

BREASTFEEDING, MALOCCLUSION AND DENTAL HEALTH

Ngena Ria^{1*}, Ameta Primasari²

¹Politeknik Kesehatan Kementerian Kesehatan Medan

²Department of Oral Biology Faculty of Dentistry, University of Sumatera Utara

Email :ngena_ria@yahoo.com

ABSTRACT

Breastfeeding has many health benefits for both the mother and infant, such as ideal nutrition, intake of best enzymes and antibody as well as psychologically attachment to mothers. Infants should be exclusively breastfed to achieve optimal growth, development and health. Breastfeeding is one of the cornerstones of a correct maxillofacial growth because it promotes proper lip seal, mandibular function and tongue correct position against the palate. In addition to the duration, appropriate positioning of the baby's body is important for good attachment and successful feeding. The method for writing this article is based on searches of scientific literature and also the results of research that has been carried out. There are significant differences of all variables measured between the children in babyhood who were breastfed and no breastfed ($p < 0.05$). Based on a lot of literature and the results of research that has been carried out, it is known that giving breast milk provides benefits not only to the baby but also to the mother. Exclusive breastfeeding is the best option in the early stages, it is not an all or nothing option.

Keywords: *Breastfeeding; Risk of malocclusion; Dental health*

INTRODUCTION

Growth and development in childhood needs to be considered attention to forming a healthy, intelligent and qualified future generation (Darling L., 2020; Meek & Noble, 2022). One attempt to maintaining the health of mothers and children is through exclusive breastfeeding. According to the definition the World Health Organization (WHO, 2017), exclusive breastfeeding (EBF) is the situation in which an infant receives only breast milk from his/her mother or a wet nurse for the first 6 months and no other solids or liquids with the exception of drops or syrups consisting of vitamins, minerals, supplements, or medicines (Hossain et al., 2018; Jama et al., 2020; Reddy & Abuka, 2016; WHO, 2017).

Breastmilk is the ideal food for infants. It is safe, clean and contains antibodies which help protect against many common childhood illnesses. According to current conditions, the government is trying to create a program to prevent stunting and TB disease. Exclusive breastfeeding also reduces acute respiratory infection and diarrhea deaths (Gonga, 2021). Children's health conditions are often associated with breastfeeding. The direct cause of nutritional problems in children, including stunting, is low nutritional intake and health status. Dental and oral health

needs to be maintained to prevent stunting because food and drink as a source of human nutritional intake enter the body through the oral cavity, teeth also play a role in chewing food. If dental and oral health problems occur, it will cause the child's appetite to decrease and over time this will cause the child's nutrition to decrease and affect the child's growth and development.

Both the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) recommend recommends optimal breastfeeding (only breast milk and no other food or drink, including water) for the first six months of life, then continued breastfeeding alongside complementary feeding up to the age of two years or beyond (UNICEF, 2018; WHO, 2021). Breastfeeding has many health benefits for both the mother and infant (Giugliani et al., 2015; Salone et al., 2013). The coverage of exclusive breastfeeding in Indonesia has not shown a significant increase over the years. Only 43% of the world's newborns are put to the breast within 1 h of birth and 40% of infants aged 6 months or less are exclusively breastfed. It has been reported globally that only 43% of the world's newborns are put to the breast within 1 h of birth and 40% of infants below the age of 6 months are exclusively breastfed, as mother's milk is the greatest source of nutrition (Jama et al., 2020; Reddy & Abuka, 2016).

According to 2021 Basic Health Research (RISKESDAS), 52.5 percent – or only half of the 2.3 million babies aged less than six months – are exclusively breastfed in Indonesia, or a decrease of 12 percent from in 2019. Breastfeeding initiation rate Early onset (IMD) also fell from 58.2% in 2019 to 48.6% in 2021 (Riskesdas, 2013). Breastfeeding is a determining factor for the development of craniofacial structures due to its nature of the intense exercise of the masticatory muscles, and stimulating the functions of swallowing, breathing, mastication, and phonation. The motions of the lips and tongue during breastfeeding indicate that the child receives milk by a squeeze action. The process of breastfeeding can be acclaimed to be effective only if there is an adequate milk flow to prevent any feeding problems (Chen et al., 2015; Dukuzumuremyi et al., 2020; Hermont et al., 2015; Ria et al., 2016).

METHOD

The method for writing this article is based on searches of scientific literature and also the results of research that has been carried out. Data and information collection techniques are then explained and presented in article form. The research was conducted at Desa Kedai Sianam, Batubara Regency, total sample of 116 children. Inclusion criterias, 3 to 5 years old, teeth required in examining of the arches are seen completed and caries with no any disorder hereditary and willingness as respondent to have examining in dental and teeth moulding.

RESULTS AND DISCUSSION

Based on the research sample obtained, of the 116 children 53.5% were male and 46.6% were female and the majority (86.2%) aged 5 years (Table 1).

Table 1 Frequency Distribution of Respondents Characteristics

CHARACTERISTICS	n	%
Gender		
Male	62	53,4
Female	54	46,6
Total	116	100
Age		
3 tahun	3	2,6
4 tahun	13	11,2
5 tahun	100	86,2
Total	116	100

Table 2. Breastfeeding with Dental Arch

VARIABLE	Measuring Results	No Breastmilk	Breastmilk	Total	p Value
ANTERIOR DENTAL ARCH	≤37.26	23	36	59	0.002*
		74.2%	42.4%	50.9%	
	>37.26	8	49	57	
		25.8%	57.6%	49.1%	
	Total	31	85	116	
		100.0%	100.0%	100.0%	
POSTERIOR DENTAL ARCH	≤35.24	27	33	60	0.000*
		87.1%	38.8%	51.7%	
	>35.24	4	52	56	
		12.9%	61.2%	48.3%	
	Total	31	85	116	
		100.0%	100.0%	100.0%	

The results of the study showed that there was a significant relationship between breastfeeding during infancy and the circumference of the anterior dental arch and the circumference of the posterior dental arch ($p < 0.05$).

DISCUSSION

Breast milk is the best natural milk and has high energy. Breast milk is easy to digest and contains a balanced nutritional composition for baby's growth and development available at any time, ready to serve at room temperature and free from contamination (Adiningrum, 2014; Wiji, 2013). Determinants of breastfeeding duration and exclusivity can be grouped into five broad categories: demographic variables, biological factors, attitudinal characteristics, hospital practices, and social variables (Dieterich et al., 2013).

Result shows that all of measurements of Malay children are larger among those who were breastfed compare to those who were not. Breastfeeding during childhood may generate a positive influence on anterior dental arch and posterior dental arch. According to Sum, et al. (2015), breastfeeding may stimulate the growth in three dimension direction they are sagittal, transversal and vertical (Sum et al., 2015). The research by Catala, et al (2017) pointed out there is a wide difference in anterior dental arch and posterior dental arch between breastfed children compare to those who were not (Boronat-Catalá et al., 2017). Rahmawati (2021), argued among unbreastfed children, the size with of posterior dental arch width shall be smaller compared to those who were breastfed (Rahmawati et al., 2021). American Pediatric states that dental health benefit for infants (Pediatric, 2023a, 2023b).

Breastfeeding initiation rate Early onset (IMD), is well-known for its nutritional benefits, can actually have a major impact on baby's future oral health.

Developing strong teeth

Breastfeeding can help baby build better bones, and that includes stronger teeth. A study published in the International Breastfeeding Journal showed that children at age 8 who were breastfed for 3 months or longer had a stronger bone density than those who were breastfed less than 3 months, or not breastfed at all. Low bone density in the teeth and jaws can pose a variety of health risks, including fractures and permanent tooth loss. Of course, this does not mean that babies who are not breastfed will encounter these issues. Breastfeeding simply serves as a foundation in helping to prevent them. Human milk contains necessary nutrients for healthy teeth development such as phosphate, calcium, and vitamins A, C, and D. For hydroxyapatite crystals to form properly, calcium and phosphorus are necessary. So, deficiency in the previous nutrients can have an effect on tooth development (Ballard & Morrow, 2013; Spence, 2017).

Improving tooth alignment

There is a clear link between babies who were breastfed and proper tooth alignment. Breastfeeding had a protective effect on posterior cross-development. Breastfeeding can be seen

as a natural orthopaedic appliance that promotes good craniofacial development, as the movements produced by the tongue and mandible during the suction of breast milk stimulate a better maxillary and mandibular growth (Agarwal et al., 2016; Chen et al., 2015).

Decreasing tooth decay

Breastmilk also contains antibodies that help counteract the effects of tooth decay (Laksmiastuti et al., 2017). Previous studies showed that prolonged breastfeeding increases the risk of caries (Meijeren-van Lunteren et al., 2021).

Pediatric Dentistry as the Building Block of Oral Health

Breastfeeding can have many amazing benefits for child's oral health. We know that breastfeeding is a very personal decision, and whether will choose to breastfeed or not.

Breastfeeding After Your Baby Gets Teeth

Baby's first tooth probably will appear after 6 months. Many nursing parents decide that it's time to stop breastfeeding when they first notice a tooth. Usually, this is because the baby has nipped the breast at the end of a feeding session. Or, the nursing parent fears they will be bitten soon. Yet many babies with teeth (or those who are teething) never bite when breastfeeding. An actively nursing baby will not bite because their tongue covers their lower teeth. A baby who nips the breast as they start to pull away near the end of a feeding can be taught to stop.

CONCLUSION

Breastfeeding will stimulate the dental arch, which will influence the size of dental arch which is the main factor for the achievement of proper dental occlusion and dental health.

ACKNOWLEDGEMENT

The researchers would like to thank Medan Health Polytechnic of Ministry of Health and all related parties who have provided the opportunity for researchers to be able to take part in the administrative selection and selection of research proposal substances until the research is carried out.

REFERENCES

- Adiningrum, H. (2014). *ASI Eksklusif. Cetakan Pertama: 110-22*. Salsabila Pustaka Alkautsar Group.
- Agarwal, S. S., Sharma, M., Nehra, K., Jayan, B., Poonia, A., & Bhattal, H. (2016). Validation of Association Between Breastfeeding Duration, Facial Profile, Occlusion and Spacing: A Cross-

Sectional Study. *Int J Clin Pediatr Dent*, 9, 162–6. <https://doi.org/10.5005%2Fjp-journals-10005-1356>.

Ballard, O., & Morrow, A. L. (2013). Human Milk Composition: Nutrients And Bioactive Factors. *Pediatr Clin*, 60, 49–74. <https://doi.org/10.1016%2Fj.pcl.2012.10.002>.

Boronat-Catalá, M., Montiel-Company, J. M., Bellot-Arcís, C., Almerich-Silla, J. M., & Catalá-Pizarro, M. (2017). Association Between Duration of Breastfeeding and Malocclusions In Primary and Mixed Dentition: A Systematic Review and Meta-Analysis. *Sci Rep*. <https://doi.org/https://dhttps://doi.org/10.1038%2Fs41598-017-05393-y>.

Chen, X., Xia, B., & Ge, L. (2015). Effects of Breast-Feeding Duration, Bottle-Feeding Duration And Non-Nutritive Sucking Habits on The Occlusal Characteristics of Primary Dentition. *BMC Pediatr*, 15, 46. <https://doi.org/10.1186/s12887-015-0364-1>

Darling L. (2020). Implications For Educational Practice of The Science of Learning and Development. *Applied Developmental Science*, 24(2), 97–140,. <https://doi.org/10.1080/10888691.2018.1537791>.

Dieterich, C. M., Felice, J. P., O’Sullivan, E., & Rasmussen, K. M. (2013). Breastfeeding and Health Outcomes for The Mother-Infant Dyad. *Pediatr Clin North Am*, 60(1):31-4. <https://doi.org/10.1016%2Fj.pcl.2012.09.010>

Dukuzumuremyi, J. P. C., Acheampong, K., & Abesig, J. (2020). Knowledge, Attitude, and Practice of Exclusive Breastfeeding Among Mothers In East Africa: A Systematic Review. *Int Breastfeed J*, 15, 70. <https://doi.org/10.1186/s13006-020-00313-9>

Giugliani, E. R., Horta, B. L., Mola, C. L., Lisboa, B. O., & Victora, C. G. (2015). Effect of Breastfeeding Promotion Interventions On Child Growth: A Systematic Review And Meta-Analyses. *Acta Paediatrica*. <https://doi.org/10.1111/apa.13160>.

Gonga, V. N. (2021). Relationship of Exclusive Breastfeeding with History of Acute Respiratory Infection (ARI) in Children Aged 0-24 Months in Siwalima Village in 2021. *Bioscientia Medicina: Journal Of Biomedicine & Translational Research*, 6(2), 1399–1404. <https://doi.org/10.37275/bsm.v6i2.450>.

Hermont, A. P., Martins, C. C., Zina, L. G., Auad, S. M., Paiva, S. M., & Pordeus, I. A. (2015). Breastfeeding, Bottle Feeding Practices and Malocclusion In The Primary Dentition: A Systematic Review of Cohort Studies. *Int J Environ Res Public Health*, 12(3), 3133–51. <https://doi.org/10.3390/ijerph120303133>.

Hossain, M., Islam, A., Kamarul, T., & Hossain, G. (2018). Exclusive breastfeeding practice during first six months of an infant’s life in Bangladesh: a country based cross-sectional study. In

BMC Pediatr (Vol. 18, Issue 93). <https://doi.org/doi.org/10.1186/s12887-018-1076-0>.

Jama, A., Gebreyesus, H., Wubayehu, T., Gebregyorgis, T., Teweldemedhin, M., Berhe, T., & Berhe, N. (2020). Exclusive breastfeeding for the first six months of life and its associated factors among children age 6-24 months in Burao district, Somaliland. *Int Breastfeed J*, 30;15(1):5. <https://internationalbreastfeedingjournal.biomedcentral.com/articles/10.1186/s13006-020-0252-7>

Laksmiastuti, S. R., Budiardjo, S. B., & Sutadi, H. (2017). Breastfeeding and Dental Caries Risk in Children: A systematic Review for Pediatric Dentistry. In *Pertemuan Ilmiah Nasional Ilmy Kedokteran Gigi Anak ke-10*.

Meek, J. Y., & Noble, L. (2022). Breastfeeding and the use of human milk. *Pediatrics*, 129, 827–841. <https://doi.org/10.1542/peds.2011-3552>

Meijeren-van Lunteren, A., Voortman, T., Elfrink, M., & Wolvius, E. (2021). Breastfeeding and Childhood Dental Caries: Results From A Socially Diverse Birth Cohort Study. *Kragt L.Caries Res*, 55(2), 153–161. <https://doi.org/10.1159/000514502>.

Pediatric, A. A. (2023a). *Breastfeeding After Your Baby Gets Teeth*.

Pediatric, A. A. (2023b). *Why Breastfeed: Benefits for You & Your Baby*.

Rahmawati, A. D., Arguni, E., Sudarso, I. S. R., & Pramono, D. (2021). Between Frequencies and Durations of Bottle Feeding Towards Maxillary Dental Arch Size in 7-9-Year Old Children. *Advances in Health Sciences Research*, 33, 177–181. <https://doi.org/10.2991/ahsr.k.210115.037>

Reddy, S., & Abuka, T. (2016). Determinants of exclusive breastfeeding practice among mothers of children under two years old in Dilla Zuria District. *Journal of Pregnancy and Child Health*. <https://doi.org/>. <https://10.1159/000514502>

Ria, N., Sutadi, H., Primasari, A., & Elyanoer, P. (2016). Association between Breastfeeding and Dentocraniofacial Growth and Development among 3-5 Years Old Children in Two Ethnic Group of North Sumatera. *Journal of Biology, Agriculture and Healthcare*, 6(14), 16–23.

Riskesdas. (2013). *Health Research and Development Agency, Ministry of Health of the Republic of Indonesia*. RI Ministry of Health. <https://www.litbang.kemkes.go.id/laporan-riset-kesehatan-dasar->

Salone, L. R., Vann, W. F., & Dee, D. L. (2013). Breastfeeding an overview of oral and general health benefits. *J Am Dent Assoc*, 144, 143–51. <https://doi.org/10.14219/jada.archive.2013.0093>

Spence, J. E. (2017). *Deciduous Tooth Emergence, Maternal and Infant Condition, and Infant Feeding Practices in the Brazilian Amazon (Doctoral Dissertation)*. The Ohio State University.

Sum, F. H. K. M. ., Zhang, L., Ling, H., Yeung, C., Li, K., HM, W., & Y, Y. (2015). Association

of Breastfeeding and Three-Dimensional Dental Arch Relationship in Primary Dentition. *BMC Oral Health*, 15(30), 1–11. <https://doi.org/10.1186/s12903-015-0010-1>.

UNICEF. (2018). *Breastfeeding: A Mother's Gift, for Every Child*. <https://www.unicef.org/media/48046/file/UNICEF>.

WHO. (2017). *Guideline: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services*. <https://iris.who.int/bitstream/handle/10665/259386/9789241550086-eng.pdf?sequence=1>

WHO. (2021). *World Breastfeeding Week*. World Breastfeeding Week.

Wiji, R. N. (2013). *ASI dan Panduan Ibu Menyusui*. Yogyakarta: Nuha Medika