The relationship of Dewey-type grade 1 malocclusion knowledge to the need for orthodontic treatment in children aged 9-12 years at SD Negeri Tamalanrea Makassar

Hubungan pengetahuan maloklusi kelas 1 tipe Dewey dengan kebutuhan perawatan ortodonti pada anak usia 9-12 tahun di SD Negeri Tamalanrea Makassar

[1]Roynald Daniel Dendang, [2]Muh. Harun Achmad
[1]Student
[2]Department of Pediatric Dentistry
Faculty of Dentistry, Hasanuddin University
Makassar, Indonesia
Corresponding author: **Roynald Daniel Dendang**, e-mail: **roynald30@gmail.com**

ABSTRACT
According to the 2018 Basic Health Research or Riskesdas, 57.6% of the Indonesian population admitted to having oral health problems. Patients with malocclusion in Indonesia are high despite the low demand for orthodontic treatment due to lack of knowledge about malocclusion. WHO defines malocclusion as an abnormality that can cause damage or interfere with occlusion function and may be an obstacle to the patient's physical and emotional health. This study aimed to determine the relationship between knowledge about malocclusion and the need for orthodontic treatment in children aged 9-12 years through quantitative research with descriptive observation method. The correlation coefficient value was obtained as 0.796. This shows that there is a very strong positive relationship between the level of knowledge of Tamalanrea State Elementary School students aged 9-12 years with malocclusion. In addition, a significance value of 0.002 (<0.01 or 0.05) was also obtained, which means that there is a significant relationship between knowledge and the incidence of malocclusion. It is concluded that there is a significant relationship between children and parents' knowledge and the incidence of malocclusion in children.
Keywords: knowledge, malocclusion, orthodontic treatment, children aged 9-12 years

ABSTRAK
Menurut Riset Kesehatan Dasar (Riskesdas) 2018, sebanyak 57,6% penduduk Indonesia mengaku memiliki masalah kesehatan gigi dan mulut. Penderita maloklusi di Indonesia cukup tinggi meskipun jumlah permintaan perawatan ortodonti masih rendah karena kurangnya pengetahuan tentang maloklusi. WHO mendefinisikan maloklusi sebagai suatu kelainan yang dapat menyebabkan kerusakan atau mengganggu fungsi oklusi dan mungkin menjadi hambatan bagi kesehatan fisik maupun emosi pasien. Studi ini dimaksudkan untuk mengetahui hubungan antara pengetahuan tentang maloklusi dengan kebutuhan perawatan ortodonti pada anak usia 9-12 tahun melalui penelitian kuantitatif dengan metode observasi deskriptif. Nilai koefisien korelasi diperperoleh sebesar 0,796. Hal ini menunjukkan bahwa terdapat hubungan positif yang sangat kuat antara tingkat pengetahuan siswa SD Negeri Tamalanrea usia 9-12 tahun dengan maloklusi. Selain itu, diperoleh juga nilai signifikansi sebesar 0,002 (<0,01 atau 0,05) yang berarti terdapat hubungan yang signifikan antara pengetahuan dengan kejadian maloklusi. Disimpulkan bahwa ada hubungan yang signifikan antara pengetahuan anak dan orang tua terhadap kejadian maloklusi pada anak.
Kata kunci: Pengetahuan, maloklusi, perawatan ortodontik, anak usia 9-12 tahun
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INTRODUCTION

Occlusion is the position when the upper and lower teeth make contact in all mandibular positions and movements. Occlusion is formed through interactions between all components of the mastication system consisting of teeth, periodontal structures, maxilla and mandible, temporomandibular joints, and related muscles and ligaments. In simple terms, normal occlusion is characterized by a harmonious relationship between the lower and upper teeth, and the arrangement of the teeth forms a regular arch.[1]

Habits are actions that are often done spontaneously and generally occur in childhood. A habit in the oral cavity that can cause malocclusion is called a bad habit. Bad habits affect dentofacial functions such as mastication, speech, dental occlusion, tooth support tissue structure and aesthetics.[2]

Oral bad habits are habits that last at least 6 hours a day, if the frequency is high enough with sufficient intensity it can cause malocclusion.[3] Factors that can cause malocclusion are divided into two factors, namely intrinsic factors and extrinsic factors. Oral bad habits are extrinsic factors such as the habit of biting nails, biting objects such as pencils and pens, sucking fingers, and breathing through the mouth.[4]

Breathing through the mouth is a habit that most often causes abnormalities in facial structure and dentition occlusion. The habit of breathing through the mouth that lasts during growth and development can affect the growth of dentocraniofacial growth. Chronic mouth breathing causes abnormalities in the muscles around the mouth, so it can spur the development of malocclusion.[4]

According to a report from the results of the National Basic Health Research or Riskesdas in 2018, as many as 57.6% of the Indonesian population admitted to having problems with oral and dental health.[5] Malocclusion sufferers in Indonesia are quite high although the number of requests for orthodontic treatment is still low due to lack of knowledge about malocclusion. The prevalence of malocclusion in Indonesia reaches 80% of the total population in Indonesia and ranks third after caries and periodontal disease. WHO defines it as an anomaly that can cause damage or interfere with occlusive function that is likely to be an obstacle to physical or emotional well-being in patients.[6]

The purpose of orthodontic treatment is to obtain regular tooth arrangement, good occlusal contact, so that efficient occlusion function can be achieved, and aesthe-

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tics on facial appearance and stable treatment results. To achieve these goals, dentists must able to identify malocclusion cases to be treated, ability and competence to achieve treatment goals so that satisfactory treatment results can be achieved.[8]

Orthodontic treatment can be 1) simple treatment, which it is aimed at a certain part of malocclusion that is set as the target of treatment; 2) comprehensive treatment, which is treatment that is done to correct the malocclusion as a whole; 3) multidisciplinary treatment, namely malocclusion treatment involving several branches of science; 3) interdisciplinary treatment, namely malocccclusion treatment carried out in collaboration between branches of science, treatment planning is carried out jointly, for example orthodontic treatment in collaboration with oral surgical treatment in dealing with jaw fractures.[8]

Based on the background, researchers are interested in conducting research about the relationship of Dewey type 1 malocclusion knowledge to the need for orthodontic treatment in children aged 9-12 years, especially in children in the city of Makassar.

METHODS

This quantitative research with descriptive observational methods is aimed to describe or describe the phenomena found, both risk factors and effects caused. The study was conducted with a cross sectional study design. The study population is elementary school students aged 9-12 years at SDN Tamalanrea Makassar, Makassar City for the 2022/2023 school year.

RESULT

The research sample included students of SDN Tamalanrea Makassar aged 9-12 years with a total sample of 76 people taken according to inclusion criteria, including 54 male (49.1%) and female 56 (50.9%) (Tabel 1).

The results of the study were analyzed using the SPSS program version 29.0 and is displayed in the distribution table 1; A total of 76 people had malocclusion and 34 people who had normal occlusion). Samples with male sex who experienced malocclusion as many as 39 people and female sex samples who experienced malocclusion as many as 37 people. Based on the table above that the percentage who experience malocclusion is higher are men.

Table 1 Distribution of malocclusion based on gender

Gender	Malocclusion				
	Type 1	Type 2	Type 3	Type 4	Total
Man	10	17	7	5	39
Woman	4	18	13	2	37
Total	14	35	20	7	76

Table 2 Distribution of malocclusion based on age

Age	Malocclusion				Total
	Type 1	Type 2	Type 3	Type 4	
9 Years	0	8	8	5	21
10 Years	5	7	7	0	19
11 Years	3	17	4	1	25
12 Years	6	3	1	1	11
Total	14	35	20	7	76

Based on Dewey on the table 2, 76 people experienced malocclusion, including 21 people aged 9 years, 10 years old 19 people, 11 years old 25 people, and 12 years old 11 people. Based on the age of all samples who experienced the most malocclusion was the age of 11 years, followed by ages 9, 10, and 12 years.

Table 3 Malocclusion Frequency Distribution in SDN Tamalanrea Makassar students

Dewey's classification	Sum	Percentage
Type 1	14	18.4%
Type 2	35	46.1%
Type 3	20	26.3%
Type 4	7	9.2%
Total	76	

Based on the table 3, 76 people who experienced malocclusion were found. So, the sample that undergoes the most malocclusion is class 1 type 2 angle.

Table 4 Knowledge level and malocclusion correlation test

Correlations		Knowledge		Malocclusion
Spearman's rho	Knowledge	Correlation coefficient	1.000	.796
		Sig.(2-tailed)	.	.002
		N	76	76
	Malocclusion	Correlation Coefficient	.796	1.000
		Sig.(2-tailed)	.002	.
		N	76	76

A correlation coefficient value of 0.796 was obtained. This shows that there is a very strong positive relationship between the level of knowledge of Tamalanrea State Elementary School students aged 9-12 years and malocclusion. In addition, a significance value of 0.002 was also obtained. This value is smaller than the significant level value, which is 0.01 or 0.05 so that it can be concluded that there is a significant relationship between knowledge and malocclusion.

DISCUSSION

Malocclusion is a condition of occlusion deviation from normal conditions which includes mismatch of tooth relations in the jaw arch. One of the environmental factors that cause malocclusion is bad habits of the oral cavity, which are nonfunctional habits that can disrupt the balance of muscles around the mouth. The function of the oral cavity that first maturates is breathing, so that inappropriate breathing processes can cause malocclusion in early childhood. One of the causes of malocclusion is a lack of knowledge of malocclusion or the factors that cause malocclusion.[9]

Knowledge is one of the important aspects in the formation of one's actions. Some studies state that the level of knowledge of parents underlies their attitude in maintaining or not maintaining children's dental and oral health. The benefits of adequate knowledge related to something will be seen from changes in behavior, including matters concerning the growth and development of children's teeth and mouth, so knowledge is needed to ensure optimal growth and development of children's teeth and jaws. The level of knowledge can be affected

by several factors, such as age, experience, education, and environment.[9] Knowledge is obtained from the human sensing process, or the result of a person's understanding of objects through the senses he has. The timing of the idea to produce knowledge is greatly influenced by the intensity of perception of the object. Most of a person's knowledge is acquired through the senses of hearing and sight, a person's knowledge of objects has different levels.[10]

Based on the results of the correlation test in table 4, it can be seen from the research conducted that there is a significant relationship between parental knowledge and the incidence of malocclusion in children. This can be caused by several factors, one of which is parental knowledge and parental behavior in maintaining children's habits that cause malocclusion. This is in accordance with research conducted by Aisyah et al in 2022, that in the case of malocclusion, the level of parental knowledge is still in the moderate category related to bad habits, which is 48.9%.[31] Another study by Ranggang in 2020 revealed that only 36.4% of samples had a high level of knowledge about bad habits that can cause malocclusion.[11]

Normal breathing is breathing done through the nose to inhale and exhale air so that optimal stimulation of tooth and jaw growth and development occurs. The habit of breathing through the mouth indicates a discrepancy in oral function. Lack of knowledge about malocclusion can be caused by lack of knowledge of parents about normal breathing performed by the body. This is in accordance with research by Veeresh et al, namely as many as 73.9% of parents have a wrong understandding regarding normal breathing which is assumed to be done through the nose and mouth.[12] This can cause parents to assume that breathing through the mouth for children is normal, even though it can cause malocclusion in children. Based on research conducted on elementary school children in Medan, as many as 10.83% of children have the habit of breathing through the mouth and 23% of children in Italy.[13.14]

The results of studies that show the relationship between children's knowledge and malocclusion cases can also be caused by the wrong perception of parents who assume that crowded teeth are not a disorder when they are children. This is in accordance with research conducted by Welliam in 2022 which showed that as many as 45.5% of parents think that crowded teeth are a normal condition of children. In addition, the wrong perception of parents can also be proven by research that is claimed that the assumption of the habit of sucking fingers, biting nails, breathing through the mouth is normal and not a problem for children even though it is one of the main factors causing malocclusion.[10]

The low level of knowledge about malocclusion in children can also be caused by the lack of information obtained about the incidence of malocclusion and bad habits, especially in the community. This is in accorddance with research conducted by Sari in 2015 which showed that the more and better the information, the easier it is for a person to receive and process knowledge. Research shows that information about dental malocclusion rarely receives special attention from health providers, one of which is *pusk esmas* or *posyandu* in the community. Thus, the level of knowledge of children related to malocclusion and bad habits allows for no prevention and causes malocclusion in children.[10] The habit of breathing through the mouth causes mismatch of tongue position and imbalance of orbicularis oris, genioglossus, mylohyoid, masseter, and buccinator muscles. Furthermore, postural adaptation of the body occurs, so that the growth and development of teeth and face does not occur as it should. The impact that occurs are the child's face looks oval and narrow with a receding chin (long face syndrome or adenoid faces), along with a narrow and high palate, crowded teeth, and excess overjet.[15]

The incidence of malocclusion in children in accordance with the results of this study can be caused by insufficient knowledge about the position of the child's open mouth during sleep both by the child and the knowledge of parents. Snoring is an early sign of open-mouth breathing that occurs due to vibrations in the respiratory tract that experience narrowing when air enters and exits through the mouth. Research conducted by Parcheco in 2015 showed that as many as 86.3% of children who breathe through the mouth while sleeping with their mouths open and as many as 68.1% of children who sleep with snoring.[15,16] This disturbance in sleep is called obstructive sleep apnea (OSA), which is a sleep disorder due to an obstruction in the airway that increasses in children with the habit of breathing through the mouth, proven in Martins' research in 2014 which explained that as many as 42% of children with oral habits have OSA disorders.[17]

It is concluded that a relationship that is influenced by the knowledge of parents and also the surrounding environment, based on research on bad habits, such as finger sucking, biting nails and breathing through the mouth is normal and not a problem for children even though it is one of the main factors causing malocclusion. So, it can be concluded that there is a significant relationship between parental knowledge and malocclusion.

It is recommended that further researchers can develop further about the relationship of malocclusionknowledge and add a larger number of samples in future studies which are expected to be more accurate.

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