

The relationship between bad habits of thumb sucking and the incidence of Dewey type Klas I malocclusion in students aged 9-12 years at Tamalanrea Public Elementary School Makassar

Hubungan kebiasaan buruk mengisap jempol dengan kejadian maloklusi tipe Dewey Klas I pada murid usia 9-12 tahun di Sekolah Dasar Negeri Tamalanrea Makassar

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ABSTRACT

Bad habits thumb sucking over a long period of time causes malocclusion and dentofacial abnormalities. The aim of this research is to find out how bad habits are related *thumb sucking* with class I malocclusion type dewey in students aged 9-12 years at SDN Tamalanrea Makassar. This descriptive analytical observational research with a cross sectional design uses a simple random sampling technique. The data is analysed with chi square analysis. The results of this research were 76 respondents who experienced malocclusion. The most dominant malocclusion is class I type 2, protrusive (46.1%). The lowest malocclusion is class I type 4 crossbite posterior (9.2%). Based on statistical tests, the value of $p=0.004$ ($p < 0.05$) was obtained, which means that there is a relationship between bad habits and the incidence of malocclusion. It is concluded that there is a relationship between bad habits and the incidence of malocclusion in students aged 9-12 years at SDN Tamalanrea Makassar.

Keywords: thumb sucking, malocclusion, growth and development period

ABSTRAK

Kebiasaan buruk mengisap ibu jari dalam jangka waktu yang lama menyebabkan maloklusi dan kelainan dentofasial. Tujuan dari penelitian ini adalah untuk mengetahui hubungan kebiasaan buruk mengisap ibu jari dengan maloklusi kelas I tipe Dewey pada murid usia 9-12 tahun di SDN Tamalanrea Makassar. Dengan metode penelitian observasional deskriptif analitik dan desain *cross sectional* sampel diperoleh secara *simple random sampling*. Data dianalisis dengan uji chi square. Hasil menunjukkan terdapat 76 responden yang mengalami maloklusi; yang paling dominan adalah kelas I tipe 2, protrusif (46,1%). Sedangkan yang terendah kelas I tipe 4, *crossbite posterior* (9,2%). Berdasarkan uji statistik didapatkan nilai $p=0,004$ ($p < 0,05$), yang berarti terdapat hubungan antara kebiasaan buruk dengan kejadian maloklusi pada anak usia 9-12 tahun. Disimpulkan bahwa terdapat hubungan antara kebiasaan buruk dengan kejadian maloklusi pada siswa usia 9-12 tahun di SDN Tamalanrea Makassar.

Kata kunci: kebiasaan mengisap ibu jari, maloklusi, masa tumbuh kembang

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INTRODUCTION

Children who are growing up often have bad habits. Habit is a behavior which repeated regularly automatic or spontaneous. These behaviors and habits generally begin in childhood and most stop spontaneously. Bad mouth habits can lead to malocclusion. Bad habits affect odontofacial functions such as chewing, clenching, speaking, damage periodontal structure, and damage aesthetics. One of the most prominent bad habits in children is thumb sucking that can be temporary or permanent, depending on the circumstances and age of the child. Bad habits are common in children under 6 years of age, but they can eliminate them on their own. If this bad habit continues after the age of 6, it can result in malocclusion, facial deformities, and palate abnormalities. The severity of tooth position varies with the frequency of sucking, intensity of sucking, duration of the habit and how many years the habit continues.¹

Bad oral habits are divided into two major groups; acquired oral habits and compulsive oral habits. Acquired oral habits are behaviors that children can learn and easily stop as they grow, but they can stop those behaviors and start other new habits. Compulsive oral habits are childhood behaviors that are difficult to stop and if the child insists on stopping this bad habit will make him anxious and worried.²

Malocclusion is a form of connection between the upper and lower jaw that deviates from the normally accep-

ted standard shape. Malocclusion can be caused by an imbalance between the teeth and face. Malocclusion is a disorder in the development of the dental arch, leading to aesthetic and or functional problems, the most common cause being the development of osteogenic, hereditary, and additional functional conditions.³ Dental malocclusion can lead to insecurity issues due to increased concern about the appearance of teeth in childhood and adolescence. Malocclusion in mixed teeth if it is not done early treatment will cause more severe permanent teeth. The mixed dental period is 6-12 years of age when deciduous teeth are replaced by permanent teeth. Children with malocclusion feel that there is no need for treatment, this is because school-age children have low motivation to take care of their teeth. So that the role of parents is very important for children's growth and development.⁴

It is important to conduct study on elementary school children aged 9-12 years, because it is the period of child growth and development and the period of mixed teeth. Children often engage in bad habits, if these bad habits continue continuously it can lead to malocclusion. So that if malocclusion is found, it can be easier to handle.⁵

Based on the description of the problem above, the author is interested in conducting research related to the relationship between the bad habit of thumb sucking with the incidence of malocclusion of Class I Type Dewey in students aged 9-12 years at SDN Tamalanrea Makassar.

METHOD

This study used analytical descriptive observational with a cross-sectional design, conducted at SDN Tamalanrea Makassar. The population was the students aged 9-12 years, with simple random sampling so the sample was the population who are willing to be respondents for children aged 9-12 years at SDN Tamalanrea, children with thumb sucking habits, mixed dental phases, and good general health. The variables were bad habits of thumb sucking and the incidence of malocclusion. Clinical examination is carried out to determine the malocclusion. Data were collected by means of interviews conducted with questions about bad thumb sucking habits, and analyzed with chi square test.

RESULTS

Table 1 Number of respondents

| Gender | Frequency | Percentage |
|--------|-----------|------------|
| Boy | 54 | 49.1 |
| Girl | 56 | 50.9 |
| Total | 110 | 100 |

Table 2 Characteristics of respondents

| | Characteristics | Frequency | Percentage |
|--------|-----------------|-----------|------------|
| Age | 9 Year | 21 | 27.6 |
| | 10 Year | 19 | 25 |
| | 11 Year | 25 | 33 |
| | 12 Year | 11 | 14.4 |
| Gender | Boy | 39 | 51.3 |
| | Girl | 37 | 48.6 |
| | Total | 76 | 100 |

Table 3 Description of malocclusion

| Dewey Classification | Frequency | Percentage |
|---------------------------------------|-----------|------------|
| Type 1 (<i>Crowding</i>) | 14 | 18.4 |
| Type 2 (<i>Protrusive</i>) | 35 | 46.1 |
| Type 3 (<i>Crossbite Anterior</i>) | 20 | 26.3 |
| Type 4 (<i>Crossbite Posterior</i>) | 7 | 9.2 |
| Type 5 (<i>Mesial Drift</i>) | 0 | 0 |
| Total | 76 | 100 |

Table 4 Relationship between bad habits of thumb sucking and incidence of malocclusion in students aged 9-12 years at SDN Tamalanrea Makassar

| Variable | Frequency | % | p-value |
|---------------|-----------|------|---------|
| Have no habit | 36 | 47.3 | |
| Have habit | 40 | 52.7 | |
| Total | 76 | 100 | |

Table 1 shows that the frequency of girl respondents is more dominant than boy respondents, and Table 2 shows the respondents who experienced malocclusion were predominantly 9 years old. The gender frequency shows that number of boy respondents is more dominant than girl respondents.

Table 3 shows that the most dominant malocclusion is Class I type 2 malocclusion (46.1%). The lowest malocclusion is Class I type 4 malocclusion (9.2%). Table 4 shows that of the 76 people who experienced malocclusion, 40 people (52.7%) had the bad habit of sucking their thumbs and 36 people (47.3) did not have the bad habit. The results of chi square test show a value of $p=0.004$ ($p<0.005$) which means there is a relationship between the bad habit of thumb sucking and the incidence

of malocclusion at SDN 19 Tamalanrea Makassar.

DISCUSSION

Table 1, shows that there is a difference in malocclusion between boys (69%) and girls (55%). This result is in accordance with Farani et al., namely in children aged 9-11 years at SD IT Insan Utama Yogyakarta, it shows that the prevalence of malocclusion in boys (61.7%) is higher than girls (38.3%). Riyanti et al shows that malocclusion occurs more often in boys, namely 61.11%.⁶ This is also in line with research conducted by Anggriani et al., which showed a significant relationship between gender and the severity of malocclusion. This condition can be caused by girls tend to pay more attention to appearance than boys and parents generally pay more attention to the dental and oral health of girls than boys.⁷

Table 2 shows that the results of the Dewey classification malocclusion research were highest in children aged 11 years and lowest in children aged 12 years. Malocclusion with the Dewey Type 1 classification is more common in children aged 12 years and least in children aged 9 years. Malocclusion with the Dewey Type 2 classification is more common in children aged 11 years and least in children aged 12 years. Malocclusion with the Dewey Type 3 classification is more common in children aged 9 years and least in children aged 12 years. Malocclusion with Dewey classification Type 4 is more common in children aged 9 years and least in children aged 10 years. The prevalence of malocclusion in children in each age group of 9, 10, 11 and 12 years is determined by the individual child, which is influenced by several factors, including bad habits, nutrition, heredity and the environment. This is in line with research conducted by Farani et al, which states that each person's malocclusion is different and is influenced by two factors, namely local factors and general factors for each individual.⁷

Table 3 shows the prevalence of malocclusion in children aged 9-12 years at SDN Tamalanrea Makassar that the highest percentage of Dewey malocclusion classification is Class 1 Type 2 malocclusion (46.1%), next in sequence is Type 3 (26.3%), Type 1 (18.4%) and the lowest percentage of malocclusion was Type 4 (9.2%). This result is in accordance with previous research conducted by Kaul et al which showed that 82.9% of subjects experienced malocclusion. Class I malocclusion constituted the largest proportion of malocclusions, found in 66.9% of the population studied.⁸ Apart from that, Lydianna et al., shows that the most common malrelation is protrusive with a percentage of 23.1%.⁹ Apart from that, research by Farani et al showed statistical results for Angle class I malocclusion of 57.3%, class II malocclusion of 41.6%, and class III malocclusion of 3.3% with a sample size of 149 children.¹⁰

Oral habits are repetitive behaviors as a result of complex natural processes involving muscle contractions in the oral cavity. Oral habits occur and develop from the time the child is in the womb until the age of 3.5 years and go hand in hand with the development of neuromuscular function. Oral habits can be divided into 2 groups, namely acquired oral habits and compulsive oral habits.

Acquired oral habits are behaviors that can be learned and can be stopped easily so that children can stop the habit and change the habit by starting another habit. Compulsive oral habits are behaviors that tend to be difficult to eliminate as a form of comfort for children, and when children experience continuous emotional pressure which can cause anxiety and worry in the child.¹¹

One of the factors that causes malocclusion is bad oral habits. Oral bad habits are deviant or abnormal human habits that can affect dentocraniofacial growth, because they are carried out continuously and under pressure, tend to be persistent and repetitive. One of the bad oral habits is thumb sucking.¹² The bad habit of thumb sucking is a habit that is most often found in children and if it continues from small to large children, it can lead to malocclusion in children and the presence of a diastema in the connection between the upper jaw and the lower jaw.¹³

The bad habit of sucking your thumb will cause oral cavity abnormalities, if this habit occurs over a long period of time it will cause malocclusion. The bad habit of thumb sucking is normal at the age of less than six years, but can continue at the age of more than six years which can cause abnormalities in the dentofacial structure. The level of severity depends on the frequency and long duration.¹⁴ Sucking behavior in children is divided into two, namely nutritive sucking and non-nutritive sucking. The habit of sucking fingers that continues until a child is 4 years old or more can cause malocclusions in children, such as anterior open bite, deep bite, overjet (anterior protrusion), and posterior crossbite.¹²

One of the bad oral habits that children aged 9-12 years often do is thumb sucking. The results of research by Lydianna et al., showed that the prevalence of bad oral habits that occurred at the age of 7-13 years was 18 children (69.1%) with the habit of thumb sucking being the highest prevalence of seven children (26.9%) and the lowest prevalence was the habit of breathing through the mouth was one child (3.8%). The thumb sucking habit (26.9%) in this study indicated the presence of protrusive conditions, deep bite, cross bite and posterior open bite.¹⁰ The results of this study are in line with research on orphanage children aged 4-12 years in Riyadh, Saudi Arabia which stated that the prevalence of thumb sucking was the most common bad oral habit carried out by children, namely 53 (58.9%) who then followed by the habit of oral self-mutilation in second place.¹⁵

The highest prevalence of finger sucking was also stated in research by Lydianna et al, showing that children who practice finger sucking will experience a posterior open bite.¹⁰ These results are not in line with Joelianto's theory that children who practice bad oral habits such as finger sucking will experience protrusive malocclusion. This difference may be due to the habit of finger sucking definitely causing malocclusion but depending on the adequate intensity, frequency and duration. This is in line with the results of research presented by Nabila et al, that the relationship between bad oral habits and

malocclusion is also influenced by the length of time of these habits. These two variables will be related to each other if bad oral habits have occurred for more than 3 years. Bad oral habits can actually occur for a while, but if continue they can cause poor dental health and even malocclusion.¹⁶

Table 4 shows the results of *asympt. Sig, (2-tailed)* is $0.004 < \alpha (0.05)$, so it can be decided that the level of significance means there is a significant relationship between bad habits and the incidence of Class I Dewey type malocclusion in children aged 9-12 years. This is in accordance with research conducted by Lydianna et al., which showed the results of the chisquare test on the influence of bad oral habits on dental malocclusion in orphanage children aged 7-13 years at the Nurul Haq Orphanage with a p-value of 0.008 ($p < 0.05$) which means that there is an influence of bad oral habits on dental malrelation in orphanage children aged 7-13 years.¹⁰

Martin Dewey divided malocclusion into 5 types, namely crowding (Type 1), anterior protrusive (Type 2), anterior crossbite (Type 3), posterior crossbite (Type 4), and midline shifting (Type 5). Upper and lower anterior crowding (Type 1) is the most common variation of occlusal deviation compared to other types. Crowding has varying degrees of severity during the mixed dentition. The high prevalence of crowded teeth is also influenced by children's bad habits, namely thumb sucking.⁶

In children who have habit of thumb sucking, the position of the thumb will be placed between the maxillary and mandibular incisors so that the thumb will press the lingual portion of the maxillary incisors and the labial portion of the mandibular incisors. The thumb sucking habit that continues after the age of 2 years to more than 6 years can cause jaw abnormalities, namely the upper jaw will move forward and the lower jaw will be pushed back, causing crowding of the teeth.⁶ Apart from that, anterior crossbite can be caused by several factors such as the direction of eruption of the maxillary anterior incisors towards the lingual, post-operative cleft lip, incisor trauma which causes permanent tooth buds to shift towards the lingual, supernumerary anterior teeth, over-retention of primary teeth, odontoma, crowded teeth, incisor region, inadequate arch length or the habit of sucking the thumb and biting the upper lip. The etiology of posterior crossbite includes a combination of components including dental, skeletal and neuromuscular function, but the most frequent cause is a lack of maxillary dental arch width. The reduction was caused by the habit of sucking the thumb.⁵

Based on the results of research conducted on students aged 9-12 years at SDN Tamalanrea Makassar regarding the relationship between the bad habit of thumb sucking and the occurrence of class 1 malocclusion type Dewey, it can be concluded that the thumb sucking habit can be an etiological factor in malocclusion.

It is recommended that future researchers develop further the etiological factors of malocclusion and add a larger number of samples in future research so that the research results obtained will be more accurate.

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