

Exclusive breastfeeding and the risk of stunting, what does scientific evidence say?



Lintje Sintje Corputty^a  | Sitti R Latuamury^a  

^aDepartment of Nursing, High School Of Health Science Pasapua, Ambon, Indonesia.

Abstract

Background: Stunting is a global health problem that affects children's physical growth and cognitive development. Exclusive breastfeeding during the first six months of life is believed to reduce the risk of stunting. However, the direct link between exclusive breastfeeding and stunting prevention is still debated, with other factors such as the quality of complementary foods and socioeconomic conditions also affecting. **Methods:** This literature review used systematic searches through PubMed, ScienceDirect, Google Scholar, and Garuda databases, with relevant keywords regarding the relationship between exclusive breastfeeding and stunting. Selected articles must be relevant and published within the last five years, and include studies examining the impact of exclusive breastfeeding on stunting in children under five years of age. **Results:** Out of 440 articles found, ten relevant articles were selected for analysis. Some studies have shown a significant association between exclusive breastfeeding and a reduced risk of stunting in toddlers, but there are also studies that show that environmental and socioeconomic factors play an important role in stunting prevention. **Conclusion:** Exclusive breastfeeding has a key role in preventing stunting, but its success is influenced by various supporting factors such as social support, maternal knowledge, and environmental and socioeconomic conditions. Therefore, stunting prevention must be carried out with a more holistic approach that includes exclusive breastfeeding and improvement of external factors.

Keywords: Exclusive Breastfeeding, Stunting, Child Nutrition, Breastfeeding, Child Health.

1. Introduction

Stunting is one of the global health problems that has an impact on children's physical growth and cognitive development. The World Health Organization (WHO) reports that more than 149 million children under the age of five are stunted due to chronic malnutrition in the first 1,000 days of life (WHO, 2021). Indonesia itself still faces a fairly high stunting prevalence rate, which is around 21.6% in 2022, although various interventions have been carried out to reduce this number (Ministry of Health of the Republic of Indonesia, 2022).

One of the factors that is believed to play an important role in stunting prevention is the exclusive provision of breast milk (breast milk) during the first six months of life. Breast milk contains complete nutrients that support the optimal growth of babies and contain immunological factors that protect babies from various infectious diseases that can worsen nutritional status (Victora et al., 2016). A study conducted by Horta et al. (2018) found that babies who received exclusive breastfeeding had better growth than babies who were given formula or complementary foods before the age of six months. In addition, other studies have also shown that exclusive breastfeeding can reduce the risk of gastrointestinal infections that contribute to malnutrition and stunting (Black et al., 2013)

However, despite many studies that address the benefits of exclusive breastfeeding, the direct link between exclusive breastfeeding and stunting prevention is still debated. Several studies have shown a strong correlation between exclusive breastfeeding and reduced stunting risk (Oddo et al., 2019). Meanwhile, other studies have stated that other factors such as the quality of complementary foods for breast milk, maternal nutritional status, and socioeconomic conditions also have a significant influence on determining child growth (Victora et al., 2016). Therefore, a comprehensive literature review is needed to review the latest scientific evidence regarding the role of exclusive breastfeeding in reducing the risk of stunting.

This literature review aims to explore the existing scientific evidence regarding the link between exclusive breastfeeding and stunting risk, as well as identify other factors that can influence the relationship. Thus, the results of this study are expected to be the basis for policies and intervention strategies in efforts to prevent stunting, especially in developing countries such as Indonesia.

2. Materials and Methods

The method of searching for articles in this literature review is carried out systematically using various databases of trusted scientific journals, namely PubMed, ScienceDirect, Google Scholar, and Garuda (Garba Rujukan Digital - Ministry of Education and Culture of Indonesia). The search was carried out by entering keywords relevant to the research topic, namely "Exclusive Breastfeeding" OR "Breastfeeding" OR "Human Milk" combined with "Stunting" OR "Linear Growth" OR "Chronic Malnutrition" OR "Growth Faltering" using Boolean AND and OR operators. Some of the keyword combinations used include ("Exclusive Breastfeeding" AND "Stunting"), OR ("Breastfeeding" AND "Child Malnutrition") and ("Breastfeeding" AND "Stunting" AND "Prevention"). These keywords are searched in the title, abstract, and keyword of the article to ensure relevance to the research being conducted.

The selection of articles is carried out based on the inclusion and exclusion criteria that have been set. The selected article must be published in a peer-reviewed journal within the last 5 years (2019–2024) to be relevant to the latest research developments. In addition, the article should discuss the relationship between exclusive breastfeeding and the risk of stunting in children under the age of five and be written in English or Indonesian. The types of studies accepted include cross-sectional, cohort, case-control, or clinical trials that analyze the relationship between exclusive breastfeeding and the nutritional status of children. In contrast, articles that are editorial, opinionated, or have no empirical data are excluded. In addition, studies that only discuss social, cultural, or policy aspects without measuring the impact of breast milk on children's physical growth were also not included in this study.

The article selection process starts from initial identification through a search in the database, then screening is carried out on the title and abstract to eliminate irrelevant articles. Articles that pass this stage are then examined in depth in the full-text assessment stage, where the suitability of the content of the article with the focus of the research is critically assessed. Articles that meet the final criteria will be further analyzed for data extraction, focusing on the research method, the results found, and conclusions regarding the relationship between exclusive breastfeeding and stunting risk. With this method, literature review is expected to present a comprehensive synthesis based on the latest scientific evidence.

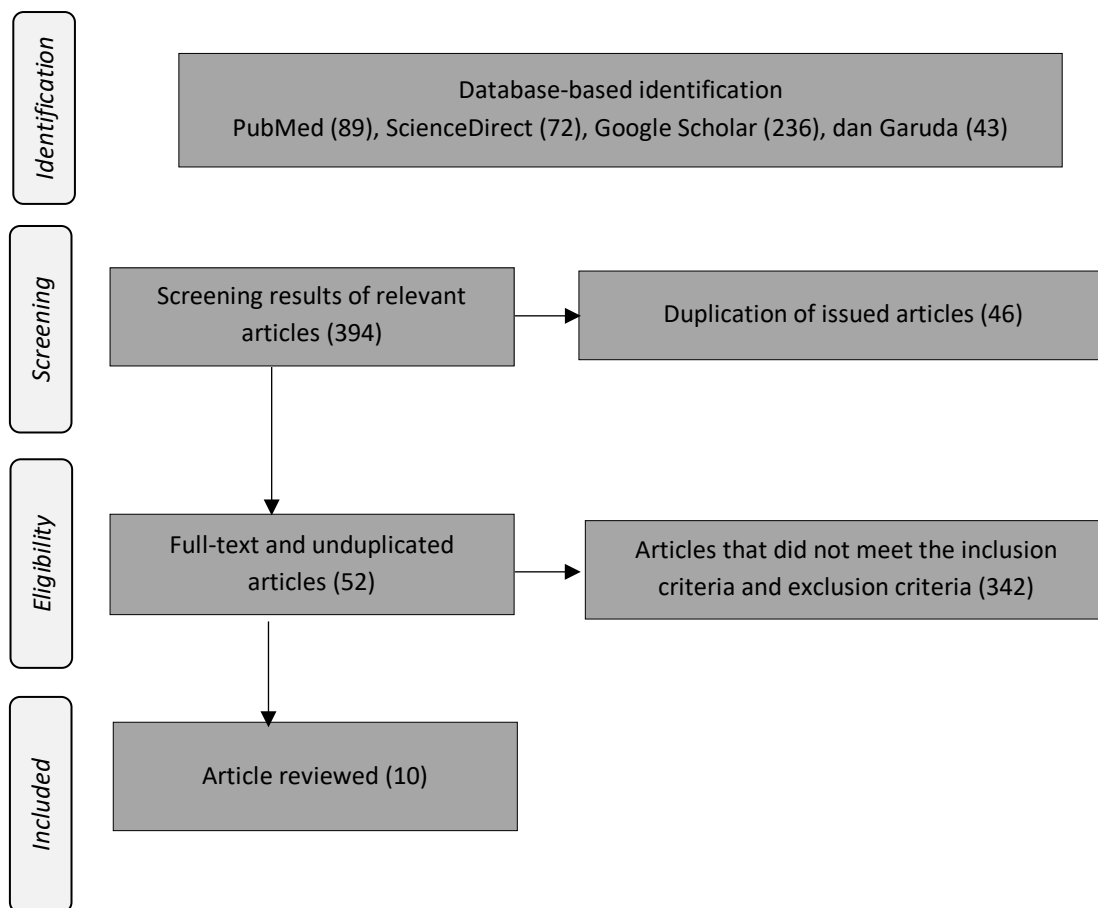


Figure 1. Flowchart

3. Results

3.1 Literature Synthesis: Methods and Findings of Studies on Exclusive Breastfeeding and Stunting

Table 1 Literature Synthesis: Methods and Findings of Studies on Exclusive Breastfeeding and Stunting

No	Heading	Method	Findings
1.	Maternal knowledge regarding antenatal care services, history of exclusive breastfeeding and stunting among toddlers in West Java, Indonesia (Aini et al., 2024)	<p>The research uses a quantitative correlation method.</p> <p>The population consists of 68 families with dwarf toddlers who live in Hamlet III, Sukamulya Village.</p> <p>Total sampling is used to determine the sample size for the study.</p> <p>Secondary data was used for this study.</p> <ul style="list-style-type: none"> The instrument includes a combination of "Environmental Modification through Sanitation, Clean Water, Hygiene and Nutrition for Stunting Prevention" along with research instruments from Khairani (2012) and Fitriani (2021). 	<p>Exclusive breastfeeding during the first six months of a child's life significantly reduces the risk of stunting. In this study, 42.9% of dwarf toddlers were exclusively breastfed, compared to 57.1% who did not. Bivariate analysis revealed a significant relationship between exclusive breastfeeding and stunting (p-value 0.030). This shows that proper exclusive breastfeeding practices can prevent stunting, highlighting the importance of promoting and supporting these practices to improve children's health and development. (Aini et al., 2024)</p>
2.	Exclusive breastfeeding in preventing stunting in toddlers (Angreni et al., 2024)	<ul style="list-style-type: none"> The research uses a quantitative analytical approach with a case-control design using a retrospective method. The population consists of mothers with toddlers aged 12-60 months. Subjects were determined through a simple random sampling technique. The inclusion criteria included mothers with stunted toddlers aged 12-60 months and those who were willing to participate as respondents. Exclusion criteria are set for toddlers suffering from chronic diseases and those with a history of premature birth. A total of 70 toddlers were included in this study, with 35 stunted toddlers in the intervention group and 35 non-stunted toddlers in the control group. 	<p>Exclusive breastfeeding during the first six months of a child's life significantly reduces the risk of stunting. In this study, 42.9% of dwarf toddlers were exclusively breastfed, compared to 57.1% who did not. Bivariate analysis revealed a significant relationship between exclusive breastfeeding and stunting (p-value 0.030). This suggests that proper exclusive breastfeeding practices can prevent stunting, highlighting the importance of promoting and supporting these practices to improve child health and development (Angreni et al., 2024).</p>
3.	The Relationship of Body Weight, Exclusive Breastfeeding, MP-ASI and Energy Intake with Stunting in Toddlers (Silaban et al., 2024)	<ul style="list-style-type: none"> The research uses a descriptive analytical approach with a cross-sectional design. A sample of 92 participants was selected using a simple random sampling technique. Data collection involves measuring body weight for birth weight, administering questionnaires about exclusive breastfeeding and MP-ASI (weaning food), and calculating energy intake using a daily energy requirement calculator. Stunting incidents are assessed through a special questionnaire. 	<p>Exclusive breastfeeding is significantly associated with stunting in toddlers. Research shows that proper breastfeeding practices boost the immune system, reducing the risk of diseases that can interfere with nutritional intake. A p-value of 0.003 confirms this association, highlighting that inadequate breastfeeding can lead to malnutrition and stunting. This study emphasizes that exclusive breastfeeding plays an important role in preventing stunting by ensuring adequate nutrition during the critical growth period in toddlers aged 24-59 months (Silaban et al., 2024).</p>
4.	Determinants of Exclusive Breastfeeding to 0-6 Month Babies in Stunting Handling in The District of Kupang (Ludji, 2024)	<ul style="list-style-type: none"> This study uses a quantitative research design with a cross-sectional approach. The study population consisted of breastfeeding mothers and infants 	<p>Exclusive breastfeeding is essential in preventing stunting, as it provides essential nutrients during the first 0-6 months of life, a critical growth period. The study found a significant relationship between maternal age, education, knowledge, family support, and the role of</p>

		<p>aged 0-6 months from Kupang Regency, East Nusa Tenggara.</p> <ul style="list-style-type: none"> The sample included 75 breastfeeding mothers who met specific inclusion criteria: live birth, willingness to participate, single birth, no disability, and free from comorbidities. Cluster random sampling technique is used to select samples. 	<p>health workers with the practice of exclusive breastfeeding. Insufficient breastfeeding can lead to malnutrition and stunted growth, increasing the risk of stunting. Therefore, promoting exclusive breastfeeding is very important to improve children's health and reduce the prevalence of stunting in areas such as Kupang, East Nusa Tenggara (Ludji, 2024).</p>
5.	The Relationship between Exclusive Breastfeeding and Clean Water with Stunting in Toddlers (Lanita et al., 2023)	<ul style="list-style-type: none"> The research uses a quantitative approach with a cross-sectional design. The total population consists of 1,066 mothers with toddlers in the Simpang Pandan Health Center area. A sample of 73 respondents was selected using a stratified proportional sampling technique. Data collection was carried out through a questionnaire developed through interviews. 	<p>The study showed that there was no significant association between exclusive breastfeeding and the incidence of stunting in toddlers, with a p value of 0.058. Although some toddlers receive exclusive breastfeeding, they are still stunted. Misconceptions among mothers regarding exclusive breastfeeding contribute to this problem, as some introduce supplements too early. In contrast, access to clean water is significantly linked to stunting, highlighting the importance of nutrients and environmental factors in children's growth and development (Lanita et al., 2023).</p>
6.	Relationship of exclusive breastfeeding in the effort to prevent stunting in toddlers at Cidahu Health Center in 2022 (Anisah et al., 2023)	<ul style="list-style-type: none"> The research uses a quantitative approach with an observational research design and case control methods. The case population consisted of mothers with dwarf toddlers aged 24-59 months, totaling 44 toddlers. The control population included mothers with toddlers aged 24-59 months from 8 villages, totaling 271 toddlers. The sample selection was based on a 1:2 ratio, resulting in 44 case samples and 88 control samples, leading to a total sample size of 132. 	<p>Exclusive breastfeeding significantly reduces the risk of stunting in toddlers. The study found a strong association between exclusive breastfeeding and stunting incidence, with a p value of 0.000, indicating statistical significance. Breast milk provides essential nutrients that support optimal growth and development, minimizing the risk of malnutrition. Inadequate breastfeeding can lead to insufficient nutrient intake, contributing to stunting. Therefore, promoting exclusive breastfeeding is essential to prevent stunting and ensure healthy growth in children during their critical early years (Anisah et al., 2023).</p>
7.	The relationship between exclusive breastfeeding history and stunting incidence in toddlers age 24-60 months (Sarida & Lushinta, 2023)	<ul style="list-style-type: none"> This study uses an analytical observational research design with a retrospective approach to determine the relationship between exclusive breastfeeding and stunting incidence among toddlers. A case-control design was used, with the dependent variable being the occurrence of stunting in toddlers and the independent variable being the exclusive breastfeeding history. The population consists of toddlers aged 24-60 months in the work area of the Telen Health Center, totaling 179 toddlers, 36 of whom are stunted and 143 have not. The ratio of case to control samples was 1:1, with 36 stunted toddlers selected through targeted sampling and 36 non-stunted toddlers selected using systematic random sampling. 	<p>Exclusive breastfeeding significantly reduces the risk of stunting in toddlers aged 24-60 months. The study found that among the 35 toddlers who received exclusive breastfeeding, only 3 were stunted, while 33 of the 37 toddlers who were not exclusively breastfed suffered from stunting. This suggests a strong association between exclusive breastfeeding history and stunting incidence, highlighting the importance of adequate nutrition during early childhood for normal growth and development, as well as stunting prevention (Sarida & Lushinta, 2023).</p>
8.	The Relationship between Exclusive Breastfeeding and Stunting Incidents in Candipuro	<ul style="list-style-type: none"> The study used quantitative research, specifically retrospective or case-control designs. 	<p>Exclusive breastfeeding is significantly associated with stunting incidence, as evidenced by a study in Candipuro Village, which found that toddlers who did not receive</p>

	Village (Puspitasari et al., 2023)	<ul style="list-style-type: none"> Data collection for dependent variables is carried out first, focusing on causal variables that occurred in the past. The population consists of stunted toddlers in Candipuro Village, totaling 58 individuals. The sample included toddlers aged 12-60 months who were dwarfed and whose parents agreed to participate. 	exclusive breastfeeding were at higher risk of stunting. While exclusive breastfeeding is essential for optimal nutrition, other factors such as birth weight, maternal nutritional status, and infectious diseases also contribute to stunting. This study emphasizes the importance of exclusive breastfeeding in the first 1000 days of life to reduce the risk of stunting in children (Puspitasari et al., 2023).
9.	The Relationship of Exclusive Breastfeeding to Stunting in Toddlers in Jambangan District, Surabaya, Indonesia (Kusumahati & Herdiani, 2023)	<ul style="list-style-type: none"> This study uses an observational design with a cross-sectional approach. Utilizing secondary data from the Kebonsari Health Center in Surabaya. A total of 3906 toddlers were included in the research sample. 	This study did not find a significant relationship between exclusive breastfeeding and stunting in toddlers in Jambangan Regency, Surabaya, with a value of $p = 0.780$ ($p > 0.05$). Although stunting was observed in 36.8% of exclusively breastfed subjects, it was higher in those who were not exclusively breastfed (42.9%). Research shows that exclusive breastfeeding alone does not reduce the incidence of stunting; Improving socio-economic conditions, education, and infection prevention are also important factors in overcoming stunting (Kusumahati & Herdiani, 2023).
10.	Multifaceted Determinants Of Stunting In Toddlers In The Working Area Of Puskesmas Kerkap, North Bengkulu Regency (Wulandari et al., 2023)	<ul style="list-style-type: none"> The study used a quantitative method with a cross-sectional design. The population consisted of all toddlers in the Kerkap Health Center area in 2018, totaling 969 individuals. The sample included 91 toddlers aged 24-59 months, selected using proportional random sampling. 	Exclusive breastfeeding is significantly associated with the risk of stunting in toddlers. The study showed that exclusive breastfeeding boosted the immune system and nutrient intake, reducing the likelihood of stunting. The study found a significant association ($p = 0.002$) between exclusive breastfeeding and stunting incidence, highlighting that toddlers who did not receive exclusive breastfeeding were at higher risk of stunting. Therefore, promoting exclusive breastfeeding is essential to prevent stunting and ensure healthy growth and development in early childhood (Wulandari et al., 2023).

3.2 Exclusive Breastfeeding and Stunting

Table 1. It shows that several studies show a significant relationship between exclusive breastfeeding and a decrease in the risk of stunting in toddlers. Aini et al. (2024) and Angreni et al. (2024) found that exclusive breastfeeding significantly reduced the risk of stunting, with a value of $p = 0.030$, confirming the importance of exclusive breastfeeding practices during the first six months of a child's life. Similar findings were also obtained by Silaban et al. (2024), who revealed that exclusive breastfeeding can boost the immune system and reduce the risk of malnutrition, with a value of $p = 0.003$. Meanwhile, Anisah et al. (2023) found a very strong association between exclusive breastfeeding and stunting incidence ($p = 0.000$), showing that toddlers who received exclusive breastfeeding had more optimal growth than those who did not. Sarida & Lushinta (2023) also reported that toddlers who received exclusive breastfeeding had a lower risk of stunting than those who did not receive exclusive breastfeeding. In addition, research by Wulandari et al. (2023) shows that exclusive breastfeeding contributes to improving the immune system and optimizing nutrient intake, which has an impact on reducing the risk of stunting ($p = 0.002$). Thus, the existing scientific evidence further strengthens the importance of exclusive breastfeeding as the main strategy in preventing stunting and improving children's health.

Some studies did not find a significant association between exclusive breastfeeding and the incidence of stunting in toddlers. Lanita et al. (2023) reported that although there were toddlers who received exclusive breastfeeding, they still experienced stunting, with a p -value of 0.058. This study shows that environmental factors, such as access to clean water, have a greater role in influencing the incidence of stunting compared to exclusive breastfeeding. Meanwhile, Kusumahati & Herdiani (2023) also did not find a significant relationship between exclusive breastfeeding and stunting, with a p value of 0.780. The results of their study highlight that socioeconomic factors, maternal education levels, and infection prevention efforts are important aspects in overcoming the stunting problem. These findings show that although exclusive breastfeeding has great health benefits, other factors such as environmental and socioeconomic conditions also need to be considered in stunting prevention efforts.

3.3 Factors Supporting the Success of Exclusive Breastfeeding in Preventing Stunting

Table 1. It shows that the success of exclusive breastfeeding in preventing stunting is influenced by various supporting factors. Ludji (2024) found that maternal age, education level, knowledge about exclusive breastfeeding, family support, and the role of health workers play a very important role in ensuring the sustainability of exclusive breastfeeding practices. Mothers with good knowledge and adequate social support tend to be more consistent in providing exclusive breastfeeding to their babies, so that they can reduce the risk of stunting. In addition, Puspitasari et al. (2023) added that other factors such as the baby's birth weight, maternal nutritional status during pregnancy, and the presence of infectious diseases also contribute to the incidence of stunting. This shows that although exclusive breastfeeding has an important role in preventing stunting, other supporting factors must also be considered to ensure optimal growth and development in children.

4. Discussion

4.1 Exclusive Breastfeeding and Stunting

Exclusive breastfeeding has a very important role in reducing the risk of stunting in toddlers, as reflected in various studies. Aini et al. (2024), Angreni et al. (2024), and Silaban et al. (2024) reported that exclusive breastfeeding can significantly reduce the risk of stunting, with p-values of 0.030 and 0.003, respectively. This emphasizes the importance of exclusive breastfeeding during the first six months of a child's life to support optimal growth. Exclusive breastfeeding not only provides the nutrients needed for the baby's growth, but also boosts the immune system which can reduce its susceptibility to infections and malnutrition, both of which can contribute to stunting.

Anisah et al. (2023) revealed that there was a very strong relationship between exclusive breastfeeding and a decrease in stunting incidence, with a value of $p=0.000$. This shows that toddlers who get exclusive breastfeeding tend to have better growth compared to those who do not get exclusive breastfeeding. Similar findings were also obtained by Sarida & Lushinta (2023), which stated that the risk of stunting in toddlers who were exclusively breastfed was lower than those who did not receive it. Wulandari et al. (2023) further found that exclusive breastfeeding plays an important role in increasing immunity and optimizing children's nutritional intake, which ultimately contributes to reducing the risk of stunting, with a value of $p=0.002$. With these findings, it can be concluded that exclusive breastfeeding is a key factor in preventing stunting and improving children's health, because in addition to providing optimal nutrition, breast milk also strengthens the child's immune system.

However, some studies also report that although exclusive breastfeeding is given, it does not always lead to a decrease in stunting incidence. Lanita et al. (2023) and Kusumahati & Herdiani (2023) reported that despite exclusive breastfeeding, a number of toddlers were still stunted, with p-values of 0.058 and 0.780 respectively. These findings indicate that other factors, such as access to clean water, good sanitation, socioeconomic conditions, and maternal education levels, also affect the incidence of stunting in toddlers. Thus, although exclusive breastfeeding has great benefits in preventing stunting, external factors such as environment and socioeconomic status must also be considered in stunting prevention strategies. Therefore, a more holistic approach that involves paying attention to these various factors is essential to achieve effective stunting prevention goals.

Based on the existing findings, the author assumes that although exclusive breastfeeding is a very important step in stunting prevention, its success is not only determined by breastfeeding alone. Environmental and socioeconomic factors, such as sanitation quality, access to clean water, maternal education, and maternal nutritional status during pregnancy, also play a major role in reducing the risk of stunting in toddlers. Therefore, the author suggests that stunting prevention efforts be carried out with a more comprehensive approach, which involves exclusive breastfeeding along with the improvement of external factors such as public health education, nutrition counseling, and improving the quality of the environment.

4.2 Factors Supporting the Success of Exclusive Breastfeeding in Preventing Stunting

The success of exclusive breastfeeding in preventing stunting does not only depend on breastfeeding itself, but is also influenced by a number of supporting factors that can increase its effectiveness. Based on the findings from Ludji (2024), factors such as maternal age, education level, knowledge about exclusive breastfeeding, family support, and the role of health workers have proven to have a very important role in ensuring the sustainability of exclusive breastfeeding practices. Mothers who have better knowledge of the benefits of exclusive breastfeeding, and are supported by family and health workers, tend to be more consistent in giving exclusive breastfeeding to their babies. With this support, mothers will be more motivated to maintain exclusive breastfeeding, which in turn can reduce the risk of stunting in children.

In addition, Puspitasari et al. (2023) highlighted other factors that also affect the success of exclusive breastfeeding in preventing stunting, such as the baby's birth weight, maternal nutritional status during pregnancy, and the presence of infectious diseases. Low birth weight of the baby, poor maternal nutrition, or infections that occur both during pregnancy and after birth can inhibit the growth and development of the baby. These factors can worsen the situation even though exclusive breastfeeding has been carried out, which shows that the success of exclusive breastfeeding in preventing stunting cannot be separated from maternal nutritional conditions, management of infectious diseases, and attention to environmental factors.

For example, babies with low birth weight or who have an infection are at greater risk of growth disorders, even if they get exclusive breastfeeding.

The author's assumption in this case is that the success of exclusive breastfeeding in stunting prevention requires attention to all aspects that affect it. Although exclusive breastfeeding has huge benefits, other factors such as maternal knowledge, family support, maternal nutritional status, and the baby's health condition must also be considered. For this reason, a holistic approach involving social support, good health care, and attention to maternal and infant nutrition is urgently needed to ensure the success of exclusive breastfeeding and optimal stunting prevention.

5. Conclusions

Exclusive breastfeeding has a very important role in preventing stunting in toddlers. Exclusive breast milk provides optimal nutrition for the child's growth and boosts immunity, which helps reduce the risk of infection and malnutrition, two factors that often contribute to stunting. However, the success of exclusive breastfeeding does not only depend on breastfeeding, but is also influenced by other external factors, such as environmental conditions, access to clean water, sanitation, as well as socio-economic factors and maternal education.

To achieve effective stunting prevention, there needs to be a more holistic approach, which not only focuses on exclusive breastfeeding but also pays attention to other supporting factors. Mother's knowledge of the benefits of exclusive breastfeeding, family support, and the role of health workers is essential to ensure the sustainability of exclusive breastfeeding practices. In addition, attention to the nutritional status of mothers during pregnancy, the birth weight of the baby, and disease management is also very important to ensure the success of stunting prevention.

Therefore, stunting prevention strategies must include comprehensive health education, sanitation improvements, and improvement of the quality of life and welfare of mothers and children to achieve optimal results in reducing stunting rates.

Conflict of Interest

There is no conflict of interest

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