

**RESEARCH STUDY** English Version

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# The Relationship between Nutritional Knowledge and History of Exclusive Breastfeeding with the Incidence of Stunting in Toddlers

## Hubungan Pengetahuan Gizi dan Riwayat Pemberian Air Susu Ibu dengan Kejadian Stunting pada Anak Balita

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**Keywords:** Nutritional Knowledge, Breastfeeding History, Stunting

#### INTRODUCTION

#### Stunting is a nutritional issue found in toddlers in Indonesia due to insufficient nutrient intake, especially during the early stages of development and growth in the first 1000 days of life<sup>1</sup>. Although the prevalence of stunting in Indonesia has decreased from 24.4% in 2021 to 21.6% in 2022, the government continues to prioritize addressing the issue of stunting<sup>2</sup>. Stunted children are at risk of facing intellectual limitations, skill deficiencies, cognitive impairment, motor challenges, and the gradual emergence of disruptions in cellular and tissue functions. Stunted children are also at risk of obesity due to their low ideal body weight<sup>3</sup>. This phenomenon occurs because a slight increase in weight can cause the child's Body Mass Index (BMI) to exceed normal limits.

The 2022 Indonesian Nutrition Status Survey (SSGI) recorded that cases of stunted growth in toddlers in Aceh ranked fifth highest nationwide, with a prevalence reaching 31.2%. Specifically, Central Aceh Regency ranks twelfth out of 23 regencies in Aceh. The prevalence of stunting in Central Aceh reaches 32%, exceeding the average stunting rate in all provinces of Aceh<sup>4</sup>. Moreover, the prevalence of stunting in Central

#### ABSTRACT

**Background:** Nutritional knowledge in mothers is crucial in caring for toddlers. Providing nutrition has an impact on the growth and development of children. Breast milk contains complete nutrients. Exclusive breastfeeding for the first 6 months, followed by breastfeeding and complementary feeding, can prevent stunting.

**Objectives:** This research aims to determine the correlation between maternal nutritional knowledge and history of breastfeeding with the occurrence of stunting in infants aged 24-59 months.

**Methods:** The study was conducted in the working area of Angkup Community Health Center, Silinara District, Central Aceh. The study design was cross-sectional. A total sampling technique was used to select 38 toddlers. Data were collected using a questionnaire. The obtained results were analyzed using chi-square and multiple linear regression tests.

# **Results:** The analysis results showed an Asimp. Sig 0.020 < 0.05, indicating a significant association between maternal nutritional knowledge and the occurrence of stunting in toddlers. The analysis of breastfeeding also indicated an Asimp. Sig value of 0.004 < 0.05 suggests a significant association between breastfeeding and the occurrence of stunting in toddlers. Regression analysis demonstrated the influence of maternal nutritional knowledge and breastfeeding on the stunting variable by 35% in infants in the working area of Angkup Community Health Center, Central Aceh, from January to March 2022. **Conclusions:** The occurrence of stunting in the village of Angkup is related to maternal nutritional knowledge and the history of breastfeeding.

Aceh surpasses the tolerance limits set by the World Health Organization (WHO).

Exclusive breastfeeding is considered the most complete nutritional intake for infants aged 0 to 6 months, as it contains all the essential nutrients supporting their growth and development. Research indicates that exclusive breastfeeding for the first 6 months and the consumption of energy-providing foods are closely related to the incidence of stunting in children aged 6-24 months in Central Java5. Children without exclusive breastfeeding have a higher risk (1.282 times) of stunting, with the lowest risk around 1.076 times and the highest risk reaching 1.527 times compared to children who receive exclusive breastfeeding<sup>5</sup>. Breast milk contains complex nutritional components crucial for infant health, so in areas where the community's understanding of the importance of exclusive breastfeeding is lacking, the incidence of stunting tends to be high<sup>2</sup>. A study in Gondanglegi District, Malang Regency, shows a higher risk of stunting in children who are only breastfed for less than 6 months<sup>6</sup>. Additionally, children without exclusive breastfeeding have a 4 times higher chance of stunting<sup>7</sup>.

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Therefore, exclusive breastfeeding is essential for toddlers up to 6 months, accompanied by the introduction of complementary foods and continued breastfeeding until the age of 2 years.

Several contributing factors to stunting include parental income, maternal nutrition knowledge, parents' educational and occupational status, exclusive breastfeeding, and socioeconomic factors, all of which have a significant impact on child nutrition issues<sup>2</sup>. Mothers play a crucial role in child upbringing<sup>8</sup>, and good parenting ensures optimal growth and development<sup>9</sup>. Mothers with proper nutritional knowledge can provide balanced nutritional intake according to their child's needs and growth<sup>10</sup>, significantly impacting the child's physical development and intelligence<sup>11</sup>. Research results confirm a significant correlation between maternal knowledge levels and stunting events<sup>12</sup>. Stunting should be prevented as early as possible to ensure healthy children with maximum growth and development. The research problem formulation in this study is the relationship between maternal nutrition knowledge and the history of breastfeeding with stunting cases in toddlers. The study's objective is to determine the relationship between maternal nutrition knowledge and the history of breastfeeding with the occurrence of stunting in infants.

#### METHODS

This study employed an observational analytical approach using a cross-sectional design to determine the correlation between maternal nutrition knowledge and exclusive breastfeeding practices with cases of stunting in toddlers. The study was conducted in the working area of Angkup Community Health Center, Silinara District, Central Aceh, during the period of January to March 2022. The study population comprised all stunted toddlers in Angkup Village, Central Aceh, totaling 38 toddlers who received exclusive breastfeeding. The sampling method used in this study was total sampling. The instrument used was a questionnaire to obtain information on the history of breastfeeding and maternal nutrition

Table 1. Distribution of respondent characteristics
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knowledge. Information on stunted infants was obtained from the Angkup Community Health Center by measuring height with age recording (height-for-age, TB/U) with zscore classification <-3SD as severely stunted and -3SD to <-2SD as stunted.

Variables consisting of the history of breastfeeding, maternal nutrition knowledge, and stunting events were categorized and then analyzed. Chisquare analysis was used to evaluate the correlation between nutrition knowledge and stunting events, aiming to assess the relationship between breastfeeding intake and stunting events in toddlers. Linear regression analysis was employed to analyze the correlation between nutrition knowledge and breastfeeding practices with cases of stunting in toddlers.

#### **RESULTS AND DISCUSSION**

#### **Characteristics of Respondents**

The questionnaire data of respondents were tested using a frequency test. The testing results revealed the characteristics of stunted toddlers who were the subjects or respondents in this study based on gender, age, maternal nutrition knowledge, history of breastfeeding, and stunting cases. The characteristics of the subjects or respondents were obtained directly from secondary data (health center data) and primary data (direct measurements and questionnaire completion). The data presented in Table 1 indicate that the percentage of male toddlers reached 60.5% (23 toddlers), while female toddlers contributed approximately 39.5% (15 toddlers). It can be concluded that male toddlers dominated the toddlers in this study out of a total sample of 38 toddlers. Meanwhile, the number of toddlers in the age category of 24-35 months was 39.5% (15 toddlers), and the age category of 36-60 months was 60.5% (23 out of 38 children). The research results show that some respondents are over 3 years old. Failure to thrive refers to the inability of a child to achieve the ideal weight or height according to the ideal growth model. This often occurs in children over 2 years old, when they become active and can choose the types of food they like<sup>12</sup>.

Characteristics	Frequency (n)	Percentage (%)		
Gender				
Male	23	60.5		
Female	15	39.5		
Total	38	100		
Child Age				
24-35 Months	15	39.5		
36-60 Months	23	60.5		
Total	38	100		
Maternal Nutrition Knowledge				
Insufficient	29	76.3		
Sufficient	9	23.7		
Good	0	0		
Total	38	100		
Breastfeeding Record				
Exclusive Breastfeeding	16	42.1		
Non-Exclusive Breastfeeding	22	57.9		
Total	38	100		
Stunting Cases				
Short (-2SD to -3SD)	14	36.8		

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Characteristics	Frequency (n)	Percentage (%)		
Very Short (<-3SD)	24	63.2		
Total	38	100		

Data on the mother's nutritional knowledge was collected through the use of a questionnaire containing questions about the types of nutrition, nutritional functions, and benefits of nutrition. The assessment in this study was based on scores given according to correct answers (score 1) or incorrect answers (score 0) provided by respondents. The assessment criteria for maternal nutritional knowledge were divided into 3 categories: insufficient if the respondent's score is 56.6-78.3%, and good if the respondent's score is >78.3-100%.

The research data in Table 1 shows an average maternal nutritional knowledge of 47.1. The results obtained indicate that maternal nutritional knowledge is dominated by the insufficient category, which is 76.32% (29 people), and in the sufficient category, it is 23.68% (9 people). The inability of mothers to understand nutrition is caused by various factors, including educational level. Based on this research, it was found that around 81% of mothers of toddlers have a secondary school education background. Limited nutritional knowledge can lead to obstacles in implementing good nutritional principles in daily life, which is one of the triggers for nutritional problems<sup>14</sup>. Nevertheless, the risk of malnutrition in fiveyear-old infants can be reduced by increasing mothers' knowledge of how to care for and manage children's diets. As the primary figures in a child's life, mothers play a central role in caring for and feeding their children, so the level of maternal knowledge has a significant impact on the growth and development of children<sup>8</sup>.

Research data on the history of breastfeeding shows that about 42.1% of respondents exclusively breastfeed, equivalent to 16 toddlers, while 57.9% or 22 toddlers did not receive exclusive breastfeeding from birth to 6 months. More than half of the toddlers who experienced stunting did not receive exclusive breastfeeding from birth to 6 months. The provision of breastfeeding to toddlers in the study area is divided into 2 categories, namely exclusive breastfeeding and nonexclusive breastfeeding. The definition of exclusive breastfeeding is stated in the Government Regulation of the Republic of Indonesia Number 33 of 2012, which explains that exclusive breastfeeding is giving Mother's Milk to babies from birth for 6 months without additional or replacement with other foods or drinks<sup>4</sup>. In this study, less than half of the samples (42.1%) received exclusive breastfeeding with an average of 2.95  $\pm$  1.089. Factors influencing the low provision of exclusive breastfeeding include a lack of understanding or knowledge of the mother. Breast milk has significant benefits for babies, including disease prevention, support for brain development, and assistance in the physical development of babies<sup>15</sup>. In addition to being the best source of nutrition for babies, breastfeeding also benefits mothers, such as overcoming childbirth trauma and reducing the risk of cancer.

Data on cases of stunting in toddlers in the research area are presented in Table 1. Measurement data indicate that 36.8% or 14 toddlers have a short nutritional status, while 63.2% or 24 toddlers have a very short nutritional status. Therefore, it can be concluded that cases of growth retardation (stunting) in five-year-old infants in Angkup Village (study location) can be categorized as very short. These results illustrate that the majority of toddlers who experience stunting fall into the very short category.

The results of the analysis of respondent questionnaire data using frequency tests provide an overview of the characteristics of mothers of toddlers as samples or examples in this study based on several factors such as age, the mother's last education level, the mother's occupation, and the mother's income. According to the data in Table 2, respondents have an age range, with 26.3% (10 people) classified as late teenagers (<25 years), 57.9% (22 people) in the early adult category (26-35 years), and 15.8% (6 people) in the late adult category (36-45 years). Thus, it can be said that the characteristics of the example/sample of mothers in terms of age in this study are dominated by mothers who are in the early adult category. In addition, data on the mother's last education level shows that 7.9% (3 people) are not educated or only graduated/did not graduate from elementary school (<6 years), 81.6% (31 people) graduated from junior /senior high school, and 10.5% (4 people) have the last education level of college/higher education. This data shows that high school graduates dominate the last educational level undergone by mothers, and they have toddlers who experience stunting. Low education leads to low maternal nutritional knowledge, making it likely to have stunted children<sup>13</sup>.

Variables	Frequency (n)	Percentage (%)	
Mother's Age			
Late Adolescent (<25 years)	10	26.31	
Early Adult (26-35 years)	22	57.89	
Late Adult (36-45 years)	6	15.78	
Early Elderly (>45 years)	0	0	
Total	38	100	
Mother's Education			
Graduated/Not graduated from elementary school	3	7.9	
Junior/Senior High School	31	81.6	

**Table 2.** Distribution of frequency of characteristics of mothers of stunted toddlers

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Variables	Frequency (n)	Percentage (%)		
College/Higher Education	4	10.5		
Total	38	100		
Occupation				
Housewife (IRT)	26	68.4		
Farmer	11	28.9		
Self-employed	0	0		
Other	1	2.6		
Total	38	100		
Income				
Low (<1,000,000)	37	97.37		
Medium (1,000,000-2,000,000)	0	0		
High (>2,500,000)	1	2.63		
Total	38	100		

Information regarding the mothers' occupations indicates that 68.4% (26 individuals) of the respondents are housewives, 28.9% (11 individuals) work as farmers, and 2.6% (1 individual) have other occupations, such as being a teacher. Thus, it can be concluded that the majority of mothers with toddlers experiencing stunting are housewives. In terms of income, it was found that 97.37% (37 individuals) of the respondents fall into the low-income category, while 2.63% (1 individual) are in the high-income category. Therefore, it can be inferred that the majority of mothers of five-year-old children (toddlers) with stunting have low incomes. Low income is directly related to the ability to provide nutritious food for toddlers<sup>3</sup>.

The Relationship Between Maternal Knowledge and the History of Breastfeeding with the Incidence of Stunting

The analysis of the correlation between the two parameters, maternal nutritional knowledge and the incidence of stunting in toddlers in the Angkup Community Health Center, Silinara District, Central Aceh, during January-March 2022, was conducted using the Chi-square test method. Descriptive data related to the relationship between the history of breastfeeding and the incidence of stunting can be seen in Table 3 below. The results show that the lack of maternal nutritional knowledge has a significant impact on cases of toddler stunting, where the severely short and short groups reach 41.4% and 58.6%, respectively. In contrast, sufficient nutritional knowledge has a 100% impact on toddlers in the short category (-3SD to <-2SD).

	Nutritional Status TB/U			Tatal			
Variables	Severely Short		Short		– Total		Asimp. Sig*
	n	%	n	%	Ν	%	—
Maternal Nutrition Knowledge							
Insufficient	12	41.4	17	58.6	29	100	
Enough	0	0	9	100	9	100	0.020
Good	0	0	0	0	0	0	
Total	12		26		38		
Breastfeeding History							
Non-exclusive Breastfeeding	11	50.0	11	50.0	22	100	0.004
Exclusive Breastfeeding	1	6.3	15	93.7	16	100	
Total	12		26		38		

\*Chi-Square Test

Output from data processing using the Chi-Square Test indicates an Asymp. Sig value of 0.020 < 0.05; hence, it can be concluded that there is a significant relationship between the nutritional knowledge of mothers at Angkup Community Health Center, Silinara District, Central Aceh, and the occurrence of stunting cases in toddlers. This correlation indicates that the level of maternal knowledge plays a role in the incidence of stunting in toddlers, where the lower the maternal knowledge, the greater the likelihood of a child experiencing stunting<sup>9</sup>. Maternal knowledge related to the importance of exclusive breastfeeding from birth to 6 months and the motivation of close relatives regarding breastfeeding are key factors in a mother's success in providing exclusive breastfeeding, which is then continued until the age of 2 years<sup>14</sup>.

Information in Table 3 indicates that nonexclusive breastfeeding has a significant impact on cases of failure to thrive in toddlers, especially in the very short and short categories, each reaching 50%. Meanwhile, exclusive breastfeeding only has an impact of 6.3% on toddlers in the very short category. The analysis of data using the Chi-Square Test shows an Asymp. Sig value of 0.004 < 0.05, so it can be stated that there is a significant relationship between breastfeeding and the occurrence of stunting in toddlers. Breast milk is a source of nutrition that meets the needs to support the growth and development of children<sup>10</sup>. Toddlers who do not receive

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exclusive breastfeeding tend to experience malnutrition, which can potentially lead to malnutrition  $^{\rm 16}.$ 

In this study, it was found that 50% of toddlers experiencing stunting with a very short body category did not receive exclusive breastfeeding. One consequence of not providing exclusive breastfeeding is the risk of stunting. Stunting itself is the result of an inappropriate diet provided by the mother<sup>3</sup>. Consuming food without balancing nutritional needs over a certain period can lead to malnutrition, which in turn causes the slow growth and development of children and is not in line with the average height of toddlers of the same age. Parents often overlook this condition because the impact of stunting in children may be clearly visible when the child is over 2 years old<sup>3</sup>.

Linear regression analysis in this study aims to determine the correlation between 2 independent variables, namely maternal nutritional knowledge and breastfeeding, on the incidence of stunting in toddlers. The results show that the significant value for the influence of maternal nutritional knowledge (X1) on the incidence of stunting (Y) is 0.011 < 0.05. In addition, the tvalue is 2.688 > the t-table value (2.030), so there is a real influence of maternal nutritional knowledge (X1) on the incidence of stunting (Y). This data can be interpreted as maternal nutritional knowledge contributing to the incidence of stunting in toddlers in the Angkup Community Health Center, Silinara District, Central Aceh, from January to March 2022. Furthermore, the significance value for the influence of breastfeeding (X2) on Y is 0.002 < 0.05, and the t-value is 3.338 > t-table (2.030). Thus, it can be stated that breastfeeding has a significant effect on the incidence of stunting in toddlers in the Angkup Community Health Center, Silinara District, Central Aceh.

Data analysis regarding the impact of maternal nutritional knowledge and breastfeeding on the incidence of stunting was carried out using the F test, which shows the significance value of maternal nutritional knowledge (X1) and breastfeeding (X2) on the incidence of stunting (Y) is 0.001 < 0.05. In addition, the F value is 9.429, which also exceeds the F table value (3.32). These results indicate a significant impact of maternal nutritional knowledge and breastfeeding on the incidence of stunting in toddlers in the Angkup Community Health Center, Silinara District, Central Aceh, during January-March 2022, with a confidence level of 95%.

Statistical analysis found an R square value of 0.350. This figure can be stated that there is an influence of maternal nutritional knowledge (X1) and breastfeeding (X2) variables on the incidence of stunting (Y) by 35% in toddlers in the Angkup Community Health Center, Silinara District, Central Aceh, during January-March 2022. Similar research with the title "The Relationship between Exclusive Breastfeeding and the Incidence of Stunting in Toddlers" states that there is a correlation between exclusive breastfeeding and the incidence of stunting in toddlers. Through the odds ratio test, a value of OR = 61 was found, indicating that the likelihood of toddlers without exclusive breastfeeding experiencing stunting is 61 times greater than that of toddlers with exclusive breastfeeding. Therefore, providing exclusive

breastfeeding is considered to reduce the threat of stunting in toddlers  $^{\rm 16}.$ 

The data in this study revealed that maternal nutritional knowledge and breastfeeding influence the incidence of stunting in toddlers in the Angkup Community Health Center, Silinara District, Central Aceh. A study on the risk factors for stunting conducted in Bogor found that the three main problems leading to stunting are exclusive breastfeeding, dietary patterns, and maternal knowledge<sup>17</sup>. Low knowledge about nutrition can result in feeding habits in toddlers that do not comply with nutritional principles, leading to the nutritional status of toddlers being affected.

#### CONCLUSIONS

The distribution of maternal nutrition knowledge falls into the insufficient category at 76.32% (29 individuals) and the sufficient category at 23.68% (9 individuals). Exclusive breastfeeding was given to 42.1% (16 toddlers), while non-exclusive breastfeeding was given to 57.9% (22 toddlers). The occurrence of stunting in the village of Angkup is related to maternal nutrition knowledge and the history of breastfeeding.

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