

## ***Determining the Role of Exclusive Breastfeeding and Nutritional Status in Stunting Prevention: A Literature Review***

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### **ABSTRACT**

*Stunting among children is a serious global concern including Indonesia since it has a negative impact on children's growth and development. Globally, more than 148 million children are affected by stunting. In Indonesia, the prevalence of stunting was 21.6% in 2022, which reflected a serious problem that needs to be addressed. This study aims to explore the correlation between exclusive breastfeeding, nutritional status and stunting among under-five children in Indonesia. The current study explored the correlation between exclusive breastfeeding (EBF) and nutritional status with the incidence of stunting among under-five. The inclusion criteria consisted of original articles, open access, written in English/Indonesian, 2020-2023, discussed EBF, nutritional status, and stunting. Databases involved ScienceDirect, PubMed, BMC journals, Google Scholar. Article selection used keywords and MeSH, and the results were presented in a PRISMA diagram. It was conducted an analysis of 10 articles, which were grouped in a matrix based on author, year, journal name, title, methods, and results. The results revealed that exclusive breastfeeding practice was correlated with a 3.1-fold reduction in the risk of stunting (CI 95%=1.5–6.4). Factors such as good nutrition and breastfeeding for at least 6 months provided protection from the risk of stunting. In conclusion, exclusive breastfeeding and good nutritional status were required, along with strengthening education and promotion regarding nutritional fulfilment patterns. Integration of the study findings should be made in child health guidelines, which may further guide policy and practice, support concrete steps to reduce the prevalence of stunting, and ensure optimal growth of children. Recommendations in this study include improvement in maternal education, nutritional support, and child health policy advocacy. For next steps, in-depth research is needed to evaluate the impact of specific nutritional interventions, understand the social and cultural factors that influence nutritional practices, and assess the effectiveness of cross-sector programs in reducing the prevalence of stunting.*

**Keywords:** *Exclusive Breastfeeding, Nutritional Status, Stunting, Systematic Literature Review*

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## **INTRODUCTION**

The importance of nutritional status among under-five children has become a major focus in Indonesia, especially in overcoming the

problem of stunting which is still worrying. The prevalence of stunting in Indonesia, a condition of chronic malnutrition, its continues to increase from year to year<sup>1</sup>. Stunting is characterized by stunted physical growth, which often does not

appear in children until the age of two. Its impact cannot be ignored; Apart from disrupting development according to a child's genetic potential, stunting also affects cognition, future productivity, and can even lead to death<sup>2</sup>.

Globally, in 2022, the prevalence of stunting reached an alarming figure by 22.3%, equivalent to around 148.1 million under-five children worldwide. The Asian region, especially South Asia, and the African continent are regions with significant prevalence rates. In Southeast Asia, Timor Leste occupied the highest prevalence by 48.8%, while Indonesia was ranked second with a mean prevalence of around 31.8%<sup>3</sup>.

At the national level, data derived from the 2022 Indonesian nutritional status survey confirmed such concern. The prevalence of stunting in children aged 0-59 months reached 21.6%, with an increase from the previous year which was 24.4%. East Nusa Tenggara Province showed the highest stunting rate by 35.3%, while West Sumatra Province was in 14th place with a stunting rate of 25.2%<sup>4</sup>.

The importance of exclusive breastfeeding in preventing stunting becomes an important highlight. Data derived from the Indonesian Ministry of Health (2021) showed that in 2020, the coverage of babies receiving exclusive breastfeeding reached 68.74%, exceeding the Strategic Plan target of 47%. However, there are still differences between provinces, wherein West Java Province showed the highest coverage of 90.79%, and West Sumatra Province and Gorontalo Province had the coverage of 68.11% and 30.71% respectively<sup>3,5-7</sup>.

Correlation between exclusive breastfeeding practices and nutritional status with the incidence of stunting has been revealed by many studies. Previous studies showed a significant correlation between exclusive breastfeeding and stunting<sup>8,9</sup>. Similar findings were also found by Soliman (2021), wherein stunted children generally had lower nutritional intake than non-stunted children<sup>10</sup>. Tello (2022) further revealed a significant relationship between exclusive breastfeeding and the incidence of stunting among under-five children<sup>11</sup>. A study conducted by Sari (2021) also strengthened the relationship between exclusive breastfeeding and the incidence of

stunting<sup>12</sup>.

Stunting, as a problem of chronic malnutrition among under-five children in Indonesia, showed an increasing prevalence from year to year. Correlation between exclusive breastfeeding practices and nutritional status with the incidence of stunting has been confirmed by various studies, highlighting the importance of exclusive breastfeeding in preventing stunting. This study aims to deepen understanding of such correlation and provide a stronger foundation for improving prevention and intervention measures to overcome the problem of stunting among under-five children in Indonesia.

Therefore, this study aims to analyze the correlation between exclusive breastfeeding and stunting and evaluate the effectiveness of stunting prevention measures in Indonesia to provide concrete recommendations<sup>13</sup>. By understanding the factors that play a role in the incidence of stunting, it is expected that preventive and intervention measures can be improved to overcome the problem of stunting<sup>14</sup>.

## METHOD

This study applied a literature review technique which aims to map the literature and explore information regarding the correlation between exclusive breastfeeding and nutritional status with the incidence of stunting among under-five children. This literature review does not aim to assess the quality of research, but rather to provide an overview of scientific evidence that is similar to the problem topic to be researched. Identification of research questions was carried out using the PEOS framework, which focused on the population of women with children aged 0-59 months, exposure to exclusive breastfeeding, stunting outcomes, and quantitative or qualitative study types. The selection of literature sources was performed using inclusion criteria including original articles, open access, English or Indonesian, 2020-2023, and discussed the correlation between exclusive breastfeeding and nutritional status with the incidence of stunting. Article search was conducted in Databases of Science Direct, PubMed, BMC Journal, and Google Scholar. Exclusion criteria

included irrelevant case studies. Literature selection used specific keywords and MeSH. The search results were presented in a PRISMA flowchart for transparency. Data charting involved analysis of 10 articles which were grouped by the author, year of publication, journal name, title, methods, and results which were presented in a matrix.

**Identification of Research Questions.** In the first stage, the researcher identified research questions using a specific framework called PEOS, as a search strategy which is quite effective.

**Table 1. Framework**

P (Population)	Women who had children aged 0-59 months
E (Exposure)	Exclusive breastfeeding and nutritional status
O (Outcome)	Correlation between exclusive breastfeeding and nutritional status with the incidence of stunting among under-five children
S(StudyDesign)	Quantitative or qualitative study

Based on the framework above, the scoping review question is "Is there a correlation between exclusive breastfeeding and nutritional status with the incidence of stunting among under-five children?"

**Identification of Relevant Literature Sources.** At the first stage, researchers identified relevant literature sources by determining inclusion and exclusion criteria for the articles to be searched to make it easier to select article sources.

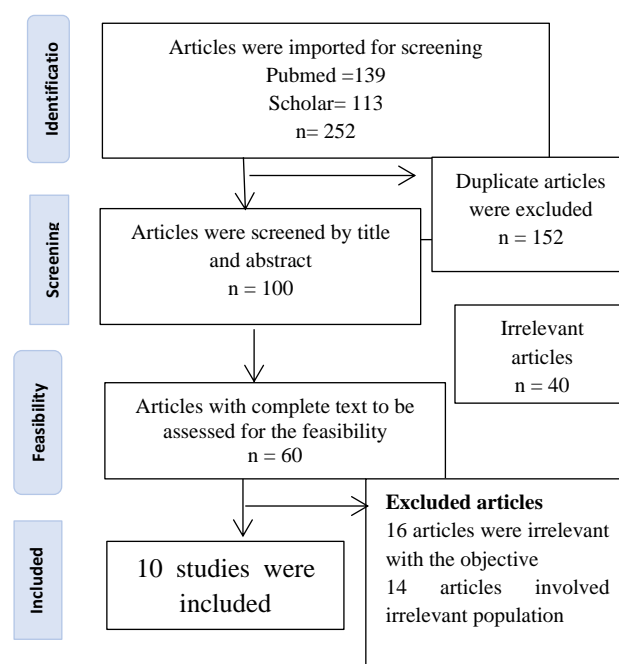
**Inclusion Criteria.** 1) Original article, 2) Open Access article, 3) Article published in 2020-2023, 4) Articles written in English or Indonesian, 5) article which discussed EBF, nutritional status, and stunting 6) Articles which discussed the correlation between Exclusive Breastfeeding and Nutritional Status with the Incident of Stunting among Under-five Children.

Article Searching used databases to find

articles with relevant evidence, namely Science direct, Pubmed, BMC journal and Google scholar.

**Exclusion Criteria.** Case studies that did not discuss the correlation between nutrition and the incidence of stunting or the correlation between exclusive breastfeeding and stunting.

**Literature Selection.** At this stage, researchers selected articles using specific keywords that had been determined, as well as using the help of Medical Subject Headings (MeSH). The results of articles searching and screening were displayed in the form of a PRISMA flowchart diagram, which makes it easier for readers to understand the flow of literature studies selection up to the process of articles elimination based on exclusion criteria.



**Figure 1. Flowchart Prism**

**Data Charting.** In the next stage, the researcher conducted an analysis towards the 10 articles reviewed. The articles were grouped based on author and year of publication, journal name, title, methods, and results which were presented in matrix form.

## RESULTS

**Table 1. Results of Literature Review Study**

No	Researcher/Year of Publication	Country of origin	Name of Journal/DOI	Title	Methods (Study Design, Sample, Variable, Instruments, Analysis)	Results and Conclusions
1.	Sari N Manjorang M Zakiyah Randell M (2021) <sup>12</sup>	Indonesia	Kesmas FKM UI/ DOI : 10.21109/KESMAS.V16I1.3291	Relationship between exclusive breastfeeding history, risk factor and stunting among children aged 12–23 months	<p><b>Design:</b> Cross-sectional study with a study population of children aged 12-23 months in Tulang Bawang District, Indonesia.</p> <p><b>Samples:</b> 193 under-five children.</p> <p><b>Methods:</b> Quantitative method with questionnaires, primary data about exclusive breastfeeding and potential factors.</p> <p><b>Analysis:</b> Analysis: Chi-square test to determine the relationship between exclusive breastfeeding and stunting, logistic regression analysis to control confounding variables and calculate the odds ratio (OR).</p>	<p><b>Results:</b> 29.5% of 193 under-five children experienced stunting. Children without exclusive breastfeeding had a 3.1 times higher risk (CI 95% = 1.5–6.4) of stunting compared to those receiving exclusive breastfeeding. The risk remained significant after controlling for confounding variables such as maternal education and employment status.</p> <p><b>Conclusion:</b> Exclusive breastfeeding was closely related to stunting among under-five children aged 12-23 months in Tulang Bawang District, Indonesia. Children without exclusive breastfeeding showed an increase in the risk of stunting.</p>
2.	M. Hadi (2023) <sup>15</sup>	Indonesia	Journal of Advance Research in Medical & Health Science/ DOI : 10.53555/nmhs.v9i6.1740	Correlation Between Exclusive Breastfeeding and Stunting Among Children: A Systematic Review	<p><b>Design:</b> Retrospective observational.</p> <p><b>Objective:</b> To analyze the relationship between exclusive breastfeeding and stunting among children.</p> <p><b>Samples:</b> Data derived from scientific publications on PubMed and SagePub (2013-2023).</p> <p><b>Methods:</b> Systematic review according to PRISMA 2020.</p> <p><b>Data Analysis:</b> Counted and</p>	<p><b>Results:</b> 672 articles in PubMed and 561 articles in SagePub were relevant. After inclusion, 25 articles were selected. Of these, 4 studies showed a significant correlation between exclusive breastfeeding and stunting among children.</p> <p><b>Conclusion:</b> There was a significant relationship between exclusive breastfeeding and the risk of stunting among children, and suboptimal feeding was found as the contributing factor for such risk.</p>

					selected studies that met the inclusion criteria.		
3.	Tello B Rivadeneira M Moncayo A et al. (2022)	Ecuador	International Breastfeeding Journal/ DOI : 10.1186/s13006-022-00461-0	Breastfeeding, feeding practices and stunting in indigenous Ecuadorian children under 2 years of age	<p><b>Design:</b> Cross-sectional</p> <p><b>Objective:</b> To analyze the prevalence of breastfeeding and complementary feeding practices and their relationship with the incidence of stunting.</p> <p><b>Samples:</b> 625 children aged 0-23 months.</p> <p><b>Methods:</b> Analysis of secondary data from 625 children, breastfeeding and complementary foods were analyzed according to age groups.</p> <p><b>Data Analysis:</b> Logistic regression, chi-square or Fisher's exact test</p>	<p><b>Results:</b> The results of the study showed that 26.8% of children experienced stunting. The majority of children had timely breastfeeding practices (69.5% for ages 0-12 months and 75.5% for ages 13-23 months) and exclusive breastfeeding until six months of age (78.2%).</p> <p><b>Conclusion:</b> There was a relationship between exclusive breastfeeding and the incidence of stunting</p>	
4.	Gayatri, Maria (2021) <sup>16</sup>	Indonesia	Korean Journal of Family Medicine/ DOI : 10.4082/kjfm.20.0131	Exclusive Breastfeeding Practice in Indonesia: A Population-Based Study	<p><b>Desain Studi:</b> Retrospective analytical.</p> <p><b>Samples:</b> 1,542 women with babies aged &lt;6 months derived from the 2017 Indonesian Demographic and Health Survey.</p> <p><b>Variabel:</b> Socio-demographic and maternal health services factors.</p> <p><b>Analisis:</b> Logistic regression for the relationship between factors with exclusive breastfeeding practices and stunting.</p>	<p><b>Results:</b> A significant relationship was found between the pattern of nutritional fulfillment and the incidence of stunting among children (P=0.000; OR=0.033), wherein 97.6% of children who were not stunted had better nutritional fulfillment.</p> <p><b>Conclusion:</b> A better pattern of nutritional fulfillment was related with a lower risk of stunting among children.</p>	
5.	Campos A Vilar-Compte M Hawkins S (2020)	Mexico	Annals of Global Health/10.5334/aogh.2836	Relationship between breastfeeding and child stunting in	<p><b>Design:</b> Cross-sectional</p> <p><b>Objective:</b> To determine the relationship between breastfeeding and other factors with child stunting in Mexico.</p>	<p><b>Results:</b> 1212.3% of children were stunted, 71.1% were given breast milk for at least 6 months. Breastfeeding and female gender had a protective effect on stunting.</p> <p><b>Conclusion:</b> Mexico needs prenatal and</p>	

				Mexico	<p><b>Samples:</b> 2,089 children aged 6-35 months in Mexico.</p> <p><b>Methods:</b> Secondary data analysis.</p> <p><b>Data Analysis:</b> Logistic regression.</p>	postnatal strategies to reduce stunting, including breastfeeding support.
6.	Sadler K James P Bhutta Z Et al (2022) <sup>17</sup>	United Kingdom	Journal of Nutrition BMC	How Can Nutrition Research Better Reflect the Relationship Between Wasting and Stunting among Children? Learnings from the Wasting and Stunting Project	<p><b>Design:</b> Cross-Sectional Study</p> <p><b>Objective:</b> Analysis of the relationship between nutritional wasting and stunting in children and the separation of concepts in policy.</p> <p><b>Samples:</b> Secondary data on child wasting and stunting cases from various regions.</p> <p><b>Methods:</b> Descriptive and comparative analysis using research data, surveys and reports on child nutrition.</p> <p><b>Data Analysis:</b> Chi-square test and logistic regression to identify relationships and contributing factors.</p>	<p><b>Results:</b> Analysis revealed a significant relationship between wasting and stunting among children, and it certainly had implications for the design of child nutrition programs.</p> <p><b>Conclusion:</b> The relationship between wasting and stunting emphasized the importance of improving child nutrition programs holistically and collaboratively, in order to overcome the problem of malnutrition among children.</p>
7	Elisaria E Mrema J Bogale T et al (2021) <sup>18</sup>	Inggris	BMC	Effectiveness of integrated nutrition interventions on childhood stunting: a quasi-	<p><b>Design:</b> Quasi-experimental</p> <p><b>Objective:</b> To test the effectiveness of health education, nutrition and promotion of household gardens in reducing stunting among under-five children.</p> <p><b>Methods:</b> Samples of 3467 and 4145 under-five children were</p>	<p><b>Results:</b> The proportion of stunting decreased in the intervention (35.9% to 34.2%) and control (29.3% to 26.8%) locations. However, the decrease between groups was not significant. Significant effects could be observed in the use of iron folic acid, facility delivery, breastfeeding within 1 hour, and exclusive breastfeeding under 6 months.</p>

				experimental evaluation study	selected using two-stage stratified sampling. <b>Analysis:</b> Applied "difference in difference" (DID) to estimate the effect of the intervention.	<b>Conclusion:</b> The 3 year program was not significant in reducing stunting, but positive effects were seen on children's health and nutritional behavior. Longer implementation is needed for a significant reduction in the incidence of stunting.
8	Nuraini I Iswati R Aisyah (2022) <sup>19</sup>	Indonesia	Journal of Pharmaceutical Negative Results/D OI : 10.47750/ pnr.2022. 13.04.094	Nutritional Intervention towards Stunting among Children Aged 0-59 Months	<b>Design:</b> Cross-sectional <b>Objective:</b> To identify stunting factors among 60 children (aged 0-59 months) and evaluate effective nutritional interventions. <b>Methods:</b> Questionnaire for data regarding stunting risk factors. <b>Analysis:</b> Involved logistic regression for the relationship between initial risk factors (exclusive breastfeeding, complementary foods, and nutritional adequacy) and stunting. The effectiveness of nutritional interventions was also analyzed.	<b>Results:</b> A significant relationship between initial risk factors (exclusive breastfeeding, complementary foods, food diversity, nutritional adequacy, and immunity) and stunting among under-five children was confirmed. Nutritional interventions (Fe tablets and additional food) were effective in reducing the risk of stunting. <b>Conclusions:</b> The factors had an impact on the risk of stunting among children. Successful nutritional interventions might decrease the risk of stunting.
9	Amiruddin A Bustami B Anasril et al (2021) <sup>20</sup>	Indonesia	Open Access Macedonian Journal of Medical Sciences/ 10.3889/o amjms.20 21.6000	Phenomenology study of nutrition for stunted babies in the work area of Pante Kuyun CHC, Aceh Jaya District	<b>Design:</b> Qualitative phenomenological approach <b>Objective:</b> To determine nutritional care patterns for stunted children. <b>Samples:</b> 15 people (10 stunted children, 2 heads of community CHCs, 2 community leaders), selected purposively. <b>Methods:</b> Qualitative phenomenological approach, 1 month, tools: recording device,	<b>Results:</b> Stunting was related to social construction, traditions and eating habits in society. Parenting styles were influenced by food restrictions during pregnancy, beliefs, and lack of knowledge. Nutritional care beyond 6 months was not according to recommendations, including providing instant noodles and inappropriate food mixtures. <b>Conclusions:</b> Parenting style played an important role in stunting in the work area of Pante Kuyun CHC, Aceh Jaya. Factors such

				discussion guide, field notes. <b>Data Analysis:</b> Interview transcripts, data reduction, interpretation, triangulation.	as customs, culture, habits and lack of knowledge need to be addressed with policy and intervention efforts to support healthier and optimal parenting style for children.	
10	Raiten D Bremer A (2020) <sup>21</sup>	Indonesia	Nutrient / DOI : 10.3390/n u1202037 1	Exploring the nutritional ecology of stunting: New approaches to an old problem	<b>Design:</b> Literature Study <b>Objective:</b> To identify factors that contribute to stunting and poor growth, and their implications for global nutrition assessment and health intervention approaches. <b>Samples:</b> Literature review from various sources including research studies and reports related to stunting. <b>Methods:</b> Literature review approach using the PRISMA method. <b>Data Analysis:</b> Data were analyzed through an assessment of factors associated with stunting identified from the collected literature.	<b>Results:</b> This study presented factors that influenced stunting, including nutrition, maternal-fetal interactions, infections, environmental, economic, and social factors. The importance of the nutritional assessment approach in identifying stunting was also explained. <b>Conclusion:</b> An appropriate nutritional assessment approach is needed to identify the factors of stunting. For more effective interventions, efforts to reduce the prevalence of stunting must consider internal and external factors in human nutritional ecology.



## DISCUSSION

### **Relationship between Exclusive Breastfeeding and the Incidence of Stunting.**

Studies on the relationship between exclusive breastfeeding and the incidence of stunting among children have been carried out in various regions. Findings from several studies highlight the importance of exclusive breastfeeding practices in reducing the risk of stunting.

A study conducted in Indonesia showed that exclusive breastfeeding was significantly related with lower levels of stunting among under-five children<sup>12</sup>. Such finding support the view that exclusive breastfeeding provides essential nutrients for optimal growth. Furthermore, a study conducted by M. Hadi (2023) also emphasized that suboptimal exclusive breastfeeding could increase the risk of stunting<sup>15</sup>. These results highlight the need to ensure adequate nutritional intake during the early growth phase of children.

A similar study conducted by Tello et al. (2022) in Ecuador revealed that exclusive breastfeeding at the right time was related with a reduced risk of stunting. Such finding strengthen the role of exclusive breastfeeding in providing nutrition to support early growth<sup>11</sup>.

In the context of nutrition for under-five children, a study conducted by Gayatri (2021) confirmed that adequate nutritional intake was related with a reduced risk of stunting<sup>16</sup>. A study conducted by Campos et al. (2020) in Mexico revealed that exclusive breastfeeding for at least six months and female gender had a protective effect against the risk of stunting<sup>22</sup>

A cross-country review also strengthened the correlation between exclusive breastfeeding and reduced risk of stunting. Such finding emphasize the important role of exclusive breastfeeding in supporting healthy growth and development<sup>23</sup>.

Overall, the previous results confirm the importance of exclusive breastfeeding in reducing the risk of stunting among under-five children. Education and support for mothers about exclusive breastfeeding practice is key in addressing the prevalence of stunting and supporting the growth of future generations<sup>24</sup>.

The researchers assume that the data used here were representative regarding other factors that influence stunting

### **Relationship between Nutritional Status and the Incidence of Stunting**

Analysis of a series of studies on the relationship between nutritional status and the incidence of stunting among children provides a more complete description of the interrelated factors regarding this problem.

The study findings explained by Sadler et al. (2022) provided important insights into the relationship between wasting and stunting<sup>17</sup>. This study confirmed that there was a significant correlation between wasting and the risk of stunting. The implication is clear, wherein lack of adequate nutritional intake can lead to weight loss and poor growth, and it raises questions about strategic planning in holistic nutrition programs<sup>25</sup>.

However, a more complex perspective emerged through a study conducted by Elisaria et al. (2021), showed a decrease in the proportion of children who experienced stunting in the intervention group, although the difference was not statistically significant<sup>18</sup>. Such finding indicates that the impact of improvement in nutritional status may not be directly reflected in stunting prevalence in the short term, but is more clear in the long term. It also highlights the need to look at long-term effects in efforts to assess the impact of nutritional interventions.

A study conducted by Nuraini et al. (2022) revealed that factors such as a history of exclusive breastfeeding, complementary foods, diversity in food composition, nutritional adequacy, and immunity, had a significant effect on the risk of stunting among children<sup>19,26</sup>. This study clearly emphasized the importance of adequate nutritional intake to support optimal growth of children. Interventions such as iron supplementation and dietary supplementation was also proven to be effective in reducing the risk of stunting. Such finding highlights the crucial role of nutritional intake in reducing the prevalence of stunting.

Regarding cultural factors, traditions and habits, Amiruddin et al. (2021) found that these elements had an effect on parenting styles and eating behavior of children. Such finding highlights the need for culturally sensitive

education to encourage parenting styles that support optimal growth<sup>20</sup>.

Furthermore, an in-depth study conducted by Raiten & Bremer (2020) noted the complexity of factors that influenced stunting, including nutritional, maternal-fetal, and social, economic and physical environmental aspects. Such finding illustrates the need for a holistic approach in analyzing the variables underlying stunting. By understanding the complexity of these interactions, steps to decrease the prevalence of stunting can be more targeted and effective<sup>21</sup>.

Overall, this study provides a broad view of the relationship between nutritional status and the incidence of stunting among children. The implication underlines the urgency of a comprehensive approach, contextual education and proper nutritional evaluation in the management stunting<sup>27,28</sup>. In responding to the issue of malnutrition among children, cross-sector collaboration emerges as the main pillar, in line with the previous findings. This emphasizes the importance of working together in overcoming the challenges of malnutrition and stunting among children.

Overall, this study underlined the urgency of a comprehensive approach, contextual education on exclusive breastfeeding, and in-depth nutritional evaluation in dealing with the problem of stunting.

The implications of these findings for health policy and clinical practice require serious consideration. There is a need of concrete steps such as culturally sensitive education, increase in nutritional intake, and a holistic approach in dealing with the problem of stunting among children. Future research needs to explore more deeply the complex interactions of factors influencing stunting and evaluate the effectiveness of nutritional intervention programs.

## CONCLUSION

This study consistently showed a positive correlation between exclusive breastfeeding practice and adequate nutritional intake with a reduced risk of stunting among children. Exclusive breastfeeding practice was identified as the main contributor to essential

nutrition that supports optimal growth, while adequate nutritional intake in the early stages of a child's life had a significant impact in reducing the prevalence of stunting. Such findings encourage the need to strengthen education for mothers and emphasize the importance of exclusive breastfeeding practice as well as proper nutrition early since the early childhood life. Nutritional support and interventions also played an important role, especially through iron supplementation programs and complementary breastfeeding. In addition, cross-sector collaboration and a sustainable approach were identified as keys to success in overcoming the stunting challenge. Recommendations for further development include implementation of support programs, in-depth research for a more holistic understanding, and on-going evaluation of the effectiveness of implemented interventions. In conclusion, this study provided a strong basis for guiding health policy and clinical practice to reduce the prevalence of stunting among children.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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