Relation between Class I malocclusion and bad oral habits in children with autism in Makassar

Hubungan maloklusi Klas I dengan kebiasaan buruk oral pada anak dengan autisme di Makassar

[1]Muh. Chaerul Gunawan, [2]Muh. Harun Achmad, [2]Marhamah, [2]Yayah Inayah
[1]Undergraduate Program
[2]Department of Pediatric Dentistry
Faculty of Dentistry, Hasanuddin University
Makassar, Indonesia
Corresponding author: **Muh. Harun Achmad**, e-mail: **harunachmader@gmail.com**

ABSTRACT
Poor oral habits are more common in individuals with autism. There is a greater prevalence of bruxism, mouth breathing, biting objects, lips or tongue, nail biting, and finger sucking. Childhood autism patients showed a significant increase in the prevalence of severe crowding, posterior crossbite, and increased overjet in the autism group. This article examines the determinants of Dewey's modified Class I malocclusion classification and poor oral habits in childhood autism. The study was quantitative with descriptive observational method. A high rate of Angle class I malocclusion was found in patients with autism. A total of 68.6% of children with autism had Angle class I malocclusion and 60% of children with autism had poor oral habits. It was concluded that the incidence of Angle class I malocclusion and poor oral habits in children with autism is very high.
Keywords: autism, class I malocclusion, bad oral habits

ABSTRAK
Kebiasaan mulut yang buruk lebih sering terjadi pada individu dengan autisme. Prevalensi penderita autisme lebih besar dari bruxism, bernapas melalui mulut, menggigit benda, bibir atau lidah, menggigit kuku, dan mengisap jari. Penderita-autisme anak menunjukkan peningkatan yang signifikan dalam prevalensi gigi berjejal yang parah, gigitan silang posterior, dan peningkatan overjet pada kelompok autisme. Artikel ini meneliti faktor penentu klasifikasi maloklusi Kelas I modifikasi Dewey dan kebiasaan oral yang buruk pada penderita-autism anak. Penelitian bersifat kuantitatif dengan metode observasional deskriptif. Angka maloklusi Angle kelas I yang tinggi ditemukan pada penderita autisme. Sebanyak 68,6% penderita-autisme anak dengan maloklusi Angle kelas I dan sebanyak 60% anak dengan autisme memiliki kebiasaan oral yang buruk. Disimpulkan bahwa angka kejadian maloklusi kelas I Angle dan kebiasaan oral yang buruk pada anak dengan autisme sangat tinggi.
Kata kunci: autisme, maloklusi kelas I, kebiasaan oral yang buruk
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INTRODUCTION

Autism is a behavioral disorder in children with special needs. Autism itself is a disorder that includes cognitive areas, emotions, social behavior, and also the ability to interact with people in the surrounding environment. In Indonesia, it is estimated that there are more than 112,000 children suffering from autistic spectrum disorder (ASD) with an age range of 5-19 years. Other research estimates that the number of autistic children in Indonesia will increase at 6,900 children/year. The prevalence of the number of children with autism continues to increase and the social problems experienced by children with special needs have so many limitations both physically and mentally that it is not easy for them to develop a positive understanding for themselves, especially understanding dental and oral health maintenance.[1-4]

Bad oral habits are more common in individuals with ASD than in those without. Compared with controls, individuals with ASD reported a greater prevalence of bruxism, mouth breathing, biting objects, lips or tongue, nail biting and finger sucking. The influence of harmful oral habits on malocclusion and the greater prevalence of parafunctional oral habits in individuals with ASD raises the question of whether ASD predisposes to a different type of malocclusion.[5-7]

Malocclusion is caused by hereditary factors which result in crowded teeth, diastema, an excess or deficiency in the number of teeth, and other conditions in the oral cavity. Malocclusion can also be caused by bad habits with a duration of at least 6 hours per day, so that high frequency and intensity can cause malocclusion.[8]

One of the classifications of malocclusion that is often used today is the Angle classification. Angle classifies malocclusion into three classes, namely Class I, namelywhere there is a normal anteroposterior relationship of the jaws seen from the permanent first molars of the upper and lower jaws forming a good occlusion relationship accompanied by the condition of the anterior teeth whose positions vary, Class II is a malocclusion that experiences disocclusion of the lower jaw dental arch relationship which tends to be more distal to the upper jaw dental arch, and Class III is a malococclusion that experiences mesiocclusion of the lower jaw dental arch relationship which tends to be more mesial to the upper jaw dental arch. Then Dewey modified Angle's class I classification into five types and class III into 3 types.[9-11]

This study discusses the relation between Class I malocclusion and bad oral habits in children with autism in Makassar.

METHODS

This cross-sectional research was conducted at 7 special schools (SLB) in the city of Makassar, namely SLB Negeri 1 Makassar, SLB Negeri 2 Makassar, SLB YPAC Makassar, SLB Laniang Makassar, SLB Autism Bunda Makassar, SLB C YPPLB Makassar, and SLB Arnadya Makassar in February-June 2023. The population in this study were all students with autism at the special schools. The sampling in this study used a purposive sampling technique, which is based on the researcher's consideration of a sample that is considered to represent a population based on inclu-

sion criteria, namely the child is not undergoing orthodontic treatment, has a permanent first molar relationship with class I malocclusion, is willing and cooperative to undergo examination. The results of determining the research sample obtained a sample of 35 people.

The research was carried out after obtaining a research permit to obtain research permission from the head of the SLB which was the research location, then the researcher determined the sample based on the research inclusion criteria, then collected data by examining the sample for malocclusion and distributing questionnaires to the parents of the children who were the research sample. obtained then processed and presented in the form of tables and frequency diagrams.

RESULTS

The research sample was children with autism aged 6-18 years with a total sample of 35 people who met the research inclusion criteria. Fig.1 showing that the gender of the respondents was mostly 29 men (82.9%) and 6 women (17.1%). Fig.2 shows the age of respondents in the 7-11 years age group (54.3%) and in the 12-17 years group (45.7%). Fig.3 shows the Dewey modification Class I malocclusion classification with normal (31.4%), Class I type 2 malocclusion (28.6%), Class I type 3 malocclusion (31.4%), and 8.6% suffered from Class I type 4 malocclusion. Fig.4 showing bad oral habits carried out by respondents in the forms of biting (25.7%), sucking their fingers (28.6%), breathing through the mouth (2.9%), sticking out tongue (2.9%), and 40.0% did not have bad oral habits.

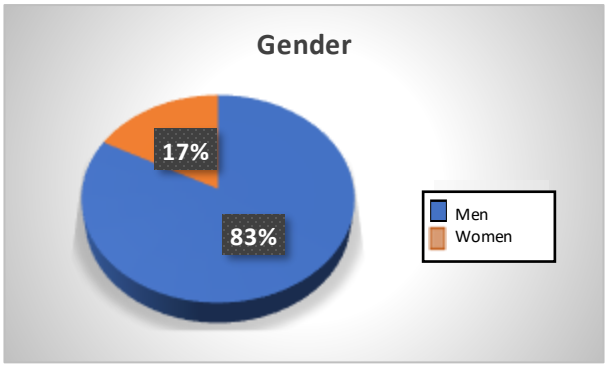

Figure 1 Frequency distribution of respondents based on gender in a diagram form (n=35)

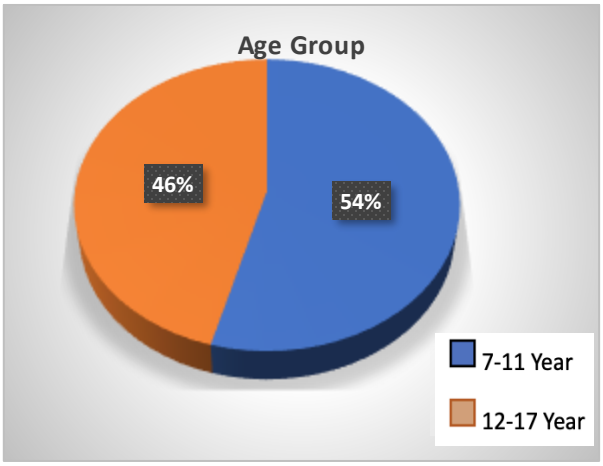

Figure 2 Frequency distribution of respondents by age group in diagram form (n=35)

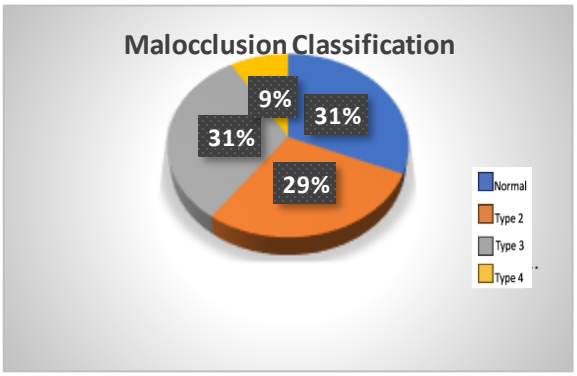

Figure 2 Frequency distribution based on Dewey's modified Class I malocclusion classification in diagram form (n=35)

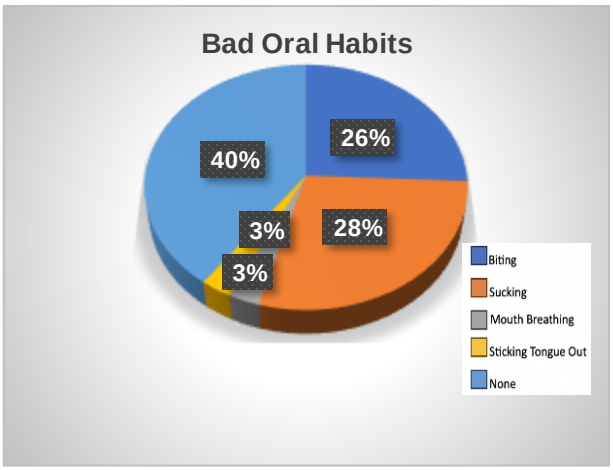

Figure 3 Frequency distribution of respondents based on bad oral habits in diagram form (n=35)

Table 1 showing a modified Dewey Class I malocclusion classification with normal teeth on men and women; Class I type 2 malocclusion in men and woman; Class I type 3 malocclusion in men and women, as well as malocclusion sufferers Class I type 4 in men and women.

Table 2 and Fig.5 demonstrate bad oral habits based on Dewey's modified Class I malocclusion classification. Table 3 showing the child's ability to brush their own teeth (48.6%) were able to brush their teeth and 51.5% were unable to brush their teeth.

Table 4 shows the income of parents of children with autism in 1 month with an income of less than one million rupiah, with an income of one million rupiah to five million rupiah, with an income of five million rupiah to ten million rupiah, and with an income of more than ten million rupiah.

Table 1 Frequency distribution of malocclusion types based on gender (n=35)

Gender	Types of Malocclusion				
	Normal	Type 2	Type 3	Type 4	Total
Man	9 (25.7)	9 (25.7)	9 (25.7)	2 (5.7)	29 (82.9)
Woman	2 (5.7)	1 (2.9)	2 (5.7)	1 (2.9)	6 (17.1)
Total	11 (31.4)	10 (28.6)	11 (31.4)	3 (8.6)	35 (100.0)

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Table 2 Frequency distribution of bad oral habits based on Dewey's modified Class I malocclusion classification (n=35)

Type	Oral Bad Habits					
	Breath Through the Mouth	Biting	Finger Sucking	Sticking tongue out	There isn't any	Total
Normal	0 (0.0)	3 (8.6)	1 (2.9)	0 (0.0)	7 (20.0)	11 (31.4)
Type 2	0 (0.0)	0 (0.0)	7 (20.0)	1 (2.9)	2 (5.7)	10 (28.6)
Type 3	1 (2.9)	6 (17.1)	1 (2.9)	0 (0.0)	3 (8.6)	11 (31.4)
Type 4	0 (0.0)	0 (0.0)	1 (2.9)	0 (0.0)	2 (5.7)	3 (8.6)
Total	1 (2.9)	9 (25.7)	10 (28.6)	1 (2.9)	14 (40.0)	35 (100.0)

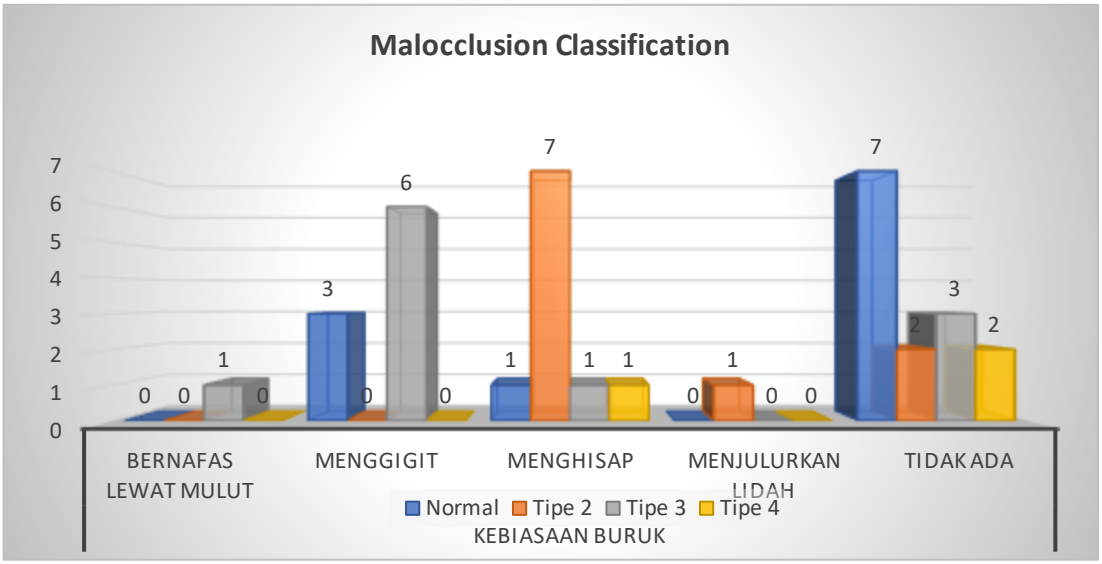

***Figure* 4** Frequency distribution of bad oral habits based on Dewey's modified Class I malocclusion in diagram form (n=35)

Table 3 Frequency distribution of the ability to brush one's own teeth (n=35)

Ability To Brush Your Own Teeth	n	%
Capable	17	48.6
Unable	18	51.5
Total	35	100.0

Table 4 Frequency distribution of income of parents of children with autism (n=35)

Parental Income	n	%
<1,000,000	4	11.4
1,000,000-5,000,000	18	51.5
5,000,000-10,000,000	11	31.5
>10,000,000	2	5.8
Total	35	100.0

DISCUSSION

Based on the research results, it was found that the gender prevalence of autism sufferers in the sample was mostly males at 82.9% and females at 17.1%. This is the same as research conducted by Octiara et al which showed that 88% of autism sufferers were male and 12% female.[13] This prevalence is mostly male because females tend to be more unco-operative and afraid of operators, so they are difficult to direct and even refuse and have tantrums. However, the distribution between men and women with autism is almost the same.

According to research conducted by Octiara et al, children with autism tend to be unable to maintain oral hygiene and also have bad habits such as nail biting, biting soft tissue in the mouth and bruxism which is one of the factors causing malocclusion. Oral bad habits in autistic children in Makassar as many as 60% have bad habits and 40% do not have bad habits with finger sucking as a bad oral habit with the highest prevalence of 28.6%.[13]

The results of this study showed that the prevalence of class I malocclusion in the Dewey classification with normal teeth and sufferers of class I type 3 malocclusion had the highest frequency of 31.4%. This prevalence is higher when compared to the prevalence of normal dental occlusion in the study by Octiara et al,[13] namely 12% and sufferers of class I type 3 malocclusion according to Meuffels et al, as much as 29.2%. Then sufferers of class I type 2 malocclusion had the next highest prevalence at 28.6%, this is lower than the research by Farmani et al,[15] namely 44.4%, while according to Meuffles et al[14] it was 31.3%. And sufferers of class I type 4 malocclusion have the lowest prevalence, namely 8.6%, this is lower than research by Meuffels et al, namely 45.8%.

In this study, 4 bad oral habits were found, namely breathing through the mouth, biting, sucking fingers, and sticking out the tongue. In sufferers of class I type 2 malocclusion, the majority of sufferers practice bad oral habits, namely sucking fingers 20%, this tends to be higher than by Yousif et al's[16] which is 13.7% and according to Alqahtani et al[17] which is as much as 13.6%. Meanwhile, the majority of sufferers of class I type 3 malocclusion have bad oral habits, namely biting, as much as 17.1%, this tends to be higher than research by Yousif MK et al[16], namely 10.6% and according to research by Al-Sehaibany et al[18] as much as

44.7% and sufferers of class I type 4 malocclusion are actually 5.7% less likely to have bad oral habits.

This research also measured the ability of autism sufferers to brush their teeth. It was found that children with autism who were able to brush their own teeth and those who were unable had almost the same prevalence, namely 48.6% of those who were able, while those who were unable tended to be higher, namely 51.5%. This is in accordance with research by Sayuti et al,[12] which revealed that 57% of autistic children do not want to put a toothbrush in their mouth, 37% of children are afraid to brush teeth, and 55% of children do not like the taste or texture of toothpaste.

From an economic perspective, the economic situation of parents can help children receive proper care and education for them. The economy of parents of children with autism is also very important, because it can affect their children. One aspect that is affected and clearly visible is the aspect of children's education, especially education for children with special needs. This research also displays the economic situation based on parents' income in 1 month, where the majority of parents' economic situation in the research sample is in the range of IDR 1,000,000 – IDR 5,000,000 as much as 51.5%.

It is concluded that a) the determinant of the type of class I malocclusion in the Dewey classification in children with autism in Makassar City is class I type 3 malocclusion with 31.4%, then class I type 2 malocclusion with a percentage of 28.6% or 10 people is the class type of malocclusion. Dewey classification I, and class I type 4 malocclusion is the type of class I Dewey classification malocclusion that is least suffered by children with autism in Makassar City, namely with a percentage of 8.6%; b) the prevalence of oral bad habits in children with autism in Makassar City is one of the causes of children experiencing malocclusion. In class I type 2 malocclusion sufferers, the majority of sufferers do bad oral habits, namely sucking their fingers, 20% and 1 person does bad oral habits. In the form of sticking out the tongue or as much as 2.9%, while in sufferers of class I type 3 malocclusion most of them have oral bad habits, namely biting their fingers, 17.1% or 6 people and 1 person each has bad oral habits in the form of breathing through the mouth and sucking fingers or with a percentage of 2.9% each and in sufferers of class I type 4 malocclusion caused by bad oral habits in the form of sucking fingers with a percentage of 2.9% or 1 person; c) the condition of normal teeth in children with autism is also relatively high, namely 11 people or 31.4%, children with autism who do not have bad habits are also classified as high, namely 14 people or 40%, and children with autism have normal teeth and have no habits, 7 people were bad or a percentage of 20%; d) the inability of children with autism to brush their own teeth is still relatively high, namely 51.5% or 18 people, while children with autism who are able to brush their own teeth are still below the figure who are unable, namely 48.6% or 17 people.

It is suggested that this research can be developed and suggested to future researchers to research other classifications of malocclusion as well as larger samples and provide education to parents of sufferers regarding treatment according to the conditions experienced by children suffering from malocclusion.

REFERENCES

1. Desiningrum DR. Psychology of children with special needs. Jakarta: Psychoscience; 2016.
2. Fathonah Y, Fatmasari D, Santoso B. Yay's dental education model as an effort to increase the knowledge, attitudes and actions of parents of autistic children. J Dent Health 2022 :9(2); 132-6
3. Nuraeni. Textbook of educational psychology for children with special needs. Purwokerto: UM Press: 2017
4. Syahril SN. Increasing self-development ability in brushing teeth through the implementation of task analysis in Class III autistic students at SLB YPAC Makassar; 2022.p.1.12
5. Peixoto T, Owens J, Abreu LG, Alves S, Debossan T, Vargasÿferreira F, et al. Malocclusion characteristics among individuals with autism spectrum disorder: a systemic review and meta-analysis. BMC Oral Health 2022; 2.
6. Veriza E, Boy H. Dental and oral health maintenance behavior in children with autism. Faletehan Health J 2018; 5(2): 56
7. KG Clinical, Babanouri N. Prevalence of malloclusion and occlusal traits in children with autism spectrum disorders. 2020; 344.
8. Nahuson DR, Sari JP. Malocclusion severity levels in children aged 11-12 years using the handicapping malocclusion assessment record index: observational research in Lalabata District, Soppeng Regency. Makassar Dent J 2018; 7(2): 61-5.
9. Viazis AD, Pagonis TC. The Viazis classification of malocclusion. J Dent Health Oral Disord Ther 2018; 9(5): 363-4.
10. Phulari BS, Naik P. Orthodontics principles and practice, 2nd Ed. Jaypee Brothers Medical Publisher's; 2017.p.71, 77-80
11. Harun MA, Natsir M, Samad R. Malocclusion in children and how to handle it. Jakarta: Sagung Seto; 2016.
12. Sayuti E, Latif DS, Aziz M, Sasmita IS. Prevalence of malocclusion and orthodontic treatment need in children with autism. J Int Dent Med Res 2021;14(2): 686-90
13. Octiara E, Fahmia Z. Percentage of malocclusion in autistic and normal children in Medan. Dentika Dent J 2014;18:141-6
14. Meuffels S, Jagtman AM, Tjoa ST. Malocclusion complexity and orthodontic treatment need in children with autism spectrum disorder. Clin Oral Investig 2022; 26: 6265-73.
15. Farmani S, Ajami S, Babanouri N. Prevalence of malloclusion and occlusal traits in children with autism spectrum disorders. Clin Cosm Investig Dent 2020; 12: 346.
16. Yousif MK, Almuhyi AA, Abood SA, Abid AA. Prevalence of common habit disorders in children aged 3-13 years. Int J Med Sci Adv Clin Res 2018; 1(3): 3-4.
17. Alqahtani AS, Gufran K, Alsakr A, Alnufaiy B, Ghwainem A, Bin Khames YM, Althani RA, Almuthaybiri SM. Oral healthcare practice and awareness among parents of autism spectrum disorder children: a multi-center study. Children 2023; 10(978):5
18. Al-Sehaibany FS. Occurrence of oral habits among preschool children with autism spectrum disorder. J Med Sci 2017; 33(5): 1-3.

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