KESANS: International Journal of Health and Science
2808-7178 / 2808-7380
http://kesans.rifainstitute.com/index.php/kesans/index

Factor That Influences Stunting in Children Under 5 Years in Citrana Village, Oe-Cusse Municipality, Timor-Leste

Maximiano Oqui, Norberto da Costa Abi, Lidia Gomes Saturnina Julieta Geri de Sena, Remigia Auxiliadora de Jesus Ximenes, Olandino Evaristo Obeno, Isabel Bartolomeu Freitas
National University of Timor Leste, University of Hasanuddin
maximiano.oqui@untl.edu.tl

Article Information
Submitted: **30 July 2025**
Accepted: **04 August 2025**
Publish: **30 August 2025**

Keyword: Stunting; Maternal Education; Exclusive Breastfeeding; Complementary Feeding; Child Nutrition;

Year: 2025

Abstract
Introduction*: Stunting is a chronic malnutrition problem caused by prolonged insufficient nutrient intake, indicated by height-for-age (HAZ) with a Z-score between –2 and –3 standard deviations. In 2020, UNICEF estimated that 149.2 million (22%) children under five worldwide were stunted. In Timor-Leste, the Ministry of Health reported a prevalence rate of 47.1%.* ***Objective:*** *This study aimed to identify factors influencing stunting among children under five in Citrana Village, Oe-Cusse Municipality, focusing on maternal education level, family income, maternal knowledge, exclusive breastfeeding, and complementary feeding.* ***Methods:*** *This analytical quantitative study employed a cross-sectional design with a purposive sample of 120 children under five. Data were collected through structured questionnaires and analyzed using SPSS with Chi-square and Spearman rank correlation tests.* ***Results and Discussion:*** *The results showed significant correlations between stunting and maternal education ($p = 0.00$; $r = 0.705$), family income ($p = 0.00$; $r = 0.931$), maternal knowledge ($p = 0.00$; $r = 0.690$), exclusive breastfeeding ($p = 0.00$; $r = 0.543$), and complementary feeding ($p = 0.00$; $r = 0.602$).* ***Conclusions:*** *To reduce stunting in Timor-Leste, targeted interventions are required to address direct causes, such as providing adequate nutrition and integrated management of childhood illness, and indirect causes, including improved sanitation, nutrition services, healthcare, parental education, and promotion of exclusive breastfeeding.*

How to Cite **Maximiano Oqui, Norberto da Costa Abi, Lidia Gomes Saturnina Julieta Geri de Sena, Remigia Auxiliadora de Jesus Ximenes, Olandino Evaristo Obeno, Isabel Bartolomeu Freitas/Factor That Influences Stunting in Children Under 5 Years in Citrana Village, Oe-Cusse Municipality, Timor-Leste, Vol. 4, No. 11, 2025**
DOI https://doi.org/10.54543/kesans.v4i11.410
e-ISSN/p-ISSN **2808-7178 / 2808-7380**
Published by **CV Rifainstitut/KESANS: International Journal of Health and Science**

Introduction

According to WHO, malnutrition is a serious health problem for children under five in developed and impoverished countries, including Timor Leste. The factors causing malnutrition are related to both mutual problems and negative impacts on health (Prima *et al.*, 2017). Stunting is a chronic malnutrition problem caused by insufficient nutritional intake over a long period of time due to insufficient food supply (Yenia and Elfindri, 2022). Stunting is a nutritional status based on the height-for age indicator (A/I) in anthropometric standards to assess the nutritional status of children. The measurement results are at the technical level (Z-Score) from < 2 SD to 3 SD in the stunted category and from <-3 SD in the severely stunted category (Kemenkes, 2022).

According to the United Nations International Children's Fund estimation, the prevalence of stunted children under five in the world reached 149.2 million (22%) in 2020. From these data, Southern Asia had 53.8 million (36%), West, and Central Africa had 29.3 million (19.6%), East and Southern Africa had 28 million (18.76%), East Asia and the Pacific had 20.7 million (13.87%), the Middle East and North Africa had 7.7 million (5.16%), Latin America and the Caribbean had 5.8 million (3.88%), and Eastern Europe excluding Russia had 2.5 million (1.67%). Thus, the WHO reports that the trend of stunting for children under five is positively changing or decreasing, despite being affected by the pandemic situation, but still remaining at 26.7% from 203.6 million in 2000 (WHO and Unicef, 2021).

Based on the research results from the Indonesian Nutritional Status Study, reported by the Republic of Indonesia's Ministry of Health, the prevalence of stunting in children under five has reached 24.4% in 2021, decreasing from 21.6% in 2022. Therefore, there is a possibility that it will decrease to 14% in 2024 (KemenKes, 2023).

According to research on food and nutrition in Timor-Leste, conducted and released by the Timor-Leste Ministry of Health, there is a tendency towards stunting among children under five years old, reaching 47.1% (16.9% severe stunting and 30.2% moderate stunting). Stunting is more prevalent among boys (52.0%) than girls (46.6%), and is more prevalent in rural areas (52.5%) than urban areas (39.8%). This level of prevalence surpasses the WHO's stunting standard limit of 30%, making it a serious problem for the nation, especially if nutritious food for mothers and children is not given enough importance (UNICEF and MdS, 2020).

The prevalence of stunting rates among children under five years old in Timor-Leste, as categorized by municipality, shows that five municipalities have rates more than half the national average: Ermera (63.4%), Ainaro (60.3%), Oe cusse (57.1%), Aileu (53.4%), and Bobonaru (50.3%) (UNICEF and MdS, 2020).

Factors that affect children with stunting include family factors such as limited family knowledge regarding health, complementary or additional food, exclusive maternal breastfeeding and nutrition before and during postpartum period, limited health care services such as antenatal and postnatal care, limited access to nutritious food, and limited access to sanitation and clean water. These factors require decisive intervention, especially in improving nutrition during the first 1000 days of life after a child is born (KemenKes, 2022).

The prevalence of stunting in Timor Leste is significantly high due to many factors that hamper proper growth and development in children under five years old. According to the information reported by UNICEF in 2020, many factors or multifactorial issues

cause stunting in children under five years old in Timor Leste, such as poor nutrition (ages 0-59 months), morbidity (ages 0-59 months), immunization and supplementation (ages 6-59 months), infant and young child feeding practices (ages 0-23 months), reproductive age of mothers (ages 15-49 years), food security, clean water access, and sanitation.

To combat Stunting in Timor Leste, the Ministry of Health needs to carry out specific prevention and intervention measures to address the direct causes of Stunting such as providing nutritious food for children, preventing infectious diseases, and managing sick children in an integrated manner (UNICEF and MdS, 2020). Sensitivity interventions that address indirect causes of Stunting such as providing clean water and sanitation, nutrition and health services, raising awareness about nutrition and exclusive breastfeeding, and increasing access to food also need to be carried out (Kurniawan et al., 2022).

To reduce Stunting in Timor Leste, the Ministry of Health also needs to carry out prevention activities by promoting health in communities to increase community knowledge about Stunting, improving community health care, caring for pregnant and breastfeeding mothers, providing healthy food for babies and children, developing or rehabilitating health posts in the subdistricts, placing doctors in every subdistrict, providing sanitation and clean water installations to communities, and ensuring every subdistrict has an ambulance. Socialization and health education for the community on a clean and healthy life are also necessary.

Methods

The research method used for this study is a quantitative analytical approach with a cross-sectional procedure. The research was conducted in the Citrana village in Oe cusse municipality in January 2024, with a population of all children under the age of five in the Citrana village. The sample for the study was 120 children under the age of five. The sampling technique used was purposive sampling. The independent variables for this study were maternal education level, family income, maternal knowledge, exclusive breastfeeding and complementary food provision. The dependent variable was Stunting in children under the age of five. The data collection tools used were questionnaires, z-score formats, and tape measures. Analysing bivariate data using the SPSS program to analyse chi square and Spearman rank correlation tests. This study used two ethical clearances from the Faculty of Medicine and Health Sciences, National University in East Timor, with approval numbers 49/FMCS/UNTL/I/2024 and 01/INSP-TL/DNPD/I/2024 by the National Institute of Public Health of Timor-Leste, National Directorate of Research and Development. Prior to the study, the teacher and headmaster provided students with informed consent through a clear protocol obtained from both parents and guardians, ensuring that ethical standards were met, and their participation was voluntary.

Result and Discussion

1. Results

Characteristics of Female

Table 1
Frequency distribution of characteristic based on the education level, age, work level, and quantity of family members

Distribution	Frequency	Percentage
Education Level of Female		
Iliterate	31	25.8
Primary	27	22.5
Pre-Secondary	16	13.3
Secondary	42	35
Higher Education	4	3.3
Total	**120**	**100**
Mother's Age		
< 20	13	10.8
20-29	40	33.3
30-39	32	26.7
≥40	35	29.2
Total	**120**	**100**
Mother's Employment Level		
Homemaker	80	66.7
Employee	22	18.3
Other Job	18	15
Total	**120**	**100**
Quantity of Family Members		
< 5	84	70
≥ 5	36	30
Total	**120**	**100**

Based on the above table, the distribution of the mother's characteristic indicates that out of the total of 120, most of mothers have a secondary education level with a frequency of 42 (35%). Most of mothers' ages are within the range of 20-29 years old with a frequency of 40 (33.3%). Most of mothers are homemakers with a frequency of 80 (66.7%). Most of families have less than 5 members with a frequency of 84 (70%).

Characteristics of Toddlers

Table 2
Frequency distribution for children under five years old, based on Gender and Age

Distribution	Frequency	Percentage
Female		
Male	69	57.5
Female	51	42.5
Total	**120**	**100**
Age of Children		
< Months 30	57	47.5
≥ Months 30-59	63	52.5
Total	**120**	**100**

Based on table 2 above, the results show that out of 120 children under five years old, the majority were male with a frequency of 69 (57.5%). In terms of age, the majorit y were ≥ 30-59 months old with a frequency of 63 (52.5%).

Univariate Analysis

Table 3
Frequency distribution based on the variable of stunting, maternal education level, family income, maternal knowledge, exclusive breastfeeding supply, and complementary food

Distribution	Frequency	Percentage
Stunting		
Normal	49	40.8
Stunting	71	59.2
Total	**120**	**100**
Maternal Education Level		
High education	46	38.3
Education Level Low	74	61.7
Total	**120**	**100**
Family Income		
Diak	47	39.2
Menus	73	60.8
Total	**120**	**100**
Maternal Education		
Good	49	40.8
Low	71	59.2
Total	**120**	**100**
Breastfeeding Supply Exclusive		
Exclusive	69	57.5
Non-Exclusive	51	42.5
Total	**120**	**100**
Complementary Food		
Good	48	40
Less	72	60
Total	**120**	**100**

Based on the above table 3, the results indicate that out of the total sample of 120 people, the majority of stunting occurred with a frequency of 71 (59.2%). The majority of maternal education level was low with a frequency of 74 (61.7%). The majority of family income was low with a frequency of 73 (60.8%). The majority of maternal knowledge was low with a frequency of 71 (59.2%). The majority of exclusive breastfeeding supply was exclusive with a frequency of 69 (57.5%). The majority of complementary food consumption was low with a frequency of 72 (60%).

Bivariate Analysis

Table 4
Analysis of the level of education factor and stunting incidents in children under five

Level of Education	Stunting Incidents				Total		Spearman Rank	
	Normal		Stunting					
	n	%	n	%	n	%	*Coefficient*	*Sig. (2-tailed)*
High	39	32.5	7	5.8	46	38.3		
Low	10	8.3	64	53.3	74	61.7	0.705	0.000
Total	**49**	**40.8**	**71**	**59.2**	**120**	**100**		

Based on the above Table 4, the result of the statistical correlation test analysis shows that the significant p value = 0.00 is less than α=0.05, meaning that the level of education factor has a significant influence on stunting incidents in children under five. The coefficient correlation value = 0.705, which is located between 0.60-0.79, represents a strong correlation category.

Table 5
Analysis of family income factor with stunting incidence in children under five

Family Income	Stunting Incidence				Total		Spearman Rank	
	Normal		Stunting					
	n	%	n	%	n	%	*Coefficient*	*Sig. (2-tailed)*
Good	46	38.3	1	0.8	47	39.2		
Less	3	2.5	70	58.3	73	60.8	0.931	0.000
Total	**49**	**40.8**	**71**	**59.2**	**120**	**100**		

Based on the above table 5, the results of statistical correlation spearman rank test show that the significant p value = 0.00 smaller than α=0.05, which indicates that the family income factor has a significant influence on stunting incidence in children under five from Citrana village. And the coefficient correlation value = 0.931, which is located between 0.80 0.99 strong correlation category.

Table 6
Analysis of mother's knowledge factor with stunting incidence in children under five

Knowledge Mother's	Influence Stunting				Total		Spearman Rank	
	Normal		Stunting					
	n	%	n	%	n	%	*Coefficient*	*Sig. (2-tailed)*
Good	40	33.3	9	7.5	49	40.8		
Less	9	7.5	62	51.7	71	59.2	0.690	0.000
Total	**49**	**40.8**	**71**	**59.2**	**120**	**100**		

Based on table 6 above, the result of spearman rank correlation statistical analysis test Based on the table 6 above, the result of the statistical analysis test, Spearman's rank correlation, shows that the small p value of 0.00 (less than α=0.05) indicates that the factor of mother's knowledge significantly influences children under study. The coefficient correlation value of 0.690 located between 0.60 0.79 is a strong correlation category.

Table 7
Analysis of exclusive maternal breast milk supply factor with stunting incidence

Supply Exclusive Maternal Breas Milk Supply	Influence Stunting				Total		Spearman Rank	
	Normal		Stunting					
	n	%	n	%	n	%	*Coefficient*	*Sig. (2-tailed)*
Exclusive	44	36.7	25	20.8	69	57.5		
NonExclusive	5	4.2	46	38.3	51	42.5	0.543	0.000
Total	**49**	**40.8**	**71**	**59.2**	**120**	**100**		

Based on table 7 above, the result of the statistical analysis test, Spearman's rank correlation, shows that the small p value of 0.00 (less than α=0.05) indicates that the exclusive maternal breast milk supply factor has a significant influence on stunting incidence in children under five. The coefficient correlation value of 0.543 located between 0.40-0.59 is a moderate correlation category.

Table 8
Analysis of complementary feeding factors with stunting incidence among children under five years old

Complementary Food	Stunting incidence				Total		Spearman Rank	
	Normal		Stunting					
	n	%	n	%	n	%	*Coefficient*	*Sig. (2-tailed)*
Good	37	30.8	11	9.2	48	40		
Low	12	10	60	50	72	60	0.602	0.000
Total	**49**	**40.8**	**71**	**59.2**	**120**	**100**		

Based on Table 8 above, the results of the analysis of Spearman Rank correlation statistical test indicate that the level of significance p value = 0.00, smaller than α=0.05, which means that complementary feeding factors have a significant influence on stunting incidence among children under five years old. And the coefficient correlations value = 0.602, which is located between 0.60-0.79, is categorized as a strong correlation.

2. Discussion

Mother's Characteristics

Based on Table 1 above, the distribution of mother's characteristics results showed that out of the total of 120 mothers, the majority of them have a secondary education level with a frequency of 42 (35%). The age of the majority of the mothers is between 20-29 years old, with a frequency of 40 (33%). The majority of the mothers are housewives, with a frequency of 80 (66.7%). The quantity or total number of family members, the majority have less than 5 members with a frequency of 84 (70%).

Based on the results from researcher (Jannah, 2021), it shows that out of the total respondents of 80, the majority had a medium level of education with a frequency of 47 (58.8%). In terms of age, the majority of mothers were between 26-35 years old with a frequency of 54 (67.5%). Majority of the mothers were unemployed with a frequency of 70 (87.5%) according to the (Wahyu, Ginting and Sinaga, 2022) study which surveyed 27 respondents. Most respondents had 1-3 children in their family with a frequency of 24 (70%) and the minority had 4-6 children with a frequency of 3 (11.1%).

Therefore, the researcher concluded that a lower level of education among mothers can lead to lack of knowledge about certain matters. Additionally, a higher number of unemployed mothers can potentially lead to stunting in children under 5 years old. This is also related to the family's economic situation and their ability to provide nutritious meals to their family members.

The Univariate Analysis

The analysis from table 3 above showed that out of the total sample of 120, stunting occurred most frequently with a frequency of 71 (59.2%). Similarly, another study conducted by (Oktaviani *et al.*, 2022) with 90 samples showed that the majority of participants experienced stunting with a frequency of 47 (52.2%). Stunting, or "short stature," is a condition where the height of a child under 5 years old is low compared to their age due to chronic malnutrition, especially during the first 1,000 days after birth (Ramayulis *et al.*, 2018). Therefore, it is important to address factors such as nutrition for both mothers and children to prevent stunting that can potentially lead to negative impacts

on human resources for families and the nation in the future.

In terms of the level of education of mothers, the majority had a lower level of education with a frequency of 74 (61.7%). Similarly, from (Syarif, 2022) research, with a total sample of 251, the majority showed low maternal education levels with a frequency of 194 (77.3%). This makes maternal education a determining factor in influencing stunting among children since mothers with low education levels lack knowledge and positive attitudes towards promoting healthy eating habits for their children while also neglecting their children's care. Moreover, maternal education can also reduce the incidence of stunting when many mothers have low levels of education (Rezaeizadeh *et al.*, 2024).

Furthermore, research by (Sari and Harianis, 2022), with a sample size of 52, showed that the majority of families with low incomes have a frequency of 37 (71.2%). Thus, low family income also significantly influences the incidence of stunting among children as such families lack the means to purchase nutritious food for their children, resulting in stunting. Lastly (Kurniati, 2022) research, with a total sample of 124, showed that the majority of mothers with good knowledge has a frequency of 65 (52.4%). Therefore, maternal knowledge is another significant factor that can increase stunting, especially in mothers with poor knowledge, even though some studies indicate that there is a positive relationship between maternal knowledge and stunting (Aprilyawan and Wibowo, 2024).

Exclusive maternal breast milk supply is a significant factor in stunting incidence, with a majority of 69 (57.5%) having exclusive supply based on research results from (Latifah, Purwanti and Sukamto, 2020) on a sample size of 48. It is concluded that this factor is a determining factor in causing stunting events, as mothers must initiate early and provide exclusive breast milk supply for at least 6 months and continue for up to 2 years, and also refrain from providing any other food to children for the first 6 months.

Complementary food consumption is another contributing factor to stunting, with a majority of 160 (58.2%) consuming food with a frequency of 72 (60%) based on research results from (Lutfiana, 2018) on a total sample size of 275. Thus, consuming complementary food that is less nutritious with high frequency is also a contributing factor to stunting incidence.

The Bivariate Analysis

For the factor of education level and the incident of stunting

Based on table 4 above, the result of statistical correlation analysis shows that the significant value p value = 0.00 is less than α=0.05, meaning that the factor of education level has a significant influence on the incident of stunting in children under five years old. With a correlation coefficient value of 0.705, located between 0.60-0.79 in the strong correlation category. This is similar to the research done by (Syarif, 2022), where the result shows Chi-Square statistical analysis and a significant value p-value =0.00 less than α=0.05, indicating a significant relationship between the education level of mothers and the incident of stunting.

Education is the highest level achieved by an individual, in which education is a means to engage in science. Education is a key factor that influences the development of malnutrition, as it is related to a person's ability to manage, receive and understand information, because education levels can affect eating habits through the food system

for children under five years of age (Hagos *et al.*, 2017). Therefore, the researchers concluded that mothers with good/high education levels (upper secondary and above) mostly do not experience stunting because they have positive attitudes towards nutrition, which helps to complete adequate nutrition needs for their families. However, mothers with lower education levels (lower than secondary education) mostly experience stunting among their children because they lack knowledge about nutrition and how to manage it for their children. Thus, higher education levels also influence the capacity to receive information about children's nutrition and health. Many mothers reported that they watch television and read newspapers/magazines, both of which provide good knowledge about child nutrition and health.

Regarding the family income factor and the incidence of stunting,

Based on Table 5 above, the result of Spearman Rank correlation statistical test analysis showed that the significant value was (p-value = 0.00), which is smaller than α=0.05. It means that family income is a significantly influential factor for stunting among children under five years of age. The coefficient correlation value was 0.931, which is located between 0.80-0.99, a very strong correlation category. This finding is similar to (Lutfiana, 2018), where Chi-Square statistical analysis showed a significant value of (p-value = 0.000) smaller than 0.05, which means that there is a significant relationship between family income and stunting incidence.

Family income is a factor associated with stunting in children under 5 years old. The small economic income of families has a strong influence on reduced food intake and poor food quality because families do not have the capacity to buy food with good nutrition. Insufficient economic conditions can cause children to suffer from severe stunting and inadequate nutrition, which has an impact on their physical and mental growth (Purnama Atmaja *et al.*, 2020). Income and prices for food production influence the level of food consumption. A low income can increase the need to purchase good quality food compared to a lower income, which reduces the need to buy food with good nutrition (Sari and Harianis, 2022)

Therefore, the researchers concluded that the majority of families with good income do not experience stunted children because they have a budget to buy food with good nutrition for their children based on their needs. On the other hand, families with minimal income have the majority of stunted children because they do not have a budget to buy food with good nutrition for their children, resulting in a high number of severe stunting.

To factor in knowledge of mother in stunting event.

Based on table 6 above, the results of the statistical test analysis correlation spearman rank show that the significant level value p value = 0.00 is smaller than α=0.05, indicating that the factor of maternal knowledge has a significant influence on the occurrence of stunting in children under five years of age. Furthermore, the coefficient correlation value is 0.690, which falls in the strong correlation category of 0.60 0.79. These findings are similar to the research conducted by (Kurniati, 2022), which shows that the statistical analysis results have a p- value of 0.000 (p.value<0.05) with an Odd Ratio of 5.091, indicating that the level of maternal knowledge, which is less, has a risk of 5.091 to occur stunting in children.

Knowledge about nutrition is an initial process to change behavior and improve nutrition status, making it an internal factor that influences behavioral change. A mother's knowledge about nutrition determines her actions in providing food for her child. Mothers with good knowledge about nutrition can provide the right type and quantity of food to support the healthy growth of their children up to the age of five (Sari and Harianis, 2022).

The job of mother is very important in improving the nutritional status of children. Starting with determination, selection, processing, and serving nutritious menus. According to (Zogara and Pantaleon, 2020), a mother's knowledge is a determining factor in implementing health behavior for the family, such as selecting and processing food to ensure good nutrition. Knowledge about stunting helps improve children's nutrition to achieve normal height and avoid stunting. Knowledge also provides the ability to comprehend various sources of information, such as social media or formal and informal education (Anggraeni *et al.*, 2023).

Therefore, the researchers conclude that most of the mothers who have good knowledge about nutrition do not experience stunting because of their good behavior in providing nutritious food for their children according to the type and quantity needed. However, mothers with less knowledge about nutrition contribute to higher rates of stunting due to their lack of understanding and poor management of their children's nutrition.

Exclusive provision of breast milk is a significant factor that contributes to stunting.

Based on table 7 above, results from statistical analysis indicate a significant correlation (P value = 0.00, significance level α=0.05) between exclusive provision of breast milk and stunting in children aged 5 years or younger. The correlation coefficient value of 0.543 falls under the category of moderate correlation (0.40-0.59). This finding is consistent with research by (Latifah, Purwanti and Sukamto, 2020) where Chi-square statistical analysis showed a significant relationship between exclusive provision of breast milk and stunting in children aged 1-5 years old.

Breast milk is a vital fluid produced by a mother that is essential for babies and contains various substances necessary for their growth and development as per their body's needs (Agustina, Hamisah and Mutia, 2020). Exclusive provision of breast milk for the first six months of a baby's life, along with supplementation if needed, is recommended by UNICEF and WHO (Sanofarizka, Rahfiludin and Fatimah, 2022). However, problems related to the provision of exclusive breast milk often occur, such as delayed initiation of breastfeeding, failure to follow standard procedures, or cessation of exclusive breastfeeding before 6 months, leading to the provision of additional food for babies (Wati, Kusyani and Fitriyah, 2021).

Babies aged 0-6 months need exclusive breastfeeding because the process of digesting other complementary foods is not mature enough for their organs to receive them. Breast milk is different from formula milk because the latter does not have a complete composition of nutrients. Breast milk is the perfect food for babies and meets all their nutritional needs (Wangiyana *et al.*, 2020).

Therefore, researchers conclude that mothers who exclusively breastfeed their babies for the first 6 months and continue to breastfeed until 2 years of age, while not giving any other foods until 6 months, have healthy babies without stunting. However, the opposite happens when mothers do not breastfeed exclusively, starting late or giving

complementary foods before 6 months. This situation causes stunting for children under 5 years of age because most people do not provide colostrum milk, start breastfeeding late, do not follow exclusive breastfeeding standards, and stop breastfeeding or provide additional foods before 6 months.

For complementary food factors with stunting incidents,

Based on table 8 above, the results of the analysis of statistical tests using the Spearman rank correlation show that the significant value is p-value=0.00 which is smaller than α=0.05, indicating that complementary food factor has a significant influence on the occurrence of stunting in children under five years old. The coefficient correlation value is 0.602 located between the categories of strong correlation, which is consistent with previous research by (Lutfiana, 2018) using Chi Square statistical analysis. The inadequate complementary food factors include the quality of food that is unvaried or less nutritious, inadequate feeding methods such as frequency, consistency, and quantity, unsafe food and beverage with pesticide contamination, unhygienic practices, and unsafe storage and preparation of food. Thus, it is important to provide appropriate complementary food to infants over six months of age to support their growth and development. However, failure to follow proper standards can lead to a high incidence of stunting.

The lack of complementary foods for breast milk is caused by a decrease in food quality, namely the absence of good nutrition. And inadequate feeding methods; Inadequate frequency, consistency and quantity of food. Safety and beverages such as food and drinks contaminated with pesticides, clean hygiene practices, foods without salt, safe food storage and preparation (Beal *et al.*, 2018). Thus the researchers concluded that there are complementary foods for breast milk that are important to give to babies after the baby reaches 6 months of age. This is to complement the growth and development needs of the baby and child's body. However, if standards are not provided it will cause high stunting rates.

Conclusion

The research results indicate that education level of the mother, family income, maternal knowledge, exclusive breastfeeding, and complementary food consumption are significant factors in the incidence of stunting in children under five in the Citrana sub-village of Oe-cusse municipality.

Acknowledgement

The reseach to express thanks to the academic institution of the Nursing School, the village chie, sub village chief, and collaborating respondents who worked together with the researcher. And finally, thank you to all the people who provided support, endorsement and suggestions to this research in order to finish it well.

References

Agustina, Hamisah, I. and Mutia, Y. (2020) Hubungan promosi susu formula, produksi ASI dan psikologis ibu dengan pemberian ASI Eksklusif The relationship of formula milk promotion, breast milk production and psychological mothers with exclusive breastfeeding. *SAGO*, 1(2), pp. 159–164. Available at: https://doi.org/10.30867/sago.v1i2.409.

Anggraeni, L.D. *et al.* (2023) Factors Affecting Community Knowledge Regarding Stunting in South Tangerang. *Malaysian Journal of Nursing*, 14(3), pp. 143–148. Available at: https://doi.org/10.31674/mjn.2023.v14i03.017.

Aprilyawan, G. and Wibowo, T.S. (2024) The Influence of Health Education On Mother's Knowledge About Stunting Prevention In Toddler Age Children: Literature Review. *Health Scientific Journal*, 5(1), pp. 1–5. Available at: https://doi.org/10.55700/oahsj.v5i1.43.

Beal, T. *et al.* (2018) A review of child stunting determinants in Indonesia. *Maternal and Child Nutrition*. Blackwell Publishing Ltd. Available at: https://doi.org/10.1111/mcn.12617.

Hagos, S. *et al.* (2017) Spatial heterogeneity and risk factors for stunting among children under age five in Ethiopia: A Bayesian geo-statistical model. *PLoS ONE*, 12(2). Available at: https://doi.org/10.1371/journal.pone.0170785.

Jannah, F. (2021) Hubungan Tingkat Pendidikan Dan Pengetahuan Orang Tua Terhadap Kejadian Stunting Pada Balita Di Puskesmas Kebayoran Baru Kota Jakarta Selatan. Sarjana Kedokteran. Universitas Islam Negeri Syarif Hidayatullah Jakarta.

KemenKes (2022) *Faktor-faktor Penyebab Kejadian Stunting pada Balita.*, *Kementria Kesehatan: Hoesin Palembang*. Available at: https://yankes.kemkes.go.id/view_artikel/1529/faktor-faktor-penyebab-kejadian-Stunting-pada-balita. (Accessed: 14 November 2023).

KemenKes (2023) *Prevalensi Stunting di Indonesia Turun 21,6% dari 24,4%*, *Kementerian Kesehatan Republik Indonesia*. Available at: https://www.kemkes.go.id/id/rilis-kesehatan/prevalensi-stunting-di-indonesia-turun-ke-216-dari-244 (Accessed: 16 December 2023).

Kemenkes, R. (2022) *Faktor-faktor Penyebab Kejadian Stunting pada Balita. Kementria Kesehatan:*
Hoesin Palembang, *Kementria Kesehatan: Hoesin Palembang*. Available at: https://yankes.kemkes.go.id/view_artikel/1529/faktor-faktor-penyebab-kejadian-Stunting-pada-balita. Asesu iha 29-11-2022. (Accessed: 10 December 2023).

Kurniati, P.T. (2022) Hubungan Tingkat Pengetahuan dan Sikap Ibu Terhadap Kejadian Stunting Pada Balita Di Puskesmas Sungai Durian Kabupaten Sintang Tahun 2021. *JurnalMedika Usada*, 5(1), pp. 58–64.

Kurniawan, A.W., Maulina, R. and Fernandes, A. (2022) Faktor yang Berhubungan dengan Berat Badan Kurang pada Balita di Timor Leste. *Jurnal Kesehatan Vokasional*, 7(3), p. 139. Available at: https://doi.org/10.22146/jkesvo.69648.

Latifah, A.M., Purwanti, L.E. and Sukamto, F.I. (2020) Hubungan Pemberian Asi Eksklusif Dengan Kejadian Stunting Pada Balita 1-5 Tahun. *Health Science Journal*, 4(1), pp. 131–142. Available at: https://doi.org/10.24269/hsj.v4i1.409.

Lutfiana, O.N. (2018) *Faktor-Faktor Yang Berhubungan Dengan Kejadian Stunting Di Wilayah Kerja Upt Puskesmas Klecorejo Kabupaten Madiun Tahun 2018*. S1. Sekolah Tinggi Ilmu Kesehatan Bhakti Husada Mulia. Available at: http://repository.stikes-bhm.ac.id/351/ (Accessed: 11 March 2024).

Oktaviani, P. *et al.* (2022) *Faktor-Faktor Yang Mempengaruhi Kejadian Stunting Bada Balita Di Wilaya Kerja Puskesmas Kerkap Kabupaten Bengkulu Utara*. Doctoral dissertation. Poltekkes Kemenkes Bengkulu. Available at: https://repository.poltekkesbengkulu.ac.id/1506/1/SKRIPSI%20POPI%20OKTAVIANI.pdf (Accessed: 28 February 2024).

Prima, E. *et al.* (2017) *Layanan Kesehatan, Gizi da Perawatan*. Edited by Direktorat Pembinaan Pendidikan Anak Usia Dini Direktorat Pendidikan Anak Usia Dini dan Pendidikan Masyarakat. Jakarta.

Purnama Atmaja, B. *et al.* (2020) Kejadian stunting pada anak umur 1-5 tahun di Desa Rantau Panjang Hilir Incidences of stunting in children 1-5 years in Rantau Panjang Hilir Village. *JHECDs*, 6(2), pp. 65–72. Available at: https://doi.org/10.22435/jhecds.v6i2.31243.

Ramayulis, R. *et al.* (2018) *Stop stunting dengan konseling gizi*. Cetakan I. Edited by Atmarita. Jakarta: Penebar Plus+ (Penebar Swadaya Group).

Rezaeizadeh, G. *et al.* (2024) Maternal education and its influence on child growth and nutritional status during the first two years of life: a systematic review and meta-analysis. *eClinicalMedicine*, 71. Available at: https://doi.org/10.1016/j.eclinm.2024.102574.

Sanofarizka, L., Rahfiludin, M.Z. and Fatimah, S. (2022) Faktor-Faktor yang Berhubungan dengan Pemberian ASI Eksklusif di Desa Cimekar Kabupaten Bandung. *Media Kesehatan Masyarakat Indonesia*, 21(6), pp. 387–393. Available at: https://doi.org/10.14710/mkmi.21.6.387-393.

Sari, N.I. and Harianis, S. (2022) Analysis of Factors Affecting the Incidence of Stunting in Toddlers. *Maternal & Neonatal Health Journal*, 3(2), pp. 57-64. Available at: https://garuda.kemdikbud.go.id/documents/detail/2906905 (Accessed: 28 May 2024).

Syarif, S.N. (2022) *Hubungan Faktor Ibu dengan Kejadian Stunting Balita Usia 0-59 Bulang di Wilayah Puskesmas Kassi Kecamatan Rappocini Tahun 2021*. Available at: https://journals.stikim.ac.id/index.php/jikm/article/view/505 (Accessed: 28 May 2024).

UNICEF and MdS (2020) *Digital Tetun TL Food Nutrition Survey 2020 FINAL*. Dili: Unicef and Ministerio da Saude Timor Leste. Available at: https://www.unicef.org/timorleste/media/4611/file/Digital_Tetun_TL%20Food%20Nutrition%20Survey%202020_FINAL_20%204%202022.pdf (Accessed: 10 November 2023).

Wahyu, A., Ginting, L. and Sinaga, N.D. (2022) Jumlah Anak, Jarak Kelahiran Anak dan Peran Ayah dengan Kejadian Stunting Selama Pademi COVID-19. *Jurnal Keperawatan Silampari*, 6(1), pp. 535–543. Available at: https://doi.org/10.31539/jks.v6i1.4554.

Wangiyana, N.K.A.S. *et al.* (2020) The Complementary Feeding Practice And Risk Of Stunting Among Children Aged 6-12 Months In Central Lombok. *The Journal of Nutrition and Food Research*, 43(4), pp. 81–88.

Wati, S.K., Kusyani, A. and Fitriyah, E.T. (2021) Faktor-faktor yang Berhubungan dengan Kejadian Stunting pada Balita. *Journal of Health Science Community*, 2(1), pp. 85–92. Available at: https://doi.org/https://doi.org/10.33221/jikm.v9i02.505.

WHO and Unicef (2021) 'The taxa Insidence of Stunting in the World is Descreasing', *Databoks*, pp. 1–1. Available at: https://databoks.katadata.co.id/datapublish/2021/09/23/jumlah-balita-Stunting-di-dunia-menurun-tapi-tak-merata. (Accessed: 10 November 2023).

Yenia, W. and Elfindri (2022) Faktor Yang Berhubungan Dengan Kejadian Stunting Pada Balita Di Wilayah Kerja Puskesmas Gunung Kota Padang Panjang Tahun 2022, 2(2).

Zogara, A.U. and Pantaleon, M.G. (2020) Faktor-faktor yang Berhubungan dengan Kejadian Stunting pada Balita. *Jurnal Ilmu Kesehatan Masyarakat*, 9(02), pp. 85–92. Available at: https://doi.org/10.33221/jikm.v9i02.505.