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Review Article

Bad habits in children and their impact on oral health and development of teeth

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ABSTRACT

Background: Bad oral habits are extrinsic factors that can affect hard tissue (teeth, alveolar bone), tooth supporting tissue (gums, periodontal ligaments), and other oral mucosa (tongue, lips, cheeks, palate, etc.). Bad habits affect dentofacial functions such as the process of chewing, speaking, tooth occlusion, and the structure of the tooth supporting tissue as well as aesthetics during the teething period. **Purpose:** To see the overview of bad habits in children that have an impact on oral health and to explain the kinds of bad habits that can affect the growth of teeth. **Discussion:** Various kinds of bad habits in children that affect the development of teeth in children include thumb or finger sucking, inserting foreign objects into the oral cavity (biting pencils, pens and nail biting), tongue thrusting, mouth breathing, and lip sucking or lip biting. **Conclusion:** An overview of bad habits in children that have an impact on oral health is thumb sucking and mouth breathing which can cause malocclusion in the child. Malocclusion is formed due to the interaction of various factors, namely internal and external.

Keywords: Bad habits in children, malocclusion, growth and development of tooth.

INTRODUCTION

A habit is a repetitive action that is performed automatically or spontaneously. This behavior generally occurs in childhood and is mostly resolved spontaneously. A habit in the oral cavity that can cause malocclusion is called a bad habit. Bad habits affect dentofacial functions such as the process of chewing, speaking, tooth occlusion, and the structure of the tooth supporting tissue and aesthetics.¹

Bad habit is defined as stereotypical repetitions of the functions of the mastication system, which differ qualitatively and quantitatively from their physiological functions. Bad habits usually happen quietly so that children do not realize that they often do this. The habit is initially carried out in a conscious state, but repetition results in decreased awareness and motor response. Eventually the habit is fully formed and becomes part of the mind's routine, making it more difficult to get rid of.²

Bad habits can be divided into two main groups: acquired oral habits and compulsive oral habits. Acquired oral habit is a learned behavior that can be stopped easily as the child grows older but the child can break the behavior and start with other habits. Compulsive oral habit is a behavior in children that is hard to lose, but if the child

continues to be pressured into stopping the bad habit, it will make the child anxious and worried.² Oral bad habits are habits that last at least six hours a day. If the frequency is high enough with sufficient intensity it can cause malocclusion because the teeth are an integral part of the surrounding structures such as chewing muscle tissue, jawbone, and face which have a close and reciprocal relationship. So growth and development disorders in these structures can affect the arrangement of teeth, and vice versa. Habits in the oral cavity can affect hard tissue (teeth, alveolar bone), tooth supporting tissue (gums, periodontal ligaments), and other oral mucosa (tongue, lips, cheeks, palate, etc.).³ Oral bad habits are normal in children aged less than six years and can stop on their own in children aged less than six years. If the oral bad habits persist after the age of six years, they can cause abnormalities in the dentofacial structure such as malocclusion, facial deformity, and deformity of the palate. Oral bad habits that still persist in children over six years of age can be caused by an abnormality in bodily functions and psychological disorders due to emotional stress that occurs as the result of psychological stress.³ Bad habits are common in children with normal psychological status, but can also occur in

children with developmental problems, emotional difficulties, or physical disorders.² Bad oral habits are often distributed as a cause or risk factor for various types of malocclusion, be it on open bite, with the maxillary incisors tip facially, the mandibular incisors lingually, and the eruption of some of the incisors is obstructed, causing increased overjet and decreased overbite. There is also an increased prevalence of posterior crossbite with the use of pacifiers.⁴

In dentistry, the irregular arrangement of the teeth and the abnormal relationship between the upper and lower jaws is called a malocclusion. Malocclusion is the irregular or abnormal relationship between the teeth when the upper and lower jaws occlude.³ Malocclusion is a form of relation between the upper and lower jaws that deviates from the standard form in which it is considered normal, malocclusion can be caused by an dentofacial imbalance. Malocclusion is a fairly large dental and oral health problem in Indonesia and its prevalence is still very high, around 80% of the population and is in the third place after dental caries and periodontal disease.¹

The prevalence of malocclusion in Indonesia is still high, which is around 80%. The prevalence of thumb sucking in children ranges from 13-45%, about 80% of babies suck their thumbs until around 18 months of age, but this habit is still found in preschoolers, even up to 6 years of age.³ Malocclusion caused by bad habits is increasing from 21.5% at 3-4 years of age to 41.9% at 12 years of age. Reported incidence varies between 39% -93%, this proves that the majority of children have irregular teeth and less than ideal occlusal relationships.⁵ According to some studies, as many as 67-95% of children aged 5-8 years do the habit of tongue thrusting in the long term will be associated with orthodontic problems or speech problems.⁶

The etiology of malocclusion can be classified into general factors and local factors. General factors are those that have no direct effect on teeth. Local factors are factors that have a direct effect on teeth. Bad habits are one of the common factors that play a role in malocclusion. Bad habits include sucking fingers and thumbs, pushing tongue, biting lips and nails, incorrect swallowing, mouth breathing, and bruxism.¹

Oral bad habits are extrinsic factors such as nail biting, biting objects such as pencils and pens, sucking on fingers, sucking on cheeks, and breathing through the mouth. Oral breathing is the habit that most often causes abnormalities in the facial structure and occlusion of the teeth. The habit of breathing through the mouth that lasts during the growth and development period can

affect dento-craniofacial growth. Chronic mouth breathing causes abnormalities in the muscles around the mouth, which can promote the development of malocclusion.⁷

The habit of breathing through the mouth is a breathing disorder. Breathing is one of the vital functional mechanisms in the human body which is physiologically carried out by inhaling oxygen through the nose. The mouth, which can also be used as a way in and out of air, is used as a substitute for the function of the nose by children who have the habit of breathing through the mouth. Children with prolonged oral breathing habits, especially during the development of the face, may result in facial deformities, tooth malposition, and abnormal bites or malocclusion. The habit of breathing through the mouth can result in facial shapes and a characteristic type of malocclusion. Children with oral breathing tend to develop anterior open bite, large overjet, high and narrow palate, protrusive maxillary incisors associated with Class II Division 1 Malocclusion, retrusion of mandibular anterior teeth, and short upper lip and incompetent lip type.⁸ The habit of sucking on things including fingers, which do not provide nutritive value (non-nutritive) is often considered normal. However, prolonged sucking habits will result in malocclusion. This situation can occur due to a combination of direct pressure from the thumb or other fingers and changes in the pressure pattern of the lips and cheeks at rest. The pressure on the cheek at the corner of the mouth is the highest pressure. The pressure of the cheek muscles against the posterior maxillary teeth increases due to the contraction of the buccinator muscles at the same time during sucking, thus giving the risk of the maxillary arch becoming V-shaped, narrow in size and deep.² The result of the thumb sucking habit is the occurrence of anomalies in the location of the teeth and the connection of the jaw, it can affect the normal growth of the jaw, interfere with cranial growth, and the physiology of occlusion to social interactions.⁸

Tongue thrusting is the habit of sticking the tongue forward and pressing against the teeth at rest, during speaking or swallowing. This habit can come up, among others, due to enlarged tonsils or tonsils, breathing through the mouth, narrowed upper dental arches, and a large tongue or due to psychological factors.³ This habit is also common, among others, due to enlarged tonsils or tonsils, narrowing of the upper dental arch, a large tongue or psychological factors. Tongue thrusting causes an imbalance of the mouth muscles which eventually results in malocclusion, in which the incisors are pushed

forward with an open bite. The habit of sticking out the tongue is usually done when swallowing.⁵ Bruxism is a chronic habit of clenching the jaw and grinding the teeth that occurs in children, especially children under five years. Bruxism occurs most often during a deep sleep at night, it may also occur when the child is stressed or afraid. Bruxism is a parafunctional activity caused by reflex chewing, but this is not the result of learning activities. Chewing is a complex neuromuscular activity controlled by reflex neural pathways, of which the brain is the supreme controller. During sleep, this section is still active even though the central control is not active, it is in this phase that bruxism occurs.⁹

Other bad habits that affect babies or children include sleeping on one side of the face or sleeping on the arm as a pillow. This habit in infants or children who are experiencing active growth can cause facial asymmetry, namely: imbalance of the left side and right side of the face. Facial asymmetry will ultimately affect the aesthetics of the child's face and this is permanent until adulthood if the habit is not stopped.³ Knowledge of children's dental health is a must for a mother for the development and growth of good children's teeth. The knowledge and the ability of parents in maintaining children's dental health can be influenced by several things, including age, education, socio-economic status, experience, mass media and environmental information.¹⁰

MATERIAL AND METHOD

The design of this scientific paper is literature study. Literature study is a method of gathering relevant study topics from various sources. Literature source used in the making of this scientific paper is obtained through online search engine providing free journal articles in PDF format, such as: Google Scholar, Research Gate

DISCUSSION

Oral habits are habits that can cause changes in occlusal relationships, such as finger sucking, mouth breathing, lip sucking and biting, pushing the jaw forward, pushing the tongue, or biting nails. Bad habits are things that are considered as a causal factor that tends to lead to the development of abnormal forms.

One of the literature that looks at the relationship of bad habits to the incidence of malocclusion in children, entitled the description of bad habits and the incidence of malocclusion in students of elementary school of 19 Pemecutan conducted by Susanto F. Kd., *et al*, concluded that the most dominant bad habit done by elementary school of 19 Pemecutan students is thumb or finger

sucking. This is in accordance with Sisti's research, with 12% of children still have a bad habit of thumb sucking at the age of 9 years and 2% at 12 years of age. Research conducted by Aria shows that the habit of sucking on the finger, especially the thumb, is quite common among children, and the prevalence ranges from 13-45%. So this study concluded that there is a relationship between bad habits in the oral cavity and the incidence of malocclusion.^{11,12,13}

In another study that looked at the relationship between bad oral breathing habits and the severity of malocclusion using the Handicapping Malocclusion Assessment Record (HMAR) index conducted by Feroza AN, *et al* obtained results from 60 samples examined in the group with the most frequent non-mouth breathing mild malocclusion was 70%. In the group with the habit of breathing through the mouth the most severe malocclusion occurred, namely by 80%. This is in line with the research of Moimaz SAS, *et al*, which states that oral habits such as breathing through the mouth can increase the occurrence of malocclusion.^{14,15}

The next research that discusses the habit of tongue thrusting, thumb sucking and premature loss of the occlusion status of elementary school students in Makassar city conducted by Samad R, *et al*, of 203 students who met the criteria for male students had more bad habits than the female students sample, a sample of 103 male students (51.9%) and 100 female students (48.1%). In the results of this study, it was found that all subjects who experienced malocclusion were 64.8%, more than half of the total sample of elementary school students examined in the city of Makassar. The results of this study showed that the 51 students with a percentage of 17.7% had a thumb-sucking habit, and the most dominant occurred in malocclusion Class I type 2 and Class II division 1. There was a significant relationship between thumb sucking habits and types of malocclusion of elementary school students in Makassar city. Research conducted by Hayder, *et al* is the same as this study. Research on students aged 6-12 years in the city of Summawa reported 18.7% of children with thumb sucking habits and more dominant in class II division 1 malocclusion. shows the relationship between ATTS and malocclusion, it was found that 8.3% of elementary school students in Makassar city have ATTS habits and the most dominant occurs in Class I type 2 malocclusion and Class II division 1 malocclusion. Makassar city.^{16,17}

A study that discusses the prevalence of malocclusion and bad habits in Down syndrome children aged 6-18 years, conducted by Salmiah S, *et al*, found that tongue thrusting was the most

common bad habit for Down Syndrome children, which was 41.46%. These results are consistent with the prevalence of Down Syndrome children in Chennai in 2008, which is 41.2%. The next bad habit is mouth breathing with a prevalence of 40.24%. This figure is very different from the results of the study by Oliveira, *et al* which only obtained 9% as the result because in the study in Brazil, the majority of the sample had undergone tonsil and adenoid surgery due to upper airway obstruction resulting in a low prevalence of mouth breathing. This proves that the Down Syndrome children are not yet fully able to change their mouth posture, thus leading them to return to the habit of mouth breathing. In this study also explained, bruxism in Down Syndrome children was 37.8%. The results in this study are close to those of the research conducted by Bauer, *et al* with a percentage of 33.3%. This is due to the uncertain etiology of bruxism, still in the form of risk factors ranging from genetic, psychological, neurological, systemic factors, and social conditions.^{18,19,20,21}

In the study of Hardiyanti S, *et al*, which discussed the relationship between pacifying

habits in children aged 3-5 years against the occurrence of malocclusion of 35 kindergarten students aged 3-5 years in the city of Makassar, the frequency of breastfeeding habits in the study was obtained by 15 people who have the frequency of the habit of using the pacifier 5 times a day. From the data, it was found that the variable with the lowest influence was the frequency variable with a coefficient value of 0.234, which means that if the frequency variable increases by one point, the malocclusion variable will increase by 0.234 points or in other words, the longer the frequency, the greater the severity of the malocclusion. However, the duration of pacifying had more effect on the occurrence of malocclusion than the frequency of the habit. So this study concludes that there is a relationship between children who have the habit of pacifying in 3-5 years of age and the occurrence of malocclusion. The longer the duration of the child's pacifying habit, the more severe the malocclusion will be.^{22,23,24,25,26,27,29}

No.	Author and Journal Title	Year	Results and Conclusion
1.	Susanto F.Kd., <i>et al</i> Description of Bad Habits and Incidents of Malocclusion in elementary school of 19 Pemecutan students Journal: Bali Dental Journal	2019	Results: respondents who had bad habits were 23 people (26.4%). Respondents who had bad habits and experienced malocclusion were 13 people (16.7%). Based on statistical tests using the chi square test, the value of $p = 0.002$ ($p < 0.05$), which means that there is a relationship between bad habits and the incidence of malocclusion in elementary school of 19 Pemecutan. Conclusion: There is a relationship between bad habits in the oral cavity and the incidence of malocclusion among elementary school of 19 Pemecutan students.
2.	Feroza A.N, <i>et al</i> The Relationship between Bad Habit of Breathing Through the Mouth and the Severity of Malocclusion at Junior High School of 4 Banjarbaru and Senior High School of 4 Banjarbaru Journal: Dentino Journal Dentistry	2017	Results: severe malocclusion occurred in the group with the habit of breathing through the mouth as many as 24 people, while in the group with the habit of not breathing through the mouth as many as 9 people. Statistical analysis with the Lambda test obtained a significance value of 0.0222 (p -value < 0.05). Conclusion: There is a significant relationship between bad oral breathing habits and the severity of malocclusion
3.	Samad R., <i>et al</i> The Relationship between the Habit of Pushing the Tongue, Sucking the Thumb and Premature Loss on the Types of Malocclusion of Elementary School Students in Makassar City	2016	Results: The malocclusion of male students was due to the habit of pushing the tongue of 22 students (59.5%) and female students 15 students (41.5%). Male students whose malocclusion was due to thumb-sucking habit were 31 students (60.7%) and 20 female students (39.3%). Male students whose malocclusion was due to premature loss were 50 students (43.4%) and female students 65 students (46.6%). For the habit of pushing the tongue and

	Journal: Hasanuddin University Public Dental Health Department		sucking the thumb, the most dominant malocclusions were Class I Type 2 and Class II Division 1 malocclusions, while premature loss was the most dominant in Class I Type 1 and Class I Type 3 malocclusions. Conclusion: There is a significant relationship between Anterior Tongue Thrust Swallow (ATTS), thumb sucking, premature loss and the type of malocclusion. All bad habits have the same effect on malocclusion.
4.	Salmiah S., et al Description of Malocclusion and Bad Habits of Patients with Down Syndrome Age 6-18 Years in Special Schools in Medan City Journal: Dentika Dental Journal	2016	Results: The prevalence of malocclusion based on the Angle classification in Down Syndrome children aged 6-18 years in special schools in Medan was 31.71% of the children had a Class I molar relationship, 3.66% Class II, and 48.78% Class III. The most common form of malocclusion was anterior cross bites, namely 42.68%, followed by crowding 39.02%, anterior open bites 23.17%, and posterior cross bites 21.95%. The highest bad habits were tongue thrusting, namely 41.46%, mouth breathing 40.24%, bruxism 37.8%, finger sucking 36.58%, and nail or finger biting 21.95%. Conclusion: This study shows that the high prevalence of these bad habits causes a high prevalence of malocclusion in people with Down Syndrome.
5.	Hardiyanti S., et al Relationship of Non-nutritive Sucking Habit Towards to Malocclusion to the Children Aged 3-5 Years Journal: Makassar Dental Journal	2020	Results: Correlation test of the relationship between pacifying habits in children aged 3-5 years and the severity of malocclusion showed a significant effect ($p < 0.05$). The correlation between the two is 0.496 which means it is a moderate correlation. The effect of the test with linear regression between the duration of pacification and the presence of malocclusion showed a significant effect ($p < 0.05$). Conclusion: There is an association between children aged 3-5 years who have a seductive habit of malocclusion. The longer the duration of pacification, the more severe the malocclusion was.
6.	Saitoh I., et al An Exploratory Study of the Factors Related to Mouth Breathing Syndrome in Primary School Children Journal: Elsevier	2017	Results: Twenty-six of the 44 statements were selected, and they were classified into seven factors. Factors 1-7 are defined as "incompetent lip seal", "diseases of the nose and throat", "eating and drinking habits", "problems with swallowing and chewing", "condition of teeth and gums", and "dry lips". There is also a correlation between these factors themselves. Conclusion: Mouth breathing is categorized according to seven major factors. Since the first factor is defined as "incompetent lip seal", which represents the physical appearance of the mouth breathers and correlates with other factors, they suggest that mouth breathing should consist of 7 factors in total.

CONCLUSION

Based on the analysis of several literatures related to bad habits in children that affect dental health and dental growth in children, several conclusions are obtained that are in accordance with the problem formulations in this literature review, namely:

1. The overview of bad habits in children that impact the tooth and mouth health is thumb sucking habit that can cause malocclusion in children. Malocclusion is formed due to the interaction of various factors i.e. internal and external.

2. Types of bad habits in children that affects tooth growth in children are thumb or finger sucking, inserting foreign objects (pencil biting, pen, and nail biting), tongue thrusting, mouth breathing, and lip sucking or lip biting.

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