KEMAS 20 (3) (2025) 523-533

Jurnal Kesehatan Masyarakat

http://journal.unnes.ac.id/nju/index.php/kemas

Stunting Among Children Aged 6-59 Months in Gorontalo, Indonesia

Sri Nurlaily Z[1] ✉, Rahma Dewi Agustini[1], Nurhidayah[1],
[1]Poltekkes Kemenkes Gorontalo, Gorontalo, Indonesia

Article Info

Article History:
Submitted September 2024
Accepted Desember 2024
Published January 2025

Keywords:
Factor; Socio-Cultural; Social
Demographics; Stunting

DOI
https://doi.org/10.15294/kemas.v20i3.13539

Abstract

Stunting remains a significant public health challenge in Indonesia, particularly among children aged 6-59 months. Stunting, defined as low height-for-age, results from chronic undernutrition during the most critical periods of growth and development. This study aims to analyze the sociodemographic and socio-cultural factors associated with stunting in Gorontalo, Indonesia, to inform targeted interventions. A cross-sectional study was conducted with 325 children aged 6-59 months, selected consecutively. Data were collected using a structured questionnaire covering seven sociodemographic and two sociocultural factors, alongside the Individual Dietary Diversity Score (IDDS) questionnaire. Bivariate analysis was performed using Chi-Square tests, while multivariate analysis employed Logistic Regression to identify significant predictors of stunting. The prevalence of stunting among the sample was 35.7%. Bivariate analysis identified Birth Length, Birth Weight, Family Income, Exclusive Breastfeeding, Complementary Foods, Food Diversity, and Parenting as factors associated with stunting. Multivariate analysis revealed that Birth Length (OR=0.377; 95% CI: 0.188-0.754), Birth Weight (OR=0.231; 95% CI: 0.095-0.561), Exclusive Breastfeeding (OR=0.307; 95% CI: 0.164-0.575), and Food Diversity (OR=0.064; 95% CI: 0.033-0.123) were significant protective factors against stunting. Conversely, Family Income and Education were identified as confounding factors. The findings underscore the critical importance of the first 1000 days of life in preventing stunting. Efforts should improve maternal nutrition to ensure optimal birth weight and length, promote exclusive breastfeeding, and enhance dietary diversity among young children. Addressing these factors can significantly reduce the prevalence of stunting and improve child health outcomes in Gorontalo.

Introduction

The Malnutrition remains a critical public health issue globally, particularly in low and middle-income countries (LMICs), including Indonesia, which faces the dual burden of undernutrition and overnutrition. In 2020, an estimated 149.2 million children under five years of age worldwide suffered from stunting, 45.4 million from wasting, and 38.9 million from overweight. The global prevalence of stunting has declined from 33.1% in 2000 to 22% in 2020. Yet, Asia continues to bear the highest burden with 53% of cases, and Southeast Asia ranks highest within the region at 30.7%. Despite the stunting rate in Indonesia has decreased to 21.5% in 2023, this figure is still far below the national target of 14% in 2024 (Kementrian Kesehatan RI, 2023; Rachmi *et al*., 2016; Riset Kesehatan Dasar (RISKESDAS), 2018; UNICEF, 2021). Stunting is a type of chronic malnutrition that occurs when a child does not receive enough nutrition and experiences frequent infections during critical periods of growth and development, such as during pregnancy and early childhood. Children who are affected by stunting may not reach their full height potential and often experience impaired cognitive development, which can result in poor academic performance, reduced economic productivity in adulthood, and increased susceptibility to chronic diseases. These negative consequences contribute to a

✉ Correspondence Address:
Poltekkes Kemenkes Gorontalo, Gorontalo, Indonesia
Email: srinurlailyz@poltekkesgorontalo.ac.id

pISSN 1858-1196
eISSN 2355-3596

cycle of poverty and inequality, highlighting the pressing need for effective interventions (Agustian *et al*., 2023; Delima *et al*., 2023; Mustakim *et al*., 2022)

Improving socioeconomic conditions and expanding the availability of postpartum vitamin supplements are crucial in reducing the significant impact of stunting. Implementing family planning activities and programs prioritizing maternal health during pregnancy and lactation is essential for enhancing child health outcomes and reducing the likelihood of stunting (Kusumajaya *et al*., 2023; Nomura *et al*., 2023; Thahir *et al*., 2023). Comprehensive strategies addressing both prenatal factors—such as maternal height, weight gain, and anemia—and postnatal factors—including breastfeeding practices, infection control, and dietary diversity—are necessary for effective stunting prevention (Krisnana *et al*., 2020; Sartika *et al*., 2021). Research has consistently identified several determinants of stunting, including maternal characteristics (e.g., education, short stature, poor nutritional status before and during pregnancy), child-specific factors (e.g., age, disease burden, inappropriate feeding practices during the first 1,000 days of life), household conditions (e.g., wealth index, family size, place of residence), and access to essential services (e.g., healthcare utilization, water, and sanitation facilities) (Bustos *et al*., 2023; Permatasari *et al*., 2023; Yefri *et al*., 2022). Additionally, numerous studies have explored the impact of various risk factors on stunting, such as malnutrition, infectious diseases, household environment, child sex, birth weight, maternal body mass index, food security, maternal occupation, household size, number of children under five, exclusive breastfeeding duration, and the timing of complementary feeding introduction (Imaniar *et al*., 2022; Kasmita *et al*., 2023; Linawati, 2022; Louis *et al*., 2022; Mahudeh *et al*., 2023; Nurlita sari *et al*., 2022; Puspitasari *et al*., 2023).

Despite the wealth of knowledge on the determinants of stunting, there remains a significant gap in understanding the role of local factors, such as cultural practices, customs, and beliefs, which may uniquely influence stunting in specific contexts. This gap underscores the importance of conducting localized studies to identify and address the specific causes of stunting within different communities. This study aims to analyze the sociodemographic and sociocultural factors associated with stunting among children aged 6-59 months in Gorontalo, Indonesia. The novelty of this study lies in its focus on the unique cultural and contextual factors influencing stunting in Gorontalo, which have not been extensively explored in previous research. By identifying these local determinants, this study aims to inform targeted interventions and policies to effectively reduce stunting rates in the region. The findings are expected to contribute to the broader body of literature on stunting by highlighting the importance of considering local contexts in the design and implementation of nutrition and health programs.

Method

This study employs a descriptive-analytic research design with a cross-sectional approach to analyze sociodemographic and sociocultural factors associated with the incidence of stunting in the Tilango Subdistrict of Gorontalo Regency in 2022. Cross-sectional studies observe subjects at a single point in time, with measurements conducted concurrently with the study. This approach is suitable for examining associations between various factors and the occurrence of stunting within the specified timeframe. The population for this study comprises all toddlers residing in the Tilango Subdistrict, Gorontalo Regency, totaling 1,377 individuals. To determine an appropriate sample size, the population proportion formula was used, factoring in a stunting prevalence of 12.4%, a desired level of absolute accuracy (d) of 5%, and a significance level (Zα) of 95% (1.96). The calculated sample size meets the minimum requirements established by the rule of thumb formula, which recommends a sample size of 5-50 times the number of independent variables under study, with 10 times being the most recommended.

Sampling was conducted using a consecutive sampling technique. This method ensures that all eligible participants who meet the study criteria are included until the required sample size is reached. The inclusion criteria for this study were parent and child

pairs where the child is aged 6-60 months, residing in the Tilango Subdistrict, and the mother possesses a KIA (Maternal and Child Health) book. Additionally, parent and child pairs had to be willing to participate as research subjects. Exclusion criteria included mothers with children with congenital abnormalities, as these conditions could confound the study's results. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) Version 25. Univariable analysis determined the frequency distribution of both dependent and independent variables. Bivariable analysis used the Chi-Square test to examine relationships between sociodemographic and sociocultural factors and stunting.

Table 1. Prevalence of Stunting in Tilango Subdistrict, Gorontalo Regency, 2022

Height	n	(%)
Normal	209	64,3
Stunting	116	35,7
Total	325	100

Source: Primary Data, 2022

Table 2. Characteristics Based on Sociodemographic Factors:

Factors	n	%
Birth Body Length		
Normal (≥ 48)	201	61,8
Short (<48)	124	38,2
Birth weight		
Normal (≥2500)	271	83,4
Low (<2500)	54	16,6
Gender		
Woman	164	50,5
Man	161	49,5
Mother's Age		
Safe (20-35)	241	74,2
At risk (<20/>35)	82	25,2
Maternal Education		
College	33	10,2
Senior High School	113	34,8
Junior High School	68	20,9
Elementary School	76	23,4
Not Graduated from Elementary School	35	10,8
Father's Education		
College	22	6,8
Senior High School	101	31,1
Junior High School	42	12,9
Elementary School	108	33,2
Not Graduated from Elementary School	52	16
Income		
RMW (≥ Rp 2.384.020)	86	26,5
RMW (< 2,384,020)	239	73,5
Mother's Height		

Normal (>150)	182	56
Short (<150)	143	44
ANC		
Sufficient (≥ 6)	244	75,1
Less (<6)	81	24,9
Upper arm circumference		
Normal (≥ 23,5)	237	72,9
Less(<23.5)	88	27,1
Parity		
Primipara	88	27,1
Multipara	237	72,9
Lactation		
EBF	168	51,7
No EBF	157	48,3
Complementary foods		
Suitable (≥6 months)	168	51,7
Early (<6 months)	157	48,3

Source: Primary Data, 2022

Table 3. Characteristics Based on Parenting Factors and Food Diversity

Factors	n	%
Food Diversity Diverse Not Diverse	193 132	59,4 40,6
Feeding Parenting Good Less	125 200	38,5 61,5

Source: Primary Data, 2022

Table 4. Association of Sociodemographic Factors with Stunting Incidence in Tilango Subdistrict, Gorontalo Regency (n=325)

Variable	Height		Total n (%)	p	PR
	Normal n (%)	Stunting N (%)			(95% CI)
Birth length: Normal (≥ 48) Short (<48)	 152 (75,6) 57 (46)	 49 (24,4) 67 (54)	 201 124	0,000	3,65 (2,261-5,88)
Birth weight: Normal (≥2500) Low (<2500)	 195 (72) 14 (25,9)	 76 (28) 40 (74,1)	 271 54	0,000	7,3 (3,774-14,238)
Gender: Female Male	 104 (63,4) 105 (65,2)	 60 (36,6) 56 (34,8)	 164 161	0,734	0,92 (0,587-1,456)
Mother's age: Safe (20-35) Risky (<20/>35)	 154 (63,1) 56 (68,3)	 89 (36,9) 26 (31,7)	 243 82	0,636	0,81 (0,456-1,562)

Mother's Education:					
College	27 (81,8)	6 (18,2)	33		1,0
Senior High School	75 (66,4)	38 (33,6)	113		2.23 (0,867-5,996)
Junior high school	39 (57,4)	29 (42,6)	68	0,163	3,35 (1,223-9,157)
Primary school	47 (61,8)	29 (38,2)	76		2,78 (1,023-7,535)
No School	21 (60)	14 (40)	35		3,00 (0,985-9,135)
Father's Education:					
College	17 (77,3)	5 (22,7)	22		1,0
Senior High School	71 (70,3)	30 (29,7)	101		0,37 (0,119-1,157)
Junior high school	21 (50)	21 (50)	42	0,7	0,53 (0,266-1,066)
Primary school	71 (65,7)	37 (34,3)	108		1,26 (0,558-2,850)
No School	29 (55,8)	23 (44,2)	52		0,657 (0,334-1,292)
Income:					
RMW (≥ Rp 2.384.020)	60 (69,8)	26 (30,2)	86	0,218	1,394 (0,821-2,367)
Less RMW (< 2.384.020)	149 (62,3)	90 (37,7)	239		
Mother's Height:					
Normal (>150)	124 (68,1)	58 (31,9)	182	0,105	1,459 (0,924-2,303)
Short (<150)	85 (59,4)	58 (40,6)	143		
Ante Natal Care:					
Enough (≥ 6)	162 (66,4)	82 (33,6)	244	0,173	1,429 (0,854-2,392)
Not enough (<6)	47 (58)	34 (42)	81		
Upper Arm Circumference:					
Normal (≥ 23,5)	156 (65,8)	81 (34,2)	237	0,349	1,272 (0,768-2,106)
Lack (<23,5)	53 (60,2)	35 (39,8)	88		
Parity:					
Primipara	57 (64,8)	31 (35,2)	88	0,915	1,028 (0,616 – 1,715)
Multipara	152 (64,1)	85 (35,9)	237		
Breast Milk:					
EBF	131 (78)	37 (22)	168	0,000	3,586 (2,217-5,799)
Not EBF	78 (49,7)	79 (50,3)	157		
Complementary foods for breast milk:					
In accordance (≥6 months)	131 (78)	37 (22)	168	0,000	3,586 (2,217-5,799)
Early (≥6 months)	78 (49,7)	79 (50,3)	157		

Source: Primary Data, 2002, *Chi-Square Test*

Table 5. Association of Factors in Food Diversity and Parenting Style with Stunting in Tilango Subdistrict, Gorontalo Regency (n=325)

Variable	Height		Total n (%)	p	PR
	Normal n (%)	Stunting n (%)			(95% CI)
Food Diversity:					
Various	167 (86,5)	26 (13,5)	193	0,000	13,764 (7,924-23,908)
Not Diverse	42 (31,8)	90 (68,2)	132		
Parenting Pattern of Feeding:					
Well	90 (43,1)	35 (30,2)	209	0,030	1,750 (1,081-2,834)
Not enough	119 (56,9)	81 (69,8)	116		

Source: Primary Data, 2002, *Logistic Regression Test*

Table 6. Modeling Results of Multivariate Analysis of Factors Related to Stunting in Tilango Subdistrict, Gorontalo Regency (n=325)

Variables	P Value	PR (95% CI)
Birth Lenght	0,006	0,377 (0,188-0,754)
Birth Weight	0,001	0,231 (0,095-0,561)
Exclusive Breastfeeding	0,000	0,307 (0,164-0,575)
Food Diversity	0,000	0,064 (0,033-0,123)
Mother's Education		
Mother's Education (1)	0,065	0,237 (0,051-1,096)
Mother's Education (2)	0,403	0,629 (0,212-1,865)
Mother's Education (3)	0,820	0,875 (0,277-2,769)
Mother's Education (4)	0,767	0,844 (0,275-2,589)
Family Income	0,207	0,610 (0,283-1,315)

Result and Discussion

Based on Table 1. data collected from 325 subjects revealed that 116 (35.7%) experienced stunting. The frequency distribution of respondents can be seen in the table below:

The table reveals several results regarding the characteristics of the respondents, notably, 38.2% of children were born with a shorter body length (<48 cm), and 16.6% had a low birth weight (<2500 g). A significant portion of families (73.5%) had incomes below the Regional Minimum Wage (RMW), and 44% of mothers were of shorter stature (<150 cm). Additionally, 24.9% of mothers had insufficient antenatal care visits (<6), and 27.1% had a low upper arm circumference (<23.5 cm).

The result shows that 40.6% of children did not receive a diverse diet, and 61.5% experienced less effective feeding parenting. Various sociodemographic factors related to the incidence of stunting in the Tilango Health Center's operational area were examined among 325 mother-child. The analysis was conducted based on bivariate analysis of each independent variable, which included sociodemographic factors (birth body length, birth weight, gender, mother's age, maternal and paternal education, family income, mother's height, antenatal care (ANC), maternal nutritional status, parity, exclusive breastfeeding, and timing of complementary feeding). The results are presented in Table 4 which identifies several significant sociodemographic factors associated with stunting. Short birth length (<48 cm) and low birth weight (<2500 g) were strongly linked to higher stunting rates, with prevalence ratios (PR) of 3.65 and 7.3, respectively. Exclusive breastfeeding (EBF) and timely introduction of complementary foods (≥6 months) were protective against stunting, with EBF showing a PR of 3.586. These results emphasize the critical importance of adequate prenatal and postnatal care, proper nutrition, and feeding.

Table 4. identifies several significant

sociodemographic factors associated with stunting. Short birth length (<48 cm) and low birth weight (<2500 g) were strongly linked to higher stunting rates, with prevalence ratios (PR) of 3.65 and 7.3, respectively. Exclusive breastfeeding (EBF) and timely introduction of complementary foods (≥6 months) were protective against stunting, with EBF showing a PR of 3.586. These results emphasize the critical importance of adequate prenatal and postnatal care, proper nutrition, and feeding practices in preventing stunting. Meanwhile, children who did not receive a diverse diet had a substantially higher risk of stunting, with a prevalence ratio (PR) of 13.764. Additionally, inadequate feeding practices were associated with a higher likelihood of stunting, indicated by a PR of 1.750. These findings underscore the importance of promoting diverse diets and proper feeding practices to mitigate stunting in children. The result of the bivariate analysis in Table. 5 highlights the significant impact of food diversity and parenting patterns on stunting.

The multivariate analysis identifies several significant factors associated with stunting in Tilango Subdistrict, Gorontalo. Birth length (p=0.006), birth weight (p=0.001), exclusive breastfeeding (p=0.000), and food diversity (p=0.000) were strongly associated with reduced stunting risk. Specifically, diverse food intake showed a particularly low prevalence ratio (PR) of 0.064, indicating a strong protective effect. These findings emphasize the importance of ensuring adequate birth measurements, exclusive breastfeeding, and dietary diversity to effectively reduce stunting rates. The result can be shown in the Table 6.

Table 4 identifies several significant sociodemographic factors associated with stunting; one of them is a short birth length with a p-value of 0.000. A short birth length carries a 3.65 times higher risk of stunting compared to a normal birth length. The baby's body length at birth describes the baby's linear growth during pregnancy. A low linear measurement usually indicates a state of malnutrition that was due to a past lack of energy and protein that started with slowing or delayed fetal growth (Destarina, 2018; Krebs *et al*., 2022). Insufficient maternal dietary intake before and during pregnancy leads to fetal growth disruptions, resulting in newborns with reduced birth lengths. Due to prenatal malnutrition, these infants are at a higher risk of experiencing stunted growth during childhood. Pregnant women must consume adequate nutrition both before and during pregnancy to promote optimal development of their children (Ali, 2021; Asna & Syah, 2023; Kofinti *et al*., 2022). Addressing and preventing malnutrition in pregnant women is essential to breaking the cycle of stunted growth and improving overall health outcomes for future generations.

Based on the results, birth weight showed a p-value of 0.000 and a PR of 7.3, indicating that low birth weight carries a 7.3 times higher risk of stunting. Infants with low birth weight (LBW) typically experience slower growth and development compared to those born at normal weights (Ramadhan *et al*., 2023; Sutarto *et al*., 2021). LBW newborns have an underdeveloped immune system, which makes them more prone to illnesses. This increases the chances of infant death, chronic diseases in adulthood, mental delays, and stunted growth. All of these factors add to the potential for stunting (Ramadhan *et al*., 2023; Zahriany, 2017). This increased vulnerability underscores the critical need for targeted healthcare interventions. Research indicates that significant improvements in postnatal growth are closely linked to enhanced intrauterine growth, particularly during early pregnancy. Effective prenatal care, including proper maternal nutrition and health monitoring, is essential in mitigating these risks (Simbolon *et al*., 2021; Tyas & Setyonaluri, 2022). By improving maternal health and addressing factors contributing to LBW, healthcare providers can better support the growth and development of these infants, ultimately reducing the long-term risks associated with stunted development (Amaha & Woldeamanuel, 2021). This comprehensive approach highlights the importance of early and sustained interventions to ensure healthier outcomes for LBW infants.

Infants who are solely breastfed for the initial six months experience a substantial 3.8-fold decrease in the likelihood of stunting. Ensuring that feeding methods are aligned with the developmental needs of newborns is

essential for both minimizing early growth disruptions and promoting long-term health advantages. This strategy is supported by multiple studies (De Castro *et al*., 2023; Ekholuenetale *et al*., 2022; Hura *et al*., 2022). Excessive breastfeeding delivers optimal nutrition essential for healthy growth and development. Thus, promoting exclusive breastfeeding is paramount in ensuring optimal growth and reducing the burden of childhood malnutrition-related issues.

Introducing complementary feeding either too early or too late, or providing it inadequately, can result in nutritional deficiencies and growth problems. This improper timing can disrupt the balance of essential nutrients needed for optimal infant development, leading to issues such as stunting, undernutrition, or even obesity. Research consistently shows that infants who receive timely and appropriate complementary foods experience better health outcomes compared to those with poorly timed or insufficient feeding practices (De Castro *et al*., 2023; Ekholuenetale *et al*., 2022; Hura *et al*., 2022). For instance, studies have highlighted that adhering to recommended guidelines for complementary feeding significantly reduces the risk of growth faltering and ensures a more balanced intake of vital nutrients. Thus, emphasizing the importance of proper timing and adequacy in complementary feeding is essential for safeguarding infant health and promoting optimal growth and development.

Food diversity is a key indicator of the quality of a toddler's diet, which reduces the likelihood of stunting by 13 times as shown by the p-value 0,000 and PR 13,7. Low dietary diversity is linked to an increased risk of stunting and other nutritional issues, such as overweight, dyslipidemia, and metabolic syndrome. Local factors, including customs and community beliefs, significantly influence food diversity. Ensuring a diverse diet is crucial because it provides a range of essential nutrients necessary for proper growth and development. Previous studies have consistently shown that children with a more varied diet have better health outcomes. For example, research has demonstrated that dietary diversity is associated with improved micronutrient intake and overall nutritional status, vital for preventing stunting and other health complications (De Castro *et al*., 2023; Ekholuenetale *et al*., 2022; Hura *et al*., 2022).

The parenting pattern of feeding plays a pivotal role in influencing the occurrence of stunting in children. Studies consistently demonstrate that responsive and nurturing feeding practices, where caregivers are attuned to the nutritional needs and cues of their children, are associated with better growth outcomes and reduced risk of stunting (Abdulaziz *et al*., 2024; Humaira *et al*., 2023). In contrast, authoritarian or neglectful feeding patterns, characterized by rigid or inconsistent feeding schedules, may contribute to inadequate nutrient intake and growth faltering. Research by several scholars underscores that positive feeding interactions, such as responsive feeding and encouragement of healthy eating habits, foster optimal nutritional intake and support linear growth in children (Nita *et al*., 2023; Putri & Rong, 2021). These findings highlight the critical need for caregivers to adopt nurturing and responsive feeding practices that promote a supportive feeding environment, thereby mitigating the risk of stunting and ensuring overall well-being in early childhood.

Conclusion

The findings of this investigation highlight a persistently high prevalence of stunting in the Tilango Subdistrict, amounting to 35.7%. Significant associations were observed between sociodemographic factors such as birth length, birth weight, exclusive breastfeeding, and timely introduction of complementary foods, alongside socio-cultural factors including food diversity and parenting patterns, all influencing the incidence of stunting. Birth length and birth weight emerged as primary determinants, underscoring the critical impact of prenatal nutrition and early developmental stages on childhood growth outcomes. Concurrently, food diversity played a pivotal role, indicating the importance of a varied diet in mitigating stunting risks.

Furthermore, maternal education and household income were identified as confounding variables, highlighting their indirect but influential roles in shaping

nutritional outcomes among children. These findings underscore the imperative of optimizing the first 1000 days of life, particularly through enhanced maternal nutrition during pregnancy to ensure optimal birth weight and length. Promoting exclusive breastfeeding and enhancing food diversity are crucial strategies to ameliorate stunting rates. Addressing these multifaceted factors through targeted interventions tailored to local contexts is essential for achieving sustained improvements in child health and nutrition in the Tilango Subdistrict and similar settings globally.

References

Abdulaziz, R., Suryanti, N., & Setiawan, A.S., 2024. A Review on Maternal Parenting, Child's Growth Stunting, and Oral Health. *European Journal of Dentistry*, 18(1).

Agustian, D., Triyanto, S.A., Apriyani, D., & Helbawanti, O., 2023. Strategi Pencegahan Stunting dalam Rumah Tangga untuk Mendukung Pembangunan Berkelanjutan di Kota Tasikmalaya. *Dedikasi: Community Service Reports*, 5(1).

Ali, A., 2021. Current Status of Malnutrition and Stunting in Pakistani Children: What Needs to Be Done?. *Journal of the American College of Nutrition*, 40(2).

Amaha, N.D., & Woldeamanuel, B.T., 2021. Maternal Factors Associated with Moderate and Severe Stunting in Ethiopian Children: Analysis of Some Environmental Factors Based on 2016 Demographic Health Survey. *Nutrition Journal*, 20(1), pp.1–10.

Asna, A.F., & Syah, M.N.H., 2023. Chronic Energy Malnutrition in Mothers Associated with Stunting. *Jurnal Gizi Dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics)*, 11(2).

Bustos, M., Lau, L., Manguerra, H., & Dodd, W., 2023. Sociodemographic Factors Associated with Concurrent Stunting and Wasting Among Children Experiencing Extreme Poverty in The Philippines: A Cross-Sectional Study. *Nutrition and Health*, 2023.

De Castro, I.R.R., Dos Anjos, L.A., De Aquino, L.E.M., Boccolini, C.S., Farias, D.R., Alves-Santos, N.H., Normando, P., De Freitas, M.B., Andrade, P.G., Bertoni, N., Schincaglia, R.M., Berti, T.L., Vertulli, C.L.B., & Kac, G., 2023. Nutrition Transition in Brazilian Children Under 5 Years Old from 2006 to 2019. *Cadernos de Saude Publica*, 39(S2).

Delima, D., Neviyarni, N., Marjohan, M., Ifdil, I., & Afdal, A., 2023. Psychological Impact on Stunting Adolescents: Literature Review Study. *REAL in Nursing Journal*, 6(1), pp.1.

Destarina, R., 2018. Risk Factors of Anemia Status among Pegnant Woman on Stunted Birth Length in Puskesmas Sentolo 1 Kulon Progo D.I Yogyakarta. *Gizi Indonesia*, 41(1).

Ekholuenetale, M., Okonji, O.C., Nzoputam, C.I., & Barrow, A., 2022. Inequalities in the Prevalence of Stunting, Anemia and Exclusive Breastfeeding Among African Children. *BMC Pediatrics*, 22(1).

Humaira, N., Basyir, V., Amir, A., Sulastri, D., Mayetti., & Yusrawati., 2023. The Relationship Between Food Consumption Diversity and Maternal Parenting Patterns with Stunting in Toddlers. *Contagion: Scientific Periodical Journal of Public Health and Coastal Health*, 5(2).

Hura, G.V.,Y. Aritonang, E., & Sudaryati, E., 2022. Relationship of Exclusive Breastfeeding with Stunting Incidences in Toddlers in Nias District. *International Journal of Science and Healthcare Research*, 7(2).

Imaniar, M.S., Nuryuniarti, R., Sundari, S.W., Wiatanti, W., & Hikmatunnisa, H., 2022. 1000HPK Training For Cadres and Pregnant Women To Prevent Stunting In The Bungursari Health Center Work Area Of Tasikmalaya City In 2020. *AbdimasMu UMTAS*, 1(1).

Kasmita., Tasrif, N., & Santi, T.D., 2023. Stunting in Toddlers (6-60 Months): Parenting, Mother's Education, Infectious Diseases, and Breastfeeding. *Kemas*, 18(4).

Kementrian Kesehatan RI., 2023. *Survei Kesehatan Indonesia (SKI)*.

Kofinti, R.E., Koomson, I., Paintsil, J.A., & Ameyaw, E.K., 2022. Reducing Children's Malnutrition by Increasing Mothers' Health Insurance Coverage: A Focus on Stunting and Underweight Across 32 Sub-Saharan African Countries. *Economic Modelling*, 117.

Krebs, N.F., Hambidge, K.M., Westcott, J.L., Garces, A.L., Figueroa, L., Tshefu, A.K., Lokangaka, A.L., Goudar, S.S., Dhaded, S.M., Saleem, S., Ali, S.A., Bauserman, M.S., Derman, R.J., Goldenberg, R.L., Das, A., & Chowdhury, D., 2022. Birth Length is The Strongest Predictor of Linear Growth Status and Stunting in The First 2 Years of Life After A Preconception Maternal Nutrition Intervention: The Children of The Women First Trial. *American Journal of Clinical Nutrition*, 116(1), pp.86–96.

Krisnana, I., Widiani, N.M., & Sulistiawati, S., 2020. Prenatal and Postnatal Factors Related to The Incidence of Stunting in The Coastal Area Surabaya, Indonesia. *Sri Lanka Journal of Child Health*, 49(3).

Kusumajaya, A.A.N., Mubasyiroh, R., Sudikno, S., Nainggolan, O., Nursanyoto, H., Sutiari, N.K., Adhi, K.T., Suarjana, I.M., & Januraga, P.P., 2023. Sociodemographic and Healthcare Factors Associated with Stunting in Children Aged 6–59 Months in the Urban Area of Bali Province, Indonesia 2018. *Nutrients*, 15(2).

Linawati, N., 2022. Relationship Between Low Birth Weight And Infectious Diseases With Stunting In Children Aged 4 TO 5 Years. *Indonesian Journal of Multidisciplinary Science*, 1(9).

Louis, S.L., Mirania, A.N., & Yuniarti, E., 2022. The Relationship Between Exclusive Breastfeeding with Stunting on Toddles Children. *Maternal and Neonatal Health Journal*, 3(1).

Mahudeh., Rohmah, N., & Adriani, S.W., 2023. Correlation Between History of Infectious Disease with Stunting in Toddler. *Journal of Nursing Science Update (JNSU)*, 10(2).

Mustakim, M.R.D., Irwanto., Irawan, R., Irmawati, M., & Setyoboedi, B., 2022. Impact of Stunting on Development of Children between 1-3 Years of Age. *Ethiopian Journal of Health Sciences*, 32(3).

Nita, F.A., Ernawati, E., Sari, F., Kristiarini, J.J., & Purnamasari, I., 2023. The Influence of Parenting on The Incidence of Stunting in Toddlers Aged 1-3 Year. *Jurnal Ilmiah Kesehatan Sandi Husada*, 12(2).

Nomura, K., Bhandari, A.K.C., Matsumoto-Takahashi, E.L.A., & Takahashi, O., 2023. Risk Factors Associated with Stunting among Children Under Five in Timor-Leste. *Annals of Global Health*, 89(1).

Nurlita sari, E., Dewanti, L., & Fatmaningrum, W., 2022. Risk Factor of Exlusive Breastfeeding and Infective Diseases on Stunting Incindance. *Indonesian Midwifery and Health Sciences Journal*, 6(4).

Permatasari, T.A.E., Chadirin, Y., Ernirita, Elvira, F., & Putri, B.A., 2023. The Association of Sociodemographic, Nutrition, and Sanitation on Stunting in Children Under Five in Rural Area of West Java Province in Indonesia. *Journal of Public Health Research*, 12(3).

Puspitasari, E., Wahyunigsih, S., Widayati, A., & Sunanto., 2023. The Relationship between Exclusive Breastfeeding and Stunting Incidents in Candipuro Village. *Health and Technology Journal (HTechJ)*, 1(3).

Putri, A.P., & Rong, J.R., 2021. Parenting Functioning in Stunting Management: A Concept Analysis. *Journal of Public Health Research*, 10(2).

Rachmi, C.N., Agho, K.E., Li, M., & Baur, L.A., 2016. Stunting, Underweight and Overweight in Children Aged 2.0-4.9 Years in Indonesia: Prevalence Trends and Associated Risk Factors. *PLoS ONE*, 11(5), pp.1–17.

Ramadhan, S., Amalia, R.B., & Sudaryanti, L., 2023. Correlation Between LBW History And Stunting Incidence: A Literature Review. *Indonesian Midwifery and Health Sciences Journal*, 7(4).

Riset Kesehatan Dasar (RISKESDAS)., 2018. *Prevalensi Diabetes Mellitus Berdasrkan Diagnosis Dokter pada Penduduk Semua Umur Menurut Kabupaten/Kota di Provinsi Gorontalo*.

Sartika, A.N., Khoirunnisa, M., Meiyetriani, E., Ermayani, E., Pramesthi, I.L., & Nur Ananda, A.J., 2021. Prenatal and Postnatal Determinants of Stunting at Age 0–11 Months: A Cross-Sectional Study in Indonesia. *PLoS ONE*, 16(7 July).

Simbolon, D., Adevianti, D., Setianingsih, L., Ningsih, L., & Andriani, L., 2021. The Relationship Between Maternal and Child Health Services with The Prevalence of Stunting Based on The Basic Health Research in Indonesia. *Indonesian Journal of Public Health*, 16(2).

Sutarto., Sri, A., Kinanti, R., Susianti., & Roro, R.W.P., 2021. Relationship Between Low Born Weight (LBW) And Stunting Events in Children (Age 24-59 Months). *Indonesian Journal of Medical Anthropology*, 2(1).

Thahir, A.I. A., Li, M., Holmes, A., & Gordon, A., 2023. Exploring Factors Associated with Stunting in 6-Month-Old Children: A Population-Based Cohort Study in Sulawesi, Indonesia. *Nutrients*, 15(15).

Tyas, A.P., & Setyonaluri, D., 2022. Association between Maternal Mental Health and Child Stunting in Indonesia. *Kemas*, 17(3).

UNICEF., 2021. *UNICEF-WHO-The World Bank: Joint child malnutrition estimates — levels and trends – 2021 edition*. Unicef.

Yefri, R., Lipoeto, N.I., Putra, A.E., & Kadim, M., 2022. Parental Sociodemographic Factors Associated with Stunted Children below 5 Years of Age in Kampar Indonesia. *Open Access Macedonian Journal of Medical Sciences*, 10(B).

Zahriany, A.I., 2017. The Effect of LBW on Stunting

in Children Age 12-60 Months in Puskesmas Working Area Tanjung Langkat 2017. *Jurnal Riset Hesti Medan*, 2(2).