

The level of knowledge about dental malocclusion in students at Islamic boarding schools

Ratna Nurlia Alfiandini ^{1,*}, Ananda Firman Putranto ¹, Gemelli Nur Illahi ², Syafiri Sami Anwari ², Mustaqbal Suharwan ² and Regina Purnama Dewi ¹

¹ *Département of Orthodontics, Faculty of Dental Medicine, Universitas Airlangga, Surabaya - Indonesia.*

² *Postgraduate of Orthodontic Specialist Program, Faculty of Dental Medicine, Universitas Airlangga, Surabaya - Indonesia.*

World Journal of Advanced Research and Reviews, 2024, 23(03), 1506–1510

Publication history: Received on 03 August 2024; revised on 11 September 2024; accepted on 13 September 2024

Article DOI: <https://doi.org/10.30574/wjarr.2024.23.3.2795>

Abstract

Introduction: Malocclusions often found daily include crowding of teeth, open bites, cross bites, protrusion, and maxillary or mandibular teeth. This proves that the community's need for orthodontic treatment is very high. Knowledge results from human knowledge, which occurs after people sense certain objects. A person's knowledge of an object contains two aspects, namely positive aspects and negative aspects.

Purpose: To identify the level of knowledge about dental malocclusion in students at Islamic boarding schools.

Methods: The questionnaire was prepared for pre and post-tests. The questionnaire contains 12 questions using the Guttman scale which has two answer choices "yes" or "no", where positive answers are given a score of 1 and negative answers are scored 0.

Results: There was a significant increase of understanding in the mean of subject matter from the post-test mean was higher (14,4%) than the pre-test rate (12,1%) with a significant difference (P=0.000)

Conclusion: The goal of this community service was to successfully provide counseling about the importance of awareness of dental malocclusion at the Islamic Boarding School in Karangmojo, Ponorogo, East Java by conducting a questionnaire of pretest and posttest to understand the level of knowledge of dental malocclusion. The level of knowledge was increased by the result of the post-test mean was higher (14,4%) than the pre-test rate (12,1%) with a significant difference (P=0.000).

Keywords: Malocclusion; Knowledge; Boarding school; Education

1. Introduction

A particular type of school system based on an Islamic educational institution is called an Islamic boarding school, where a closed community is formed by several students and teachers living in the same neighborhood, in a dormitory. (1) Indonesia, specifically Java Island, has 27.230 Islamic boarding schools which 78,6% are concentrated in Java; therefore, Islamic boarding schools attract special concern in research. (2) An Islamic proverb says, "Purity is half of the iman (faith)", which holds a big part in the student's character, aside from academic and religious study among students. Because of that, maintaining personal hygiene, as a part of health behavior, is not only a habit but also part of the faith itself. Students are taught the values and norms of Islam, including aspects of oral health. (3)

* Corresponding author: Ratna Nurlia Alfiandini

Malocclusion is an abnormal dentofacial condition that interferes with the functions of mastication, swallowing, speech, and facial harmony. Indonesia has a prevalence of malocclusion that reaches 80% in the entire community and is the third dental and oral health problem after caries and periodontal disease.(4) Malocclusions often found daily include crowding of teeth, open bites, cross bites, protrusion, and maxillary or mandibular teeth in up to 70% of cases. This proves that the community's need for orthodontic treatment is very high. Protruding, irregular, or misaligned teeth can lead to three types of issues for the patient. Firstly, it can cause social discrimination due to the altered facial appearance. Secondly, it can result in difficulties in jaw movements, including muscle incoordination or pain, temporomandibular dysfunction (TMD), and issues with eating, swallowing, or speaking. Lastly, it can increase the chances of oral trauma, periodontal disease, or tooth decay.(5) Orthodontic treatment aims to achieve properly aligned teeth, efficient occlusion function, aesthetic appearance, and stable results.(6) According to The World Health Organization, the age of late childhood (5-12 years) to middle adolescence (15-18 years) needs more attention because at that age the teeth are growing to avoid malocclusion or malposition. Based on the data on the proportion of actions to treat dental and oral problems by Regency/City in East Java, orthodontic treatment in Ponorogo Regency is only 0.69%.(4)

The number of patients seeking orthodontic treatment indicates the demand for it. However, not all patients with malocclusion seek treatment even if their deviation from the norm is extreme. Some fail to recognize the problem, while others cannot afford or access the treatment they need. The perceived need and demand for treatment vary depending on social and cultural conditions.(5) Parents and peers in urban areas are more likely to believe that children need orthodontic treatment compared to those in rural areas. Family income is a significant factor in determining how many children receive treatment. This reflects on two things, high-income families can afford treatment, and good facial appearance and avoiding disfiguring dental conditions are linked to prestigious social positions and occupations. The higher the parents' aspirations for their child, the more likely they are to seek orthodontic treatment for them. (5) This similar finding correlates with a study in India. There was an overall lack of knowledge about the etiology and the effects of malocclusion among the participants. (7)

Knowledge results from the knowledge of humans, which occurs after people sense certain objects. Sensing occurs through the five human senses: sight, hearing, smell, taste, and touch. Knowledge itself is heavily influenced by several factors that can be obtained from formal and non-formal education. Still, it needs to be emphasized not for someone with low education, absolute knowledge is also low because education is not obtained in formal education, but non-formal education is also obtained. These two aspects will ultimately determine a person's attitude toward a known object, thus fostering a more positive attitude toward the object. Knowledge or cognition is a critical domain for the formation of one's actions because behavior that is based on knowledge will be more lasting than behavior that is not based on knowledge.⁵

Boarding Schools of Tahfidz Al Qur'an Karangmojo was established as a boarding school with the advantages of Tahfidz Al Qur'an with a 24-hour parenting pattern coupled with the ideals of boarding school graduates to be prepared for higher education levels throughout Indonesia. A dental education program was held to encourage a higher understanding of malocclusion for students. The malocclusion prevalence is commonly related to knowledge, attitude, and practices (KAPs) - related to orthodontic treatment. Literature assessing the KAP related to orthodontic treatment among adolescents in rural and urban areas of Ponorogo has not been undertaken yet. In this background, the present study wanted to assess KAPs related to orthodontic treatment among children and adolescents in rural and urban areas in Ponorogo, East Java.

2. Material and methods

This is a descriptive study with a comparison of the pre-test and post-test. The study was conducted at Pondok Tahfidz Qur'an Karangmojo, Balong. Ponorogo. A total sampling method was used since the number of samples was below 100. The inclusion criteria of the subjects are active students of Pondok Tahfidz Qur'an Karangmojo when the data was obtained, aged 12-14 years old, and have given their consent to be the research's subject. The exclusion criteria are students who have undergone orthodontic treatment or had family members with orthodontic appliances. A questionnaire adapted from Shekar et. Al that assesses knowledge, attitude, and practice regarding orthodontic treatment is used in this research. The questionnaire was later translated into Bahasa Indonesia and modified to conform to Indonesian early adolescent's understanding. (8) The level of knowledge was assessed using a "pre-test" and "post-test" questionnaire that had been tested for validity (Pearson Product Moment).

The questionnaire contains 12 questions using the Guttman scale which has three answer choices "yes", "no", and "don't know". The scoring value of the answers is based on the Likert scale, with 'Yes' = 2 points, 'No' = 1 point, and 'Don't know' = 0 points. The pre-test questionnaire was given before the healthcare providers performed dental education. After that, dental health education was delivered by the orthodontist which mainly focused on maintaining oral hygiene

and tooth eruption process. The program was finished with a question-and-answer session, once the program was completed, the participants were asked to fill out the post-test.

3. Results and discussion

Table 1 Distribution of Respondents

Variable	Frequency	Percentage
Domicile		
East Java	44	74.6
Outside East Java	15	25.4
Gender		
Male	35	59.3
Female	24	40.7
Age		
6 - 11 years old	7	11.9
12 - 16 years old	34	57.6
17 - 25 years old	18	30.5
Education level		
Elementary school	14	23.7
Junior high school	33	60
Senior high school	12	20.3

During the program, 60 participants took part. The study revealed that most participants were originally from East Java, accounting for 74.6%, while the remaining participants were from other regions. The male respondents outnumbered the female respondents, making up 59.3% of the total. The participants' ages were grouped into three categories: 6-11 years old (11.9%), 12-16 years old (57.6%), and 17-25 years old (30.5%). The highest number of participants fell into the 12-16 age group, with a majority attending junior high school (60%).

Table 2 Paired T-Test Result

	Mean	SD	Sig.
Pre-Test	12.1	1.42244	0.000
Post Test	14.4	1.5162	

Table 2 shows the pre-test and post-test questionnaires about the level of knowledge of dental malocclusion. The paired t-test analysis was carried out to see the significance of improvement in participant's understanding. The post-test mean was higher (14.4%) than the pre-test rate (12.1%) with a significant difference ($P=0.000$) as stated in Table 2.

Dental malocclusion is a common condition in the world's population but is not considered a normal condition, although it is not usually serious enough to require treatment. Correction of malocclusion may reduce the risk of tooth decay and help to relieve excessive pressure on the temporomandibular joint. Orthodontic treatment is also used to align for aesthetic reasons. Normal dentofacial development depends on the normal function of the muscles around the mouth, the balance between the muscles of the lips, and cheeks from the outside of the dental arch, and the inside of the tongue needs to be maintained. (5)

In a study conducted by Shekar et al., it was observed that individuals residing in urban areas exhibited a higher level of dental health knowledge in contrast to their rural counterparts. This was attributed to the greater accessibility to dental care services in urban areas. (9) This observation corroborates the findings of our study. Before the implementation of dental health education initiatives, it was noted that participants had a comparatively lower level of knowledge. Notably, 25.4% of the participants hailed from rural areas.

A study conducted by Zakirulla et al. revealed that there is a positive awareness of orthodontic treatment among school children. However, the study also found that there are specific misconceptions and barriers to orthodontic treatment. Interestingly, there was no statistical difference between males and females in knowledge and behavior related to orthodontic treatment and malocclusion in school-going children. (10)

The purpose of this community service was to provide counseling on the importance of awareness of dental malocclusion at the Islamic Boarding School in Karangmojo, Ponorogo, East Java. This was done by conducting a pretest and posttest questionnaire to assess the level of knowledge about dental malocclusion. Similar dental health empowerment activities have also been carried out and have shown that oral and dental health empowerment is an effective way to increase elementary school children's understanding of dental and oral health. This is consistent with our findings that the participants' knowledge levels were higher after the program. (11,12)

4. Conclusion

The purpose of this research was to identify the level of knowledge about dental malocclusion in students at Islamic boarding schools. This was achieved by conducting a questionnaire consisting of pretests and posttests to gauge the level of knowledge about dental malocclusion. The results showed an increase in knowledge, as the mean score in the post-test (14.4%) was higher than the pre-test rate (12.1%), with a significant difference ($P=0.000$).

Compliance with ethical standards

Acknowledgments

The authors would like to thank the Orthodontic Department, Faculty of Dental Medicine, Universitas Airlangga for the support and Islamic Boarding Schools Tahfidz Al-Quran, which is in Karangmojo, Ponorogo City, East Java for kind cooperation.

Disclosure of conflict of interest

No conflict of interest was reported.

Statement of ethical approval

Ethical considerations were addressed by providing participants with comprehensive information and asking for consent before participating, while participant privacy and security rights were strictly maintained. The ethical approval of this research was obtained from the Dentistry Research Ethical Committee, Faculty of Dental Medicine, Universitas Airlangga (No.0884/HRECC.FODM/VIII/ 2024).

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Bramantoro T, Basiroh E, Berniyanti T, Setijanto RD, Irmalia WR. Intention and Oral Health Behavior Perspective of Islamic Traditional Boarding School Students Based on Theory of Planned Behavior. *Pesqui Bras Odontopediatria Clin Integr* [Internet]. 2020;20. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1983-46322020000100335&tlng=en
- [2] Kementerian Agama Republik Indonesia. EMIS PD-PONTREN [Internet]. [cited 2023 Apr 8]. Available from: <https://emispendis.kemenag.go.id/pdpontrenv2/Statistik/Pp>
- [3] Bramantoro T, Karimah N, Sosiawan A, Setijanto RD, Berniyanti T, Palupi R, et al. Miswak user's behavior model based on the theory of planned behavior in the country with the largest Muslim population. *Clin Cosmet Investig*

Dent [Internet]. 2018 Jul;Volume 10:141–8. Available from: <https://www.dovepress.com/miswak-users-behavior-model-based-on-the-theory-of-planned-behavior-in-peer-reviewed-article-CCIDE>

- [4] Badan Penelitian dan Pengembangan Kesehatan -. Laporan Provinsi Jawa Timur Riskesdas 2018. Kementerian Kesehat RI. 2019;140.
- [5] Proffit WR, Fields HW, Larson BE, Sarver DM. Contemporary Orthodontics. 6th ed. Philadelphia: Elsevier; 2019.
- [6] Cobourne MT, S. FP, DiBiase AT, Ahmad S. Clinical Cases in Orthodontic. First Edit. Vol. 1. United Kingdom: Wiley-Blackwell; 2012. 1–458 p.
- [7] Faizee SH, Veerasankar S, Avanthika K, Aruna Lakshmi MR, Angeline B, Rachel BJ. Awareness survey about the effects of malocclusion among young adults. Indian J Dent Res Off Publ Indian Soc Dent Res. 2018;29(6):705–10.
- [8] Adyasti K, Pratiwi D, Siregar E. The awareness level of orthodontic treatment among early adolescents (a survey among students of 111 public Junior High School, Jakarta). J Dentomaxillofacial Sci. 2021;6(1):5–9.
- [9] Shekar S, Chandrashekar B, Bhagyalakshmi A, Avinash B, Girish M. Knowledge, attitude, and practices related to orthodontic treatment among college students in rural and urban areas of Mysore, India: A cross-sectional questionnaire study. Indian J Oral Heal Res [Internet]. 2017;3(1):9. Available from: <http://www.ijohr.org/text.asp?2017/3/1/9/210920>
- [10] Zakirulla M, Almubarak H, Fageeh SN, Alhothimi AA, Alqahtani SK, Alqahtani FM, et al. Awareness and Behaviour Related to Orthodontic Treatment among School Children in Aseer Region, Kingdom of Saudi Arabia. Open J Stomatol [Internet]. 2019;09(04):87–94. Available from: <http://www.scirp.org/journal/doi.aspx?DOI=10.4236/ojst.2019.94009>
- [11] Nugraha AP, Alida A, Rahmawati D. Dental Health Status and Knowledge Improvement After Dental Health Empowerment at Elementary School Student in Gresik, East Java. Indones J Dent Med. 2022;5(1):1–4.
- [12] Ramadhani A, Rizky BN. The Effectiveness of Module and Webinar on the Management of Dental Health Emergency in Children with Down Syndrome. Indones J Dent Med. 2020;3(2):22.