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# Can Exclusive Breastfeeding Prevent Stunting in Lower Middle-income Countries (LMIC)?: A Systematic Review

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A R T I C L E I N F O

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A B S T R A C T

Stunting, a nutritional concern, exerts adverse effects by influencing the physical and functional attributes of a child's body, contributing to elevated rates of child morbidity. Globally, the prevalence of stunting remains considerably high, registering at 22.2% in 2017, with approximately 55% of affected children in Asia and 39% in Africa**.** To Evaluate the connection between exclusive breastfeeding and stunting rates in lower middle-income countries. The research design was a systematic review. Article searches were conducted using Google Schoolar, Pubmed, Science Direct, and Scopus databases. The keywords used were "Exclusive Breastfeeding OR Lactation AND Stunting" and "Exclusive Breastfeeding OR EBF OR Lactation AND Stunting". Inclusion and exclusion criteria were used when selecting article titles and abstracts. The study encompassed a total of 9,949 and 16 articles for analysis. Exclusive breastfeeding provides adequate calories to fulfill the growth requirements of toddlers. Consequently, toddlers who do not exclusively breastfeed are at a higher risk of experiencing stunting. Among the thirteen articles examined in this research, an association between exclusive stunting and breastfeeding was consistently observed. Conversely, three articles conveyed no discernible correlation between exclusive breastfeeding and stunting. Furthermore, these articles highlighted the limited advantages of exclusive breastfeeding in preventing stunting. Toddlers who were not exclusively breastfed exhibited a higher probability of experiencing stunted growth, demonstrating a clear connection between the occurrence of stunting and exclusive breastfeeding

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## INTRODUCTION

Stunting, defined as a condition where a child's physical growth is inappropriate for their age, is often experienced by children under five years old due to long-term malnutrition. This condition is identified by the length-for-age index (PB/U) or height-for-age index (TB/U), with a z-score of less than -2 SD(Sumardiyono, 2020). The process of stunting begins even during pregnancy and only becomes apparent when the child reaches the age of two. The impact of stunting is not only limited to nutritional health issues, but also affects the child's body functions and functional abilities. In addition, stunting also increases the risk of childhood diseases. According to the World Health Organization (WHO), rapid and appropriate treatment of stunting is crucial to overcome its negative impact on children's growth and development(Handayani et al., 2022).

Long-term malnutrition that leads to stunting is often invisible early in life, but has a long-term impact on children's growth and health. The mismatch of physical growth to a child's age, as measured by length and height indices, is a key marker of stunting using a z-score of less than -2 SD(Sumardiyono, 2020). Various factors, both direct and indirect, play a role in child stunting. Direct factors such as exclusive breastfeeding, infection-prone health conditions, food intake, and birth weight can influence stunting. While indirect factors such as parental education level, type of employment, and family economic conditions also have a significant impact(Sumardiyono, 2020). Nutrition from birth plays an important role in a child's growth, and failure to practice early initiation of breastfeeding, lack of exclusive breastfeeding, and improper weaning can be factors that lead to stunting(Warnelis & Simamora, 2021). WHO in 2013 emphasized that breastfeeding in infants and toddlers is a factor that promotes stunting, although some findings also show that the benefits of exclusive breastfeeding have limitations in supporting infant growth(Eriksen et al., 2017). The Government of the Republic of Indonesia has issued regulations regarding the provision of Exclusive Breastfeeding PP No. 33/2012, which is the provision of breast milk without adding or replacing it with other foods or drinks given to infants from 0 months of age to 6 months of age(Kemenkes RI, 2018.). Mothers and babies get various benefits from exclusive breastfeeding because breast milk is a natural food for babies, practical, economical, easy to digest, has a fairly ideal nutrient composition according to the baby's digestive abilities and needs, and breast milk supports baby growth, especially height because calcium in breast milk is more efficiently absorbed than food substitutes(Safaah et al., 2022). In relation to the function of breast milk on height, breast milk is often associated with stunting because it is claimed to help prevent stunting.

The high number of stunting cases is one of the serious nutritional problems that still occur in Indonesia(Sandjojo EP, 2017). This nutritional problem has the potential to impact the quality of human resources (HR) in Indonesia. The info-graphic data on the incidence of stunting released by the World Health Organization (WHO) in 2016 showed that 162 million children worldwide were stunted. In the Sub-Saharan region, Sub-Saharan Africa and South Asia are regions or regions that account for three-quarters of stunting cases globally. 40% of children under five in Sub-Saharan Africa are stunted and 39%

of stunting cases are in the South Asia region. Meanwhile, in the Southeast Asia region, the stunting rate in Indonesia is above Vietnam. Based on the results of the Southeast Asian Survey (SEANUTS) in 2010-2011, Indonesia has the highest stunting rate in the Southeast Asian region, much higher than Malaysia, Thailand, and Vietnam(Podungge et al., 2021).

Globally, 149.2 million children were stunted in 2020. Africa is one of the regions that has not experienced a decrease in the number of stunted children (WHO, 2021). Stunting affects the majority of children in Low Middle Income Countries (LMICs) such as Indonesia, Uganda, Gambia and Republic of Benin. Long-term impacts of stunting can include reduced human capital quality and risk of future degenerative disease disorders; medium-term impacts can include reduced cognitive ability and intellectuality; and significant short-term risks of mortality and morbidity in infants and toddlers. The problem of stunting that occurs in Low Middle Income Countries (LMICs) will become a health problem that requires serious and sustainable treatment(Budiastutik & Rahfiludin, 2019).

## LITERATURE REVIEW

Systematic Literature Review or what is called SLR is a systematic literature review that aims to to identify, evaluate, and interpret the findings of primary studies. Systematic reviews are very useful in synthesizing the results of relevant research results. Ultimately, the facts that can be provided to policy makers will be more comprehensive and balanced. be more comprehensive and balanced. Basically, systematic reviewis a research method that aims to combine primary research results to provide more accurate and clear facts. In addition, meta-analysis is one way to synthesize the findings of a systematic review. Synthesize the findings using quantitative techniques (statistical techniques). As for how to synthesize the results of the findings can be by using another way, namely by means of qualitative techniques (narrative) called meta-synthesis. Meta-synthesis. Thus meta-analysis is part of the systematic review. However, systematic reviews must be distinguished from non-systematic reviews (traditional review) (Barricelli et al., 2019).

## METHODOLOGY

This systematic review was conducted based on Prisma guidelines. This study was conducted to identify the effect of exclusive breastfeeding on the incidence of stunting in developing countries. The literature search, study selection and data extraction were conducted independently by the authors. Article searches were conducted using Pubmed, Science Direct, Scopus and Google Scholar. The keywords used in this article search were organized using Boolean Operators "AND and OR" to narrow the search results. Keywords used to search for related studies were based on the PICOS search tool, which includes population, intervention, outcome and study type. Based on this, the keywords used in the search for this research article used Indonesian and English, namely "Exclusive Breastfeeding OR Lactation AND Stunting" and "Exclusive Breastfeeding OR EBF OR Lactation AND Stunting".

Article screening was carried out by adjusting the exclusion and inclusion criteria. The inclusion criteria used in this study are: publication year from 2013-2023, available full text, has DOI and ISSN, in English and Indonesian, title and abstract in accordance with the research objectives and quality articles according to the JBI Checklist critical appraisal assessment. Exclusion criteria: duplicate articles, articles whose titles and abstracts do not reflect the research objectives properly, incomplete articles as a whole.

The research team conducted a selection with article titles screened first, articles related to "Exclusive Breastfeeding" and "Stunting" were included. Furthermore, abstracts were examined to determine the type of study, population, intervention, and outcomes related to exclusive breastfeeding and stunting. Articles were excluded if the results of the study were not related to exclusive breastfeeding and stunting in children. Study selection used PRISMA guidelines, conducted in hierarchical order. Full texts of eligible articles were retrieved for further review, and articles in English and Bahasa Indonesia were included. The next step was for the research team to discuss the selected articles together to check if there were any missed criteria or differences of opinion and steps in the selection process.

The quality assessment was conducted using the JBI Checklist Critical Appraisal tool. Assessments for Cross-Sectional Studies, Case-Control and Qualitative studies were designed explicitly because the JBI Checklist has several choices of methods that will be subjected to Critical Appraisal. Scoring on the JBI Checklist by giving a score of "YES", "NO", "UNCLEAR", or "NOT APPLICABLE". Criteria with a "YES" answer received 1 point while other than that received 0 points. Next, the scores were totaled and divided by the total number of questions. Articles with a score of <50% were excluded to avoid bias.

The data were analyzed thematically, the writing team synthesized the data by analyzing the data descriptively. The next step of analysis uses a systematic approach that is described, discussed and concluded into a systematic review

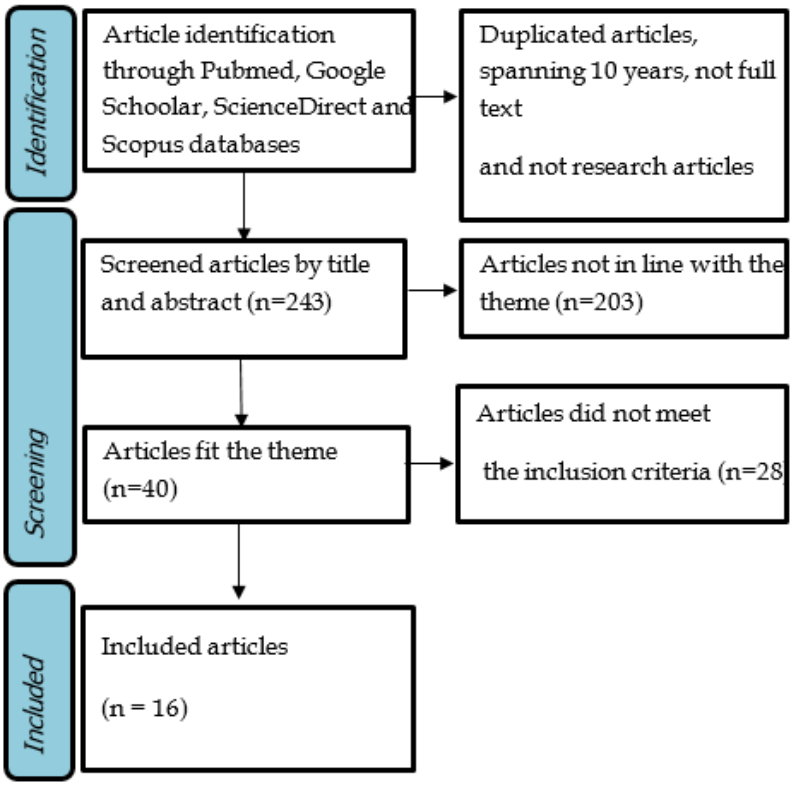


Figure 1. Article Search with PRISMA

**RESULTS**

Table 1. Literature Related to Exclusive Breastfeeding and Stunting

| No. | Researcher, Year | Title | Location | Subject | Method | Results and Conclusions | Score JBI Checklist |
|---|---|---|---|---|---|---|---|
| 1. | (Sumarni et al., 2020) | Exclusive Breastfeeding Associated with the Incidence of Stunting in Toddlers on Mandangin Island, Sampang Regency | Madura, Indonesia | 90 (2-5 Year) | Cross-sectional | The findings from the analysis show that there is a significant correlation between stunting and exclusive breastfeeding in children aged 2-5 years. The P-value of 0.000 < 0.05 and OR of 3.750 indicates that children who are not exclusively breastfed have a 3.7 times greater risk of stunting than those who are exclusively breastfed. | 75% |

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| 2. | (Danso & Appiah, 2023) | Prevalence and associated factors influencing stunting and wasting among children of ages 1 to 5 years in Nkwanta South Municipality Ghana | South Nkwanta, Ghana | 240 (1-5 Year) | Cross-sectional | Exclusive breastfeeding practices were identified as a significant predictor of stunting. Children who were not exclusively breastfed were 11.96 times more likely to be stunted than those who were exclusively breastfed (AOR, 11.96; 95% CI, 1.13-126.11; p=0.0039). | 100% |
| 3. | (Cynthia et al., 2019) | The Relationship between Exclusive Breastfeeding History and the Incidence of Stunting in Children 12-59 Months of Age at Wangaya Hospital, Denpasar City | Denpasar, Indonesia | 64 (12-59 Month) | Cross-sectional | Findings from hypothesis testing through the chisquare test showed a p value of 0.604. From this, it can be concluded that there is no significant | 87,5% |

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| | | | | | | correlation between stunting cases and exclusive breastfeeding in children aged 12-59 months. | |
| 4. | (Kasmita et al., 2023) | Stunting in Toddlers (6-60 Months): Parenting, Mother's Education, Diseases, and Breastfeeding. | Padang, Indonesia | 60 (6-60 Month) | Cross-sectional | Exclusive breastfeeding still had a significant association with stunting (p=0.001). The analysis showed that toddlers who were not exclusively breastfed were 0.067 times more likely to be stunted than those who were exclusively breastfed.. | 100% |
| 5. | (Nurainii et al., 2022) | Intervention of Stunting Aged 0-59 Months Reviewing From Nutrition | Sidoarjo, Bangkalan, dan Sukoharjo, Indonesia | 60 (0-59 Month) | Cross-sectional | The findings showed that exclusive breastfeeding had a significant association | 87,5% |

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| | | | | | | with stunting (p value 0.007 < 0.05) and was a major risk factor for stunting. | |
| 6. | (Safaah et al., 2022) | Relationship between exclusive breastfeeding and stunting among children aged 2-5 years in Indonesia | Tuban, Indonesia | 109 (2-5 Year) | Cross-sectional | The findings showed that exclusive breastfeeding has a significant association with stunting (p value 0.007 <0.05) and is one of the main risk factors for stunting. | 75% |
| 7. | (Toma et al., 2023) | Factors associated with wasting and stunting among children aged 06–59 months in South Ari District, Southern Ethiopia: a community-based cross-sectional study | Southern Ethiopia | 717 (6-59 Month) | Cross-sectional | The study also found that non-exclusive breastfeeding was among the causes associated with stunting (p=0.002). Children who were not exclusively breastfed had almost twice the odds of | 100% |

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| | | | | | | being stunted than other children (AoR=1.81 (1.24.2.65)) . | |
| 8. | (Julianti & Elni, 2020) | Determinants of Stunting in Children Aged 12-59 Months | Bangka Belitung, Indonesia | 205 (12-59 Month) | Cross-sectional | Exclusive breastfeeding history showed a significant association with stunting (p=0.001). Children who were not exclusively breastfed were 53.8% more likely to be stunted. | 100% |
| 9. | (Hadi et al., 2021) | Exclusive Breastfeeding Protects Young Children from Stunting in a a Low-Income Population: A Study from Eastern Indonesia | Nusa Tenggara Timur, Indonesia | 408 (6-24 Month) | Cross-sectional | Exclusively breastfed children from poor families were 20% less likely to be stunted than those not exclusively breastfed. Meanwhile, children who were exclusively breastfed from rich | 100% |

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| | | | | | | families were 50% less likely to be stunted than children who were not exclusively breastfed from poor families. This indicates that exclusive breastfeeding can protect children from low-income families from the risk of stunting. | |
| 10. | (Lokonon et al., 2022) | The role of exclusive breastfeeding and water sources in the reduction of stunting: Mediation and moderation analysis of cross-sectional data among Beninese children aged 6 months. | Republic of Benin | 213 (6 months old) | Cross-sectional | Of the total sample, 16% of children were stunted. The study found that children whose mothers did not practice exclusive breastfeeding were 8.7 times more likely to be | 100% |

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| | | | | | | stunted than those who did. | |
| 11. | (Mulian i et al., 2023) | Determinan ts of stunting in children aged 24-59 months: a case-control study | Sigi, Indone sia | 134 (24-59 Mont h) | Case Control | There was a significant correlation between the incidence of stunting and exclusive breastfeedi ng history in children aged 24-59 months. Infants who were not exclusivel y breastfed had a 9.44 times higher risk of stunting (OR=9.44; 95% CI=4.28-20.7). Exclusive breastfeedi ng history plays a major role in child stunting. | 90% |
| 12. | (Saadon g Djuhadi ah et al., 2021) | LBW, exclusive breastfeedin g, family income, and infectious diseases are associated | Makass ar, Indone sia | 60 (24-59 Mont h) | Case Control | Children who consumed formula and mixed foods were 5 times more | 100% |

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| | | with stunting. | | | | likely to be stunted (p=0.015) than those who were exclusively breastfed. This confirms that exclusive breastfeeding is a risk factor for stunting in children aged 24-59 months. | |
| 13. | (Podungge et al., 2021) | Determinant Factors of Stunting in Under-Five Children | Gorontalo, Indonesia | 68 (24-59 Month) | Case Control | Findings from this study confirmed a significant association between stunting and exclusive breastfeeding among children aged 24-59 months in the study area (p=0.000). Children who were not exclusively breastfed were 14.2 times more likely to be | 100% |

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| | | | | | | stunted than those who were exclusively breastfed. | |
| 14. | (Tafesse et al., 2021) | Factors associated with stunting among children aged 6–59months in Bensa District, Sidama Region, South Ethiopia: unmatched case-control study | South Ethiopia | 237 (6-59 Month) | Case Control | Inappropriate exclusive breastfeeding is still identified as a risk factor for stunting. Children who were not exclusively breastfed correctly were 2.07 times more likely to be stunted than those who were exclusively breastfed for the first 6 months (AOR=2.07; 95% CI: 1.07-4.01). | 100% |
| 15. | (Fadnes et al., 2016) | Effects of an exclusive breastfeeding intervention for six months on growth patterns of 4–5 year old children in Uganda: the | Eastern Uganda | 765 | Randomized Trial | Exclusive breastfeeding is still inappropriate as a strategy to reduce stunting, because it must look at other aspects | 69,2% |

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| | | cluster-randomised PROMISE EBF trial | | | | such as complementary foods. | |
| 16. | (Eriksen et al., 2017) | Following the World Health Organizations Recommendation of Exclusive Breastfeeding to 6 Months of Age Does Not Impact the Growth of Rural Gambian Infants | Gambia, West Africa | 756 (0-24 Month) | Randomized Trial | This study showed no significant difference between exclusively breastfed and non-breastfed infants in terms of growth and development. Thus, it was concluded that exclusive breastfeeding until 6 months of age has limited benefits in preventing stunting. | 84,6% |

## DISCUSSION

Toddler stunting is a growth failure that occurs in children under five years old or toddlers caused by lack of nutrition and height signs that are not in accordance with their age (Cynthia et al., 2019). Stunting in children can hinder the development of thinking and physical abilities during toddlerhood, potentially even affecting adulthood by reducing work capacity due to reduced muscle mass. In addition, stunting can also increase the risk of pregnancy complications in women later in life (Esfarjani et al., 2013). Exclusive breastfeeding for infants and toddlers is one of the causes of stunting. Breastfeeding is an important component in child development and growth (UNICEF, 2007).

According to the World Health Organization (WHO, 2010), newborns should be breastfed until six months of age. They should not receive any other foods or fluids other than minerals, vitamins, or medications authorized for medical reasons (Warnelis & Simamora, 2021). According to Kumar's research in 2015, breastfeeding is the most suitable way for babies to get nutrients for their growth and development (Kumar & Singh, 2015). The immune system will be enhanced by exclusive breastfeeding, so that the baby is not susceptible to infectious diseases, the child will easily get a good quality protein source from breast milk which can increase the child's immunity.(Cynthia et al., 2019; Indriani et al., 2021). Exclusive breastfeeding has IgA content that is not found in formula milk, so it is very important to meet the nutritional needs of toddlers and prevent stunting (Rahayu, 2023).

Breast milk contains nutrients such as long-chain compound unsaturated fatty acids (LC-PUFA), namely AA and DHA, which are structural components of cell membranes (Gibney MJ et al., 2008). One of the things that can lead to optimal growth and development of infants is the supply of fatty acids during the first 6 months of infancy (Glaser et al., 2011). Fat has been shown to be a very important component of breast milk, which plays an important role in the growth of the infant's central nervous system that cannot be synthesized de novo (Lauritzen & Carlson, 2011). In addition, breast milk contains growth hormones that can help babies grow into a better digestive system and protect them from bacteria and viruses (Kismul et al., 2017). As a result, if not exclusively breastfed from birth to 6 months of age, infants are at risk of stunting because there are findings linking it to infectious diseases in infants (Khan & Islam, 2017).

The majority of infants in developing countries rely heavily on breast milk to survive (Sumarni et al., 2020). The prevalence of stunting in the world is still quite high, in 2017 it reached 22.2% with 55% of stunted children in Asia and 39% in Africa (Kuewa et al., 2021). The number of stunted children in the world in 2020 amounted to 149.2 million children, and the African region has not decreased. This is in line with the explanation from the Indonesian Ministry of Health (2016) according to the Global Report Nutrition 2014, Indonesia is classified in 17 countries out of 117 countries that experience three nutritional problems: wasting, stunting, and obesity (Lestari & Zurrahmi Z R, 2023).

The results of this study obtained several articles from several countries, namely Indonesia, Ghana, Ethipoia, Republic of Benin, Uganda and Gambia.

These countries come from the Asian and African continents where the average country on this continent is an LMIC country or a country with a lower middle income(The World Bank, 2016). LMIC countries are those whose gross national income per capita is around $766-$3,035(The World Bank, 2018). Most studies conducted in several LMIC countries related to the relationship between exclusive breastfeeding and the prevalence of stunting show that exclusive breastfeeding for toddlers can prevent stunting. The study results also explain that toddlers who do not receive exclusive breastfeeding are more likely to be stunted. 13 out of 16 studies in several countries, especially in Indonesia, Ghana, and Ethiopia, stated that breastfeeding has a relationship with stunting and breast milk can prevent stunting. Infants who are not breastfed have poor nutritional intake, resulting in potential stunting(Pramulya et al., 2021). Exclusive breastfeeding is protective against stunting. However, in the short term, it can provide protection against diarrhea and respiratory infections, which have been shown that prolonged infections can lead to stunted toddlers(Horta & Victora, 2013). On this basis, exclusive breastfeeding for toddlers can prevent stunting.

However, there are also some study results in one region of Indonesia, Uganda, and Gambia that state exclusive breastfeeding has no relationship and has limited benefits to the incidence of stunting. Contributing factors to stunting cases in toddlers are not only exclusive breastfeeding. In a study in Riau Indonesia in 2023 related to exclusive breastfeeding with stunting, it was found that there were still toddlers who were not exclusively breastfed but also not affected by stunting. This is in line with the results of a research study in Denpasar Indonesia which found that there was no significant relationship between stunting cases in children aged 12-59 months and exclusive breastfeeding(Cynthia et al., 2019). Similar to research in The Gambia which explains that WHO recommendations for exclusive breastfeeding for 6 months are less effective or have limited benefits on infant growth in rural Gambia(Eriksen et al., 2017).

Based on the results of the study obtained, there are a number of other factors which include the causes of stunting in LMIC countries, namely maternal and prospective maternal nutrition, maternal and paternal knowledge, LBW, parenting patterns, history of exclusive breastfeeding, history of infectious diseases, maternal age, economic level, and sanitation. One study in The Gambia also explained that the lack of effectiveness of exclusive breastfeeding can be due to the micronutrient concentration of the mother's breast milk during the duration of exclusive breastfeeding experiencing nutritional vulnerability. In a study by Allen et al (2012), evidence was found that some micronutrients in breast milk are influenced by the nutritional status and intake of the mother(Allen, 2012). The results of this study have several strengths and weaknesses. First, the results of this study analyze the findings of exclusive breastfeeding with stunting from various countries in the Low Middle-Income Countries (LMIC) category so that the subjects are more diverse or heterogeneous and can describe how exclusive breastfeeding can prevent stunting in LMIC countries. Second, it was found in the study results that several factors can prevent and cause stunting besides exclusive breastfeeding. Third, the weakness

of this study cannot be tested with Meta-Analysis because the results of data exposure for each study vary.

## CONCLUSIONS AND RECOMMENDATIONS

Most research studies show that toddlers who do not receive exclusive breastfeeding are more likely to face stunting and there is an association between exclusive breastfeeding and stunting. However, there are also findings that exclusive breastfeeding is not associated with stunting because exclusive breastfeeding has only limited benefits, so further research is needed.

## FURTHER STUDY

This article can be useful for other researchers to develop research related to stunting and exclusive breastfeeding in LMIC.

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**REFERENCES**

Allen, L. H. (2012). B vitamins in breast milk: Relative importance of maternal status and intake, and effects on infant status and function. Advances in Nutrition, 3(3), 362–369. https://doi.org/10.3945/an.111.001172

Barricelli, B. R., Cassano, F., Fogli, D., & Piccinno, A. (2019). End-user development, end-user programming and end-user software engineering: A systematic mapping study. Journal of Systems and Software, 149, 101–137. https://doi.org/10.1016/j.jss.2018.11.041

Budiastutik, I., & Rahfiludin, M. Z. (2019). Faktor Risiko Stunting pada anak di Negara Berkembang. Amerta Nutrition, 122–126. https://doi.org/10.2473/amnt.v3i3.2019.122-129

Cynthia, Suryawan, W. B., & Widiasa, A. A. M. (2019). Hubungan Riwayat ASI Eksklusif dengan Kejadian Stunting pada Anak Usia 12-59 Bulan di RSUD Wangaya Kota Denpasar. Jurnal Kedokteran Meditek, 25(1), 29–5. http://ejournal.ukrida.ac.id/ojs/index.php/Meditek/indexhttp://ejournal.ukrida.ac.id/ojs/index.php/Meditek/article/view/1733

Danso, F., & Appiah, M. A. (2023). Prevalence and associated factors influencing stunting and wasting among children of ages 1 to 5 years in Nkwanta South Municipality, Ghana. In Nutrition (Vol. 110). Elsevier Inc. https://doi.org/10.1016/j.nut.2023.111996

Eriksen, K. G., Johnson, W., Sonko, B., Prentice, A. M., Darboe, M. K., & Moore, S. E. (2017). Following the world health organization's recommendation of exclusive breastfeeding to 6 months of age does not impact the growth of rural gambian infants. Journal of Nutrition, 147(2), 248–255. https://doi.org/10.3945/jn.116.241737

Esfarjani, F., Roustaee, R., Mohammadi, F., & Esmaillzadeh, A. (2013). Determinants of Stunting in School-Aged Children of Tehran, Iran. In International Journal of Preventive Medicine (Vol. 4, Issue 2). www.ijpm.ir

Fadnes, L. T., Nankabirwa, V., Engebretsen, I. M., Sommerfelt, H., Birungi, N., Lombard, C., Swanevelder, S., Van Den Broeck, J., Tylleskär, T., & Tumwine, J. K. (2016). Effects of an exclusive breastfeeding intervention for six months on growth patterns of 4-5 year old children in Uganda: The cluster-randomised PROMISE EBF trial. BMC Public Health, 16(1). https://doi.org/10.1186/s12889-016-3234-3

Gibney MJ, Margetts BM, Kearney JM, & Arab L. (2008). Gizi Kesehatan Masyarakat (Public Health Nutrition). EGC.

Glaser, C., Lattka, E., Rzehak, P., Steer, C., & Koletzko, B. (2011). Genetic variation in polyunsaturated fatty acid metabolism and its potential relevance for human development and health. In Maternal and Child Nutrition (Vol. 7, Issue SUPPL. 2, pp. 27–40). https://doi.org/10.1111/j.1740-8709.2011.00319.x

Hadi, H., Fatimatasari, F., Irwanti, W., Kusuma, C., Alfiana, R. D., Ischaq Nabil Asshiddiqi, M., Nugroho, S., Lewis, E. C., & Gittelsohn, J. (2021). Exclusive breastfeeding protects young children from stunting in a low-income population: A study from eastern indonesia. Nutrients, 13(12). https://doi.org/10.3390/nu13124264

Handayani, R., Qamariah, N., Munandar, H., Studi, P., Farmasi, D.-I., Kesehatan, I., Palangkaraya, U. M., Kota, P., Raya, K., & Tengah, I. (2022). Analysis Of The Effect Mother's Education Level And Exclusive Breastfeeding On The Event Of Stunting In Children In Province of Central Kalimantan. Jurnal Surya Medika (JSM), 7, 1–9. https://doi.org/10.33084/jsm.vxix.xxx

Horta, B. L., & Victora, C. G. (2013). Short-term effects of breastfeeding … A SYSTEMATIC REVIEW ON THE BENEFITS OF BREASTFEEDING ON DIARRHOEA AND PNEUMONIA MORTALITY …. www.who.int

Indriani, D., Badan, P., Retnoningrum, A. D., Retnoningsih, T., Satria, S., & Nganjuk, B. (2021). Pengaruh Panjang Badan Lahir, ASI Eksklusif, Jumlah dan Pendapatan Keluarga Terhadap Resiko Kejadian Stuntinh Pada Balita. Jurnal Bidan Pintar │Vol, 2(1). https://doi.org/10.30737/jubitar.v2i1.1651

Julianti, E., & Elni. (2020). Determinants of stunting in children aged 12-59 months. Nurse Media Journal of Nursing, 10(1), 36–45. https://doi.org/10.14710/nmjn.v10i1.25770

Kasmita, Tasrif, N., & Santi, T. D. (2023). Stunting in Toddlers (6-60 Months): Parenting, Mother's Education, Infectious Diseases, and Breastfeeding. Kemas, 18(4), 564–570. https://doi.org/10.15294/kemas.v18i4.41433

Kemenkes RI. (n.d.). Profil Kesehatan Indonesia Tahun 2018. Kementrian Kesehatan Republik Indonesia.

Khan, M. N., & Islam, M. M. (2017). Effect of exclusive breastfeeding on selected adverse health and nutritional outcomes: A nationally representative study. BMC Public Health, 17(1). https://doi.org/10.1186/s12889-017-4913-4

Kismul, H., Acharya, P., Mapatano, M. A., & Hatløy, A. (2017). Determinants of childhood stunting in the Democratic Republic of Congo: Further analysis of Demographic and Health Survey 2013-14. In BMC Public Health (Vol. 18, Issue 1). BioMed Central Ltd. https://doi.org/10.1186/s12889-017-4621-0

Kuewa, Y., Sattu, M., Otoluwa, A. S., Yusnita Lalusu, E., & Dwicahya, B. (2021). Hubungan Sanitasi Lingkungan dengan Kejadian Stunting pada Balita Di Desa Jayabakti Tahun 2021 (The relationship between environmental sanitation and the incidence of stunting in toddlers in Jayabakti village in 2021). Public Health Journal, 12(2). https://journal.fkm-untika.ac.id/index.php/phj

Kumar, A., & Singh, V. K. (2015). A Study of Exclusive Breastfeeding and its impact on Nutritional Status of Child in EAG States. Journal of Statistics Applications & Probability An International Journal, 4(3), 435. https://doi.org/10.12785/jsap/040311

Lauritzen, L., & Carlson, S. E. (2011). Maternal fatty acid status during pregnancy and lactation and relation to newborn and infant status. In Maternal and Child Nutrition (Vol. 7, Issue SUPPL. 2, pp. 41–58). https://doi.org/10.1111/j.1740-8709.2011.00303.x

Lestari, R. R., & Zurrahmi Z R. (2023). Pengaruh Riwayat Pemberian ASI Eksklusif Dengan Kejadian Stunting Pada Ibu Balita Usia 6-24 Bulan Di Desa Gading Sari Kecamatan Tapung Tahun 2022. Jurnal Ners, 7(1), 372–377. http://journal.universitaspahlawan.ac.id/index.php/ners

Lokonon, J. H. F., Hounkpatin, W. A., Bodjrenou, S. U. F., Sokadjo, M. Y., Dossou,

N. I., Atchadé, M. N., & Hounkonnou, N. M. (2022). The role of exclusive breastfeeding and water sources in the reduction of stunting: Mediation and moderation analysis of cross-sectional data among Beninese children aged 6 months. Progress in Nutrition, 24(2). https://doi.org/10.23751/pn.v24i2.9954

Muliani, M., Tondong, H. I., Lewa, A. F., Mutmainnah, M., Maineny, A., & Asrawaty, A. (2023). Determinants of stunting in children aged 24-59 months: a case-control study. International Journal of Public Health Science, 12(3), 1287–1294. https://doi.org/10.11591/ijphs.v12i3.22313

Nuraini, I., Iswati, R. S., & Aisyah. (2022). Intervention Of Stunting Aged 0-59 Months Reviewing From Nutrition. Journal of Pharmaceutical Negative Results, 13(4), 700–705. https://doi.org/10.47750/pnr.2022.13.04.094

Podungge, Y., Yulianingsih, E., Porouw, H. S., Saraswati, E., Tompunuh, M. M., Claudia, J. G., Zakaria, R., & Labatjo, R. (2021). Determinant factors of stunting in under-five children. Macedonian Journal of Medical Sciences, 9, 1717–1726. https://doi.org/10.3889/oamjms.2021.6638

Pramulya, I., Wijayanti, F., & Saparwati, M. (2021). Hubungan Pemberian Asi Eksklusif Dengan Kejadian Stunting Pada Balita Usia 24-60 Bulan. In Jurnal Kesehatan Kusuma Husada-Januari.

Rahayu, N. K. (2023). Pengaruh Pemberian ASI Eksklusif Terhadap Kejadian Stunting pada Balita di Desa Tanjung Wangi Cicalengka. Bandung Conference Series: Medical Science, 3(1). https://doi.org/10.29313/bcsms.v3i1.6130

Saadong Djuhadiah, Suriani B, Nurjaya, & Subriah. (2021). BBLR, Pemberian ASI Eksklusif, Pendapatan Keluarga, dan Penyakit Infeksi Berhubungan dengan Kejadian Stunting. Jurnal Kesehatan Manarang, 7, 52–58.

Safaah, N., Yunitasari, E., Efendi, F., Sunanita, S., & Suhartono, S. (2022). Relationship between exclusive breastfeeding and stunting among children aged 2-5 years in Indonesia. Gaceta Medica de Caracas, 130, S1019–S1024. https://doi.org/10.47307/GMC.2022.130.s5.21

Sandjojo EP. (2017). Buku Saku Desa Dalam Penanganan Stunting . Kementrian Desa Pembangunan Daerah Tertinggal dan Transmigrasi.

Sumardiyono, S. (2020). Pengaruh Usia, Tinggi Badan dan Riwayat Pemberian ASI Eksklusif Terhadap Stunting Pada Balita. Medika Respati : Jurnal Ilmiah Kesehatan, 15(1), 1. https://doi.org/10.35842/mr.v15i1.269

Sumarni, S., Oktavianisya, N., & Suprayitno, E. (2020). Pemberian Air Susu Ibu Eksklusif Berhubungan dengan Kejadian Stunting pada Balita di Pulau Mandangin Kabupaten Sumenep Provinsi Jawa Timur. Jurnal Riset Hesti Medan Akper Kesdam I/BB Medan, 5(1). https://doi.org/10.34008/jurhesti.v5i1.174

Tafesse, T., Yoseph, A., Mayiso, K., & Gari, T. (2021). Factors associated with stunting among children aged 6–59 months in Bensa District, Sidama Region, South Ethiopia: unmatched case-control study. BMC Pediatrics, 21(1). https://doi.org/10.1186/s12887-021-03029-9

The World Bank. (2016). World Bank Country and Lending Groups.

The World Bank. (2018). The World Bank Annual Report 2018.

Toma, T. M., Andargie, K. T., Alula, R. A., Kebede, B. M., & Gujo, M. M. (2023). Factors associated with wasting and stunting among children aged 06–59 months in South Ari District, Southern Ethiopia: a community-based cross-sectional study. BMC Nutrition, 9(1). https://doi.org/10.1186/s40795-023-00683-3

UNICEF. (2007). Progres For Children: A World Fit For Children.

Warnelis, E., & Simamora, D. (2021). Pengaruh Riwayat Infeksi dan ASI Eksklusif Terhadap Tumbuh Kembang Ballita Dalam Mencegah Stunting. Jurnal Maternitas Kebidanan, 6(1).

WHO. (2021, May 6). The UNICEF/WHO/WB Joint Child Malnutrition Estimates (JME) group released new data for 2021. World Health Organization (WHO).