

Research Report

Malocclusion prevalence in 11-13 years old student in the Madrasah Tsanawiyah Melirang, Gresik

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ABSTRACT

Background: When teeth are not positioned correctly, it is referred to as malocclusion, and it frequently happens in the general population. One of the traits of malocclusion that is frequently observed in children beginning in the early mixed dentition phase is crowded teeth. This disorder will become more serious and cause speech, masticatory, and cosmetic issues if therapy is not started right away. Environmental and genetic factors have a significant impact on malocclusion. Therefore, a child's nutrition, bad habits, trauma to the main teeth, and the pattern acquired from both parents will all affect the malocclusion's characteristics. **Purpose:** Enhance instruction in identifying malocclusion and the stages of permanent and changing tooth growth. **Methods:** Forty-six students from Madrasah Tsanawiyah's classes 7A and 7B participated. Intraoral examinations and the completion of pretest and post test questionnaires were used to collect data. Next, Stastical Package Social Science (SPSS) version 23 was used to analyze the frequency distribution data. **Results:** Male students had more crowded teeth (20) and less crowded teeth (2) than female students (18) and less crowded teeth (6). Class I malocclusion (41), class II malocclusion (3), and class III malocclusion (2) are the highest. **Conclusion:** Malocclusion class I is characterized by the greatest number of crowded teeth in males aged 8 to 10 years.

Keywords: Growth and Development; Malocclusion; Crowding; Knowledge; Medicine

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INTRODUCTION

Malocclusion, which is defined as when the teeth are not in the proper place, frequently happens in the general population. A significant condition that affects ethnic groups worldwide, malocclusion lowers a person's quality of life and interferes with appearance and function.¹ One Approximately 24.7% of people globally and 18.5% of people in Asia suffer from class II malocclusion, according to meta-analysis results. In Indonesia, malocclusion is the third most common dental and oral health issue, behind periodontal disease and dental caries, with a high prevalence of almost 80%.^{2,3} According to the notion, malocclusion is not influenced by social level; nonetheless, it is evident that a dentist may prevent malocclusion at an early stage. The majority of childhood malocclusions are inherited from the preceding generation.⁴

One of the traits of malocclusion that is frequently observed in children beginning in the early mixed dentition phase is crowded teeth. Should therapy not be initiated right away, this condition will worsen and lead to speech,

masticatory, and cosmetic problems.⁵ The many features of crowded teeth require different treatments; thus, it's important to determine each child's specific malocclusion type. Environmental and genetic factors have a significant impact on malocclusion. Therefore, a child's nutrition, bad behaviors, trauma to the primary teeth, and the pattern acquired from both parents will all affect the malocclusion's characteristics.⁶

Dental caries is one of the most prevalent and avoidable oral health issues in children, as is well recognized. Dental caries is a serious global public health issue that is highly prevalent and negatively affects children's quality of life. One of the reasons for malocclusion is the severity of dental cavities.^{7,8} Dentocraniofacial development anomalies may be the cause of malocclusion. This growth abnormality can be caused by the state of the teeth, upper jaw, and/or lower jaw (skeletal), or a combination of teeth and jaw (dentoskeletal).⁹ According to the findings of Basic Health Research, caries will rise with age, according to the DMFT index values for the 12–14 age group. In 2013, the East Java Province had a 76.2% prevalence of active caries,

compared to 53.2% for dental caries in Indonesia. This statistic illustrates that the prevalence of active dental caries in East Java Province exceeds the national prevalence of just 43.4%.¹⁰

It's possible that children's lack of awareness about regular tooth brushing practices contributes to the high prevalence of dental cavities. 82.9% of respondents reported a high degree of dental health knowledge, whereas 17.1% had a low level.¹¹ In this instance, it is anticipated that having a solid understanding of dental health will promote the development of healthy dental habits. Children's oral and dental health in Indonesia is still a major concern that requires careful attention from medical professionals.¹²

MATERIALS AND METHODS

This study design was a cross-sectional design and is quantitative descriptive. 46 students from classes 7A and 7B of Madrasah Tsanawiyah Miftahul Ulum Melirang, Gresik participated in this study as respondents. Total sampling is the method used for sampling. An intraoral examination and the completion of pre- and post-test questionnaires about malocclusion and the identification of crowded teeth are the methods employed. Stastiscal Package for Social Science (SPSS) version 23 (IBM corporation, Chicago, Illinois) was then used to analyze the distribution and frequency values.

Table 1. Description of the number of students in class 7A and 7B

Gender	Number of Student		Total
	7A	7B	
Male	12	10	22
Female	11	13	24
Total	23	23	46

Table 2. Description of crowded dental malocclusion according to age

Malocclusion	11		12		13	
	n	%	n	%	n	%
Crowded	2	100	29	82	7	70
Not Crowded	0	0	5	18	3	30
Total	2	100	33	100	10	100

Table 3. Description of crowded teeth malocclusion according to gender

Gender	Male		Female	
	n	%	n	%
Malocclusion				
Crowded	20	90	18	75
Not Crowded	2	9	6	25
Total	22	100	24	100

Table 4. Description of Malocclusion Classification according to Angle in female students

Angle's classification of malocclusion	Female		Male		Total	
	n	%	n	%	n	%
Malocclusion Class I	21	87.5	20	90	41	89
Malocclusion Class II	1	4	2	9	3	6
Malocclusion Class III	2	8			2	4
Total	24	100	22	100	46	100

RESULTS

Twenty-four female students and twenty-two male students participated in the study (Table 1). Eleven-year-olds student had the lowest percentage of crowded teeth (Table 2), followed by twelve-year-olds (82%). Ninety percent of the 20 male students in both classes had crowded teeth. In the meantime, 18 female students (75%) had teeth that were crowded (Table 3). The most prevalent kind of malocclusion was class I, which affected 41 individuals (89%) and was followed by class II, which affected 3 individuals (6%) and class III, which affected 2 individuals (4%) (Table 4).

DISCUSSION

According to the research findings, there were 22 male students and 24 female students. 52.08% of children in Madrasah Tsanawiyah Melirang, Bungah, Gresik between the ages of 9 and 13 have mandibular crowding. The pathogenesis of malocclusion, which includes trauma to anterior primary teeth and a high rate of primary tooth caries in children, is linked to the study's relatively high frequency of crowded teeth. In addition to dental cavities, it is not surprising that orthodontist regard anterior crossbite and deep bite as the most important traits, necessitating early treatment.¹³ Correcting deep bite and anterior crossbite in this age group has the advantage of promoting regular jaw movement and dentoalveolar structural development. In order to enhance the development of the teeth and jaw, it is advised that the tendency toward crowding in the permanent dentition be prevented and corrected in the mixed dentition phase.¹⁴

According to gender, boys have the largest percentage of mandibular crowding of teeth. Twenty children, or 90% of the male students, had crowded teeth. 18 children, or 75% of the female student, had crowded teeth. The study's findings demonstrated that males and female had different percentages of crowded teeth. The causes of crowded teeth in both boys and girls can include environmental influences or a mismatch between the width of the tooth and the width of the dental arch. There is a genetic component to the mismatch between the width of the teeth and the dental arch.^{15,16} Differences in jaw size and tooth width, such as large teeth with large jaws, can result in crowding of teeth in both boys and girls. tiny. The condition of having a tiny jaw and huge teeth is inherited from both parents.¹⁷ Stunted jaw growth is also associated with an imbalance between the breadth of the tooth and the width of the dental arch. A child's chewing habits and food have an impact on their jaw growth. The practice of eating and chewing soft foods can affect how big an arch gets.⁹

Environmental factors and local factors including the early loss of primary teeth can also result in crowding of teeth. These kinds of abnormalities can be brought on by a number of things, including an overbite distance that prevents the anterior teeth of the upper jaw from touching the anterior teeth of the lower jaw, abnormal growth patterns

that result in a small jaw arch and persistent primary teeth, and bad habits (such as sticking out the tongue, thumb sucking, and breathing through the mouth).¹⁸ Duration, frequency, and intensity all affect bad habits. According to clinical research, tooth movement occurs for at least four to six hours per day.¹⁹

There are numerous varieties of malocclusion disorders in angle class I malocclusion. Because of the permanent first molar connection caused by neutroocclusion, this clinical condition can be categorized as Angle class I malocclusion.²⁰ Accordingly, 41 individuals (89%), 3 individuals (6%) and 2 individuals (4%), respectively, had the highest class I malocclusion classification. Preventive and interceptive orthodontic treatment must therefore be started as soon as possible. For this group of childrens, primary oral health care is crucial, particularly in terms of preventing cavities.²¹ The more severe the malocclusion, the more early treatment is needed, according to preventive and interceptive orthodontic treatment. Some children, on the other hand, simply need preventive orthodontic treatment for moderate to severe malocclusion. This suggests that full orthodontic treatment is unquestionably necessary because the malocclusion is too severe to be rectified with existing interceptive orthodontic treatment.²²

It was shown that between the ages of 8 and 10, dental crowding was more prevalent in male than in women. Furthermore, it was demonstrated that the highest class I malocclusion classification was present in 41 people (89%), 3 people (6%) and 2 people (4%).

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