are among the most prevalent problems in Indonesia. Percentage of Dental and oral health issues reached 25.9%, with caries as the main problem at 45.3% in 2018 [1]. The high prevalence of dental and oral health issues can be attributed to low public awareness about the importance of dental care and a shortage of dentists. One of the dental problems that is often encountered is impacted teeth, especially third molars. The third molar is the most frequently impacted tooth Eruption can be hindered by physical obstacles such as neighboring teeth, dense alveolar bone, or an overabundance of soft tissue.. The occurrence of impacted third molars has been documented to vary between 30.3% and 68.6%. [2].

* Corresponding author: Haedar Ilhamuddin Kalamullah

Odontectomy is the act of removing or extracting impacted teeth that only appear partially or do not appear completely or on teeth that only have remaining roots so that they cannot be removed using the usual technique with a closed method (close method) so that surgery must be carried out using an open method (open method) [3].

Complications that can occur if the impacted tooth is not treated can cause problems later on such as pain, swelling, tooth decay, pericoronitis, resorption of the second molar root, crowding of other teeth or even cause the formation of cysts and tumors so that immediate action is needed to remove the impacted third molar [4]. Therefore, it is important to increase public awareness and knowledge about the impact of tooth impaction and the importance of proper treatment. The goal of this study is to develop a valid and reliable questionnaire regarding the level of knowledge of undergraduate students in Surabaya City about impacted third molar teeth and their management.

A tooth is said to be impacted if it fails to fully grow into the dental arch or reach the occlusal plane within the expected time frame [5]. Undergraduate students are the age group that most often experiences impacted third molars. This is indicated because third molars begin to grow at the age of 17–21 years, and root formation is completed at the age of 18–25 years [6].

2. Material and methods

This study is questionnaire study with a descriptive observational approach with cross-sectional study design. The population in this study were undergraduate students in Surabaya City. The measuring instrument used was a Google Form questionnaire along with informed consent containing questions to measure the level of knowledge of undergraduate students in Surabaya City about third molar impaction and its management. The distribution of links began from August to November 2023. The results of filling out the questionnaire were then saved in the form of a Microsoft Excell file.

Validity and reliability tests were carried out on the questionnaire distributed to all respondents. The validity was measured through the Pearson Product Moment correlation, and the reliability was assessed employing Cronbach's Alpha. Both tests were carried out on the IBM SPSS version 27 application.

3. Results

This study was conducted online for approximately 3 months. Data collection from respondents began on August 20, 2023, and continued until November 13, 2023, by distributing links on social media platforms such as Instagram and X (Twitter) targeted at undergraduate students in Surabaya. Data was collected by sharing a Google Form link to assess the knowledge level of undergraduate students in Surabaya. A total of 154 respondents completed the questionnaire for this study. Thus, the number of respondents obtained in this study has exceeded the minimum requirement calculated using the Lemeshow formula, which is 100 respondents. The questionnaire consisted of sociodemographic data, knowledge about third molar impaction and its management, and comments on the questionnaire.

3.1. Validity and Reliability Testing

Pearson analysis was used for the validity test in this research. If the calculated r-value exceeds the r table value (product moment r table), the item is considered valid; otherwise, it is deemed invalid if the r-value is lower. For 30 respondents, the r table value was 0.361. Since the calculated r-values were higher than this, all questionnaire items were confirmed as valid and could be used, as presented in Table 1.

Following the validity test, the reliability was assessed employing Cronbach's Alpha. If the Cronbach's alpha value exceeds 0.60, the measurement is considered reliable or consistent. The results of the reliability test indicated a Cronbach's alpha value of 0.761, demonstrating that the questionnaire is reliable and consistent.

Table 1 Validity and Reliability Testing

Number Question	r Value	r Table	Cronbach's Alpha	Description
1	0,517	0,361	0,761	Valid and Realiabel
2	0,519	0,361	0,761	Valid and Realiabel
3	0,492	0,361	0,761	Valid and Realiabel
4	0,467	0,361	0,761	Valid and Realiabel
5	0,536	0,361	0,761	Valid and Realiabel
6	0,472	0,361	0,761	Valid and Realiabel
7	0,462	0,361	0,761	Valid and Realiabel
8	0,534	0,361	0,761	Valid and Realiabel
9	0,577	0,361	0,761	Valid and Realiabel
10	0,527	0,361	0,761	Valid and Realiabel
11	0,491	0,361	0,761	Valid and Realiabel
12	0,493	0,361	0,761	Valid and Realiabel
13	0,533	0,361	0,761	Valid and Realiabel
14	0,537	0,361	0,761	Valid and Realiabel
15	0,472	0,361	0,761	Valid and Realiabel

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3.2. Frequency Distribution of Sociodemographic Characteristics

Table 2 Sociodemographic Distribution of Respondents

*N=154		Frequency	Presentation
Gender	Male	48	31, %
	Female	100	69,0%
Age	17	4	2,6%
	18	16	10,4%
	19	24	15,6%
	20	36	23,4%
	21	50	32,5%
	22	22	14,3%
	23	2	1,3%
Institution/ University	Airlangga University	46	29,9%
	Sepuluh Nopember Institute of Technology	30	19,5%
	Pembangunan Nasional "Veteran" East Java University	55	35,7%
	University of Surabaya (UNESA)	7	4,5%
	Nahdlatul Ulama Surabaya University	6	3,9%
	Ciputra University	4	2,6%
	Other Institution/ Univeristy	6	3,9%

Majors	Health study program	14	9,0%
	Non- health study program	140	91,0%
Impaction Information	Have never known/ understand	84	54,5%
	Social Media	34	22,1%
	Dentist	20	13,0%
	Family/friend	16	10,4%

*N : Number of Respondents in Distribution Sociodemographic in this study

Table 2 shows that there were 106 female respondents (69%) and 48 male respondents (31%). The majority of respondents were 21 years old, totaling 50 individuals (32.5%), followed by 36 respondents aged 20 years (23.4%), 24 respondents aged 19 years (15.6%), 22 respondents aged 22 years (14.3%), 16 respondents aged 18 years (10.4%), 4 respondents aged 17 years (2.6%), and 2 respondents aged 23 years (1.3%). All respondents were pursuing the same level of education, namely undergraduate studies (100%). The majority of them were from Pembangunan Nasional “Veteran” East Java Univeristy with 55 respondents (35.7%), followed by Airlangga University with 46 respondents (29.9%), Institut Teknologi Sepuluh Nopember with 30 respondents (19.5%), University of Surabaya (UNESA) with 7 respondents (4.5%), Nahdlatul Ulama Surabaya University with 6 respondents (3.9%), Ciputra University with 4 respondents (2.6%), and 6 respondents (3.9%) from other universities. Almost all respondents were from non-health majors, totaling 140 individuals (91%). Among the respondents, 84 individuals (54.5%) had never received information about impaction, while 70 respondents (45.5%) had received information about impaction, with 34 (22.1%) learning from social media, 20 (13%) from dentists, and 16 (10.4%) from family or friends.

Based on the questionnaire responses, additional data was collected in the form of respondents' comments after completing the questionnaire. The data presented in Table 5.3 shows respondents' feedback on the research questionnaire. The respondents considered the questionnaire to be aligned with the title, useful for gaining further information about impaction, and that it provided valuable data for researchers to assess knowledge levels. The questionnaire content was easy to understand, and respondents recommended continuing the research with a larger and more diverse sample in the future. However, some respondents pointed out shortcomings and provided suggestions, such as the use of unfamiliar terms that made the questionnaire less comprehensible, and recommended including an introductory explanation or images to provide a general overview of the questionnaire. Respondents also suggested adding a neutral or ambiguous answer option, as the questionnaire only provided two answer choices, and recommended that the questionnaire be written in more detail for better clarity.

Table 3 Respondents Comments

No	Positive	Negative
1	The content of the questionnaire is consistent with the title and relevant to the community.	Needs to be preceded by a general overview on the questionnaire page about impaction.
2	The questionnaire is beneficial for respondents to learn about impaction.	The statements in the questionnaire need to be written more clearly to make them easier to understand.
3	Data from the questionnaire can serve as feedback for researchers to assess the community's knowledge level.	It is necessary to add images to help visualize impacted teeth.
4	The questionnaire is easy to understand.	Only two answer options are provided, it is necessary to add a neutral or ambiguous choice.
5	Future research should continue with broader criteria.	Respondents are still unfamiliar with the terms used in the questionnaire.

3.3. The Result of Questionnaire of this study

After conducting the research, the data was processed using IBM SPSS version 27 on MacOS, and the results are presented in Table 4

Table 4 Distribution Of Respondents According to Their Level of Knowledge

Knowledge Level	Frequency	Presentation
Low (0-4)	2	1,3%
Moderate (5-9)	95	61,7%
High (10-15)	57	37,0%
Total	154	100%

Table 4 shows that most of the respondents had average level of knowledge about third molar impaction and its management, with 95 respondents (61.7%) falling into this category. This was followed by respondents with a high level of knowledge, totaling 57 respondents (37.0%), and those with a low level of knowledge, with only 2 respondents (1.3%).

4. Discussion

Validity testing is a test used to determine and evaluate the accuracy and consistency of a measurement instrument used as a measure of what is being measured [7]. The validity of a questionnaire can be considered valid if each element of the questionnaire is applicable as a means to reveal and identify what the questionnaire is measuring. Furthermore, a questionnaire is deemed valid if the calculated *r* value is higher than the *r* table. If the validity value of each answer after distributing or printing the questionnaire is higher than 0.3, the questionnaire item can be considered valid [7].

Based on the validity criteria explained above, the validity results can be summarized as follows: test data on the questionnaire regarding the level of knowledge about third molar impaction and its management, which consists of 15 statements, are all valid, as has been summarized in the previous discussion.

Reliability testing of research instruments is used to assess whether the selected questionnaire for data collection is dependable. For this study, the reliability assessment was conducted using Cronbach's alpha. According to Putri [7], a variable with a Cronbach's alpha value greater than 0.60 is considered reliable and consistent in measurement. Based on the reliability test of the questionnaire on the level of knowledge regarding impacted wisdom teeth and their treatment, processed using SPSS, the reliability value was found to be 0.761. Since this Cronbach's alpha value exceeds 0.60, it can be concluded that the questionnaire on the level of knowledge about impacted wisdom teeth and their prognosis is reliable.

In a study by Rahmawati et al. (2022), a survey revealed that 40 female respondents (44.1%) had moderate knowledge. The chi-square test showed a *P* value of $0.001 < 0.05$, indicating a significant relationship between gender and the community's knowledge level [12]. The study also found a higher proportion of female respondents (72.5%) compared to males. Similarly, in the study on knowledge about impacted wisdom teeth and their treatment among undergraduate students in Surabaya, 106 respondents (69%) were female and 48 were male. The average knowledge scores were 9 for females and 8.7 for males, both categorized as moderate knowledge, with a difference of 0.3. This data suggests that female respondents had slightly higher knowledge levels than male respondents. However, the relationship between gender and knowledge of wisdom teeth impaction and treatment among students in Surabaya was not further examined in this study.

Age is associated with a person's cognitive abilities and mindset, which tend to evolve as they grow older, leading to improved knowledge [8]. In a study examining students' knowledge about wisdom teeth impaction and its treatment in Surabaya, the majority of respondents were 21 years old. This was followed by 36 respondents (23.4%) aged 20, 24 respondents (15.6%) aged 19, 22 respondents (14.3%) aged 22, 16 respondents (10.4%) aged 18, 4 respondents (2.6%) aged 17, and 2 respondents (1.3%) aged 23. However, the study did not explore in detail the relationship between age and knowledge levels regarding wisdom teeth retention and treatment, as most of the respondents' ages were closely grouped.

The relationship between education and knowledge is very close, where the greater a person's education, the broader the knowledge they are expected to have. Knowledge enhancement can be collected not only through legal education but also through non-legal (informal) education [8]. A person with higher formal education is likely to have a higher desire to utilize health facilities compared to someone with lower education. In the study by Quadri et al. (2018), it was

shown that the level of individual education has a significant impact on patient visits to the dental clinic [11]. This is due to the large percentage of respondents who visited the clinic being undergraduate students with a high school or vocational school background. The level of education pursued by all respondents is homogeneous, i.e., undergraduate or equivalent. The difference in the level of knowledge about third molar impaction and its management among undergraduate students in Surabaya may be influenced by other factors, such as informal education experienced by respondents. The higher a person's level of knowledge, the easier it will be to accept information about the object or related knowledge.

Basic knowledge can be collected from information provided by parents, teachers, and mass media. Education is closely linked to knowledge and is one of the general human needs, necessary for the development of their personality. The higher a person's educational level, the easier it is for them to receive and develop knowledge and technology [9].

Social media is one of the choices for obtaining information easily. According to the study by Scribante et al. (2021), the function of social media, such as Instagram, has been evident to educate patients to be concerned about their dental and oral health and to know bad habits that affect their dental and oral health, although the use of social media cannot replace direct communication between doctors and patients [10]. This relates to whether or not respondents have been informed about third molar impaction and its management. In this research, it was found that more respondents had not been informed about third molar impaction and its management, with 84 respondents (54%), compared to 70 respondents (46%) who had previously been informed about third molar impaction and its management. The information obtained was from social media, with 34 people (22.1%) getting it from dentists, 20 people (13%) from family or friends, and 16 people (10.4%) from the family. The relationship between information media and the level of knowledge about third molar impaction and its management was not further investigated in this study.

There were also comments from respondents about the questionnaire, divided into positive and negative comments. Many positive comments were given by respondents regarding the questionnaire, such as being relevant to the title, being considered beneficial for respondents to learn more about impaction, the questionnaire data being an important source of information for researchers to determine the level of knowledge, the content of the questionnaire being easy to understand, and recommendations to continue the research with a wider range of respondents in terms of number and criteria. This aligns with the purpose and benefits of this research, which is to provide information on the level of knowledge about third molar impaction and its management, serving as a basis for healthcare practitioners in determining effective information media and services.

However, some respondents also gave negative comments and suggestions regarding the presentation of the questionnaire, such as some unfamiliar terms making the questionnaire difficult to understand and recommending an introduction in the form of a general overview or explanation of the questionnaire on the questionnaire page. Respondents also suggested adding a middle or ambiguous answer option, as the questionnaire only provided two answer options. The questionnaire should also be written in more detail to be easier to understand. Negative comments provided by respondents can be used as suggestions for this research to improve the language so that it is easier to understand. However, the addition of a middle or ambiguous answer option and the provision of a general overview of impaction in the questionnaire cannot be included because the questionnaire in this study is descriptive research and not intended as an educational tool. This questionnaire also uses the Guttman Scale, where the answer choices are only 'Yes' and 'No.'

The level of knowledge examined in this study is limited to the first level, which is knowing (know). The knowing level (know) means that undergraduate students in Surabaya only express their opinions on the questionnaire based on their prior knowledge of the level of knowledge about third molar impaction and its management [9].

Based on research result, the level of knowledge about third molar impaction and its management among undergraduate students in Surabaya falls into the moderate knowledge category. This can be seen in the frequency of respondents, with more respondents scoring 5-9, which falls into the moderate knowledge category, totaling 95 respondents (61.7%). Meanwhile, 2 respondents (1.3%) scored 0-4, which falls into the low knowledge category, and 57 respondents (37.0%) scored 10-15, which falls into the high knowledge category. So far, there has been no similar research describing the level of knowledge about third molar impaction and its management among undergraduate students in Surabaya.

This study has several limitations. It was conducted on a single community (single-center), making it difficult to generalize the findings to a broader population (multi-center). The language used in the questionnaire and the self-administered data collection method may have affected the results, leading to gaps in understanding, as respondents might have found it difficult to comprehend third molar impaction and its management. Additionally, the sample size of

154 respondents could be considered too small to represent the entire population of undergraduate students in Surabaya. However, the respondents were relatively homogeneous in terms of age, education level, and domicile, which helped to minimize bias. Furthermore, the study's validity and reliability tests can be trusted, as they were conducted with more than the minimum required number of respondents (at least 30). The homogeneous sociodemographic characteristics of the respondents may have helped reduce bias in the results, which overall indicate a moderate level of knowledge about third molar impaction and its management among undergraduate students in Surabaya.

5. Conclusion

From this research, it can be concluded that the questionnaire assessing the knowledge level of undergraduate students in Surabaya about third molar impaction and its management is valid, as indicated by the calculated r value being higher than the r table value. The questionnaire is also deemed reliable, as shown by the calculated r value exceeding the Cronbach's alpha, making the questionnaire suitable for use. The respondents' knowledge level is predominantly in the moderate category, with 95 respondents (61.7%) falling into this category, indicating that there is still a need to improve knowledge regarding third molar impaction and its management.

Compliance with ethical standards

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Disclosure of conflict of interest

Authors have no conflict of interest.

Statement of informed consent

Informed and written consent was obtained from all of respondent and participant of this study.

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