Analysis of Factors Related to the Incidence of Stunting in Fishermen's Children Aged 12-24 Months

Delsy Nurrizma[1], Delmi Sulatri[1], Syamel Muhammad[1]
[1]Midwifery Study Program, Faculty of Medicine, Universitas Andalas, Padang

Email corespondence : nurrizmadelsy@gmail.com

Track Record Article

Accepted: 2 July 2023
Revised: 25 August 2023
Published: 30 September 2023

How to cite :
Nurrizma, D., Sulatri, D., & Muhammad, S. (2023). Analysis of Factors Related to the Incidence of Stunting in Fishermen's Children Aged 12-24 Months. Contagion : Scientific Periodical of Public Health and Coastal Health, 5(3), 1026–1038.

Abstract

Stunting is a condition of growth failure in a child's body length of less than -2 standard deviations based on World Health Organization, standards due to manifestations of long-term malnutrition, recurrent infectious diseases, and inadequate psychosocial stimulation. The research aims to determine the analysis of factors related to the incidence of stunting in children aged 12-24 months in the Air Bangis Health Center working area in 2020. The research is a Mix Method Study with a Sequential Explanatory design carried out in the Air Bangis Health Center Working Area in 2022. This research was conducted in the Air Bangis Health Center Work Area from November to February 2023. The research quantitatively conducted a Cross-Sectional Study on children aged 12-24 months, as many as 148 people and their mothers. Measurement of body length according to age, questionnaires for quantitative data, and in-depth interviews for qualitative data. The logistic regression test determines the most dominant variable that causes stunting. There is a significant relationship between food intake (p-value=0.042), sanitation (p-value=0.013), immunization status (p-value=0.117), and maternal education (p-value=0.095) on the incidence of stunting. There is no relationship between exclusive breastfeeding, infectious diseases, hygiene and family income. The most dominant factor is food intake, with value (POR=2.220). Based on the research results, it was found that the most dominant variable was food intake. It is recommended for mothers of toddlers to pay more attention to nutritional intake during pregnancy and breastfeeding and it is recommended for health workers to provide education in the form of health education about nutritious foods to prospective pregnant mothers to pay more attention to their nutritional intake.

Keywords: Intake, Nutrition, Sanitation, Stunting

INTRODUCTION

Stunting in toddlers is still a problem throughout the world. Based on global estimates, there will be 149.2 million children suffering from stunting in 2020. Most of the children suffering from stunting live on the continents of Asia and Africa. The prevalence of stunted children living in Asia is 21.8%, 30.7% in Africa, 2.3% in Australia and 11.3% in America (UNICEF, 2019; WHO, 2020)

The prevalence of stunting in Southeast Asia was 27.4% in 2020. Indonesia is in second place after East Leste, with a stunting prevalence rate of 31.8% (WHO, 2020). Based on data from the 2022 Indonesian Toddler Nutrition Status Survey, the prevalence of stunting in Indonesia in 2022 is at 24.4%. This figure decreased by 2.8% from the previous year. Even though the prevalence of stunting has decreased, this has yet to reach the target of the national medium-term development plan (Kemenkes RI, 2022).

Based on the Indonesian Ministry of Health's nutritional status survey, the prevalence of stunted toddlers in West Sumatra province is 25.2% in 2022, an increase from the previous year of 23.3% in 2021. West Pasaman Regency is the area with the highest prevalence of stunting in West Sumatra in 2021. 2022, namely reaching 35.5%. This figure increased by 11.5% from 2021, namely 24% (Kemenkes RI, 2022).

The 12-24 months age is half of the Window of Opportunity period or the First Thousand Days of Life. This is important because it is the fastest growth period after the baby is born. Growth at the age of 0-2 years will have a significant effect on the child's height in the following period. This period can become permanent (irreversible) after passing the First Thousand Days of Life if it is not overcome (Achadi et al., 2020). According to the World Health Organization, the causes of stunting can be divided into three causal factors, namely direct causes, such as food intake, exclusive breastfeeding, and infectious diseases, indirect causes, such as sanitation hygiene and basic causes, such as maternal education, family income. (WHO, 2020).

The causes of stunting can be indirectly influenced by sanitation and hygiene, which can also influence the incidence of stunting indirectly. In line with research conducted by Soeracmad et al., (2019) there is a significant effect between washing hands in running water with soap and the incidence of stunting. Basic causal factors can also influence the incidence of stunting in toddlers, such as maternal education, which can influence the level of knowledge in meeting the nutritional needs of families, especially children. This aligns with research conducted by Husnaniyah et al., (2020). There is a relationship between the mother's education level and the incidence of stunting.

Based on research states that there is a relationship between the level of energy intake and the incidence of stunting. Toddlers who have low energy intake have a risk of 1.87 times stunting compared to toddlers who have sufficient energy levels (Y. W. Sari et al., 2020).

Based on an initial survey of twenty houses in the Air Bangis coastal area, there are differences in the eating patterns of one family and another. This difference is caused by food availability, frequency, and composition. Some fishermen's wives generally have side jobs, so the success of exclusive breastfeeding needs to be provided optimally. The Air Bangis Community Health Center is the only Community Health Center in Sungai Beremas District. The percentage of babies exclusively breastfed in 2021 is still relatively low in Sungai Beremas District, namely 47%. This percentage places Sungai Beremas District as the lowest regarding the percentage of children who receive exclusive breastfeeding in West Pasaman Regency in 2021.

Based on the problem of stunting in children under five above and the topographic conditions of Nagari Air Bangis, which is in the coastal area, researchers are interested in analyzing the factors related to the incidence of stunting in fishermen children aged 12-24 months in the working area of the Air Bangis Health Center, Pasaman Regency West.

METHODS

This research uses a Mix Method Study approach, which is observational. The type of Mix Method Study design used is Sequential Explanatory.

This research was conducted in the Air Bangis Health Center Work Area from November to February 2023. The research population was 538 children, and the research sample was 148 children who met the inclusion criteria, namely mothers who had toddlers aged 12-24 months, children and mothers living together, mothers can communicate well, the child is in good health, and the mother is willing to be a research respondent.

The sampling technique in this research was carried out using a probability sampling technique or proportional random sampling. Qualitative data was collected in this research using observation, interviews and documentation. In-depth interviews with mothers who have stunted children and mothers who do not have stunted children aged 12-24 months in the working area of the Air Bangis Health Center.

The dependent variable in this study is the body length index according to the age of toddlers aged 12-24 months. Meanwhile, the independent variables in this research are food intake, infectious diseases, exclusive breastfeeding, hygiene, sanitation, maternal education and family income. Data collection in this study used primary data with the results of measuring the height of children aged 12-24 months, measured using a child's body length measuring device.

Analysis used descriptive survey univariate analysis, bivariate analysis with Chi-square test and Fisher exact test, multivariate analysis used multiple logistic regression. Qualitative data analysis is done by reviewing, reducing data, presenting power, and drawing conclusions or verification.

RESULTS

Table 1. Characteristics of Respondents

Characteristics	Stunting		Normal		Total
	n	%	n	%	
Toddler Age					
12-24 months	34	23.0	114	77.0	148
Gender					
Male	19	25.3	56	74.7	75
Female	15	20.5	58	79.5	73
Father's occupation					
Fisherman	10	27.9	39	79.6	49
Farmer	4	20.4	9	69.2	13
Labourer	0	0.0	1	100.0	1
Civil Servants or Employees	1	6.7	14	93.3	15
Self-employed	19	30.8	49	72.1	68
Doesn't work	0	0.0	2	100.0	2

Based on Table 1 above, it can be seen that the percentage of children suffering from stunting in children aged 12-24 months is 23.0%, with males 25.3% and females 20.5%. The most common occupations of fathers are entrepreneurs at 30.8%, fishermen at 27.9%, farmers at 20.4% and employees at 6.7%.

Table 2. Factors associated with the incidence of stunting in the Air Bangis Health Center working area

Variable	Normal		Stunting		*P-Value*
	n	%	n	%	
Food Intake					
Not good	24	64.9	13	35.1	0.042
Good	90	81.1	21	18.9	
Exclusive breastfeeding					
Not Exclusive Breastfeeding	76	78.4	21	21.6	0.598
Exclusive breastfeeding	38	74.5	13	25.5	
Infection Diseases					
Ever	6	85.7	1	14.3	0.576
Never	108	76.6	33	23.4	
Hygiene					
Not good	29	70.7	112	29.3	0.260
Good	85	79.4	22	20.6	
Sanitation					
Not good	24	96.0	1	4.0	0.013
Good	90	73.2	33	4.0	
Per Capita Family Income					
Poor	33	73.3	12	26.7	0.480
Not Poor	81	78.6	22	21.4	
Immunization Status					
Complete	40	70.2	17	29.8	0.117
Incomplete	74	81.3	17	18.7	
Mother's Education					
Low education	6	23.1	20	76.9	
Middle Education	28	25.9	80	74.1	0.095
higher education	0	0.0	14	100.0	

The Table above explains that the highest percentage of stunting incidents occurred with good food intake, namely 21 people (18.9%) and from the results of statistical tests, the value of p = 0.042 (p < 0.05) was obtained, meaning there is a relationship. Other results show that the highest percentage of stunting incidents occurred due to non-exclusive breastfeeding, namely 21 people (21.6%) and from the results of statistical tests, the value of p = 0.598 (p > 0.05), meaning there is no relationship.

The Table above explains that the highest percentage of stunting incidents occurred due to never having experienced an infectious disease, namely 33 people (23.4%) and from the results of statistical tests obtained a value of p = 0.576 (p > 0.05), meaning there is no relationship. Other results show that the highest percentage of stunting incidents occur due to a good hygiene environment, namely 22 people (20.6%) and from 85.7% of statistical test results, the value of p = 0.260 (p > 0.05) is obtained, meaning there is no relationship.

The Table above explains that the highest percentage of stunting incidents occur due to good sanitation, namely 33 people (26.8%), and from the results of statistical tests, the value of p = 0.013 (p < 0.05) is obtained, meaning there is a relationship. Other results show that the highest percentage of stunting incidents occur due to income in the non-poor category, namely 22 people (21.4%) and from the results of statistical tests, the value obtained is p = 0.480 (p > 0.05), meaning there is no relationship.

The Table above explains that the highest percentage of stunting incidents occurred due to complete or incomplete immunization status, namely 17 people (29.8%) and from the statistical test results obtained a value of p = 0.117 (p > 0.05), meaning there is no relationship. Other results show that the highest percentage of stunting incidents occur due to maternal education being in the middle category, namely 28 people (25.9%), and from the results of statistical tests, the value of p = 0.095 (p > 0.05) is obtained, meaning there is no relationship.

Table 3. Multivariate Modeling

Variables Ejected	Variable	POR	P-value	POR 1	Odds Ratio
Model 1					
Mother's Education	Food Intake	2.810	0.034	2.589	-7.86
	Sanitation	0.089	0.017	0.080	-10.11
	Immunization Status	2.205	0.058	2.212	0.317
Model 2					
Immunization Status	Food Intake	2.810	0.025	2.690	-4.27
	Sanitation	0.089	0.098	0.098	10,11
Model 3					
Sanitation	Food Intake	2.810	0.061	2.220	-20.99
	Immunization Status	2.205	0.161	1.754	-20.45

Based on the Table above, it is known that the maternal education variable has been excluded from the analysis. Based on the Table, no variables changed in POR > 10%. Thus, the maternal education variable is permanently removed from the model. The results showed that the sanitation variable was the most related to the incidence of stunting, with a p-value of 0.017. Furthermore, the immunization status variable was excluded because it had a P value of 0.058 > 0.05.

The second stage, seen in Table, shows a change in the POR value of > 10% so that the immunization status variable is maintained and returned to the modelling. Then, another logistic regression analysis was carried out, and the results obtained were that the food intake variable was the most dominant variable with a p-value of 0.025. The POR value is 2,690, which means that food intake has a 2,690 times greater chance of influencing the incidence of stunting.

The third stage of multivariate modelling, to determine whether variables are excluded permanently, can be seen from changes in POR values. If there is a change in the POR value (Δ POR) > 10%, the variable is returned to the model. Conversely, if there is no change in the POR value > 10%, the variable is removed from the model. Based on the table, no variables had a change in POR > 10%. Thus, the sanitation variable is permanently excluded from the model.

Table 4. Final Multivariate Analysis Model

Variable	ρ-value	POR	95% CI	
			Lower	Upper
Food Intake	0.061	2.220	0.965	5.109
Immunization Status	0.161	1.754	0.799	3.850

The final results of the multivariate analysis showed that the most dominant variable related to the incidence of stunting was the variable with the highest POR value, namely food intake with a significant ρ-value of 0.061 and POR 2.220, which means that respondents who provided 2.220 times less food intake tended to experience it more easily. the incidence of stunting compared to respondents who provide good food intake.

Table 5. Conclusion Matrix of In-depth Interview Results with Mothers of Stunted Children

Thematic	Observation	Interview	Conclusion
Maternal Nutritional Intake During Pregnancy	Some mothers need to pay attention to the frequency and amount of food eaten in a day. Mothers don't seem to care about the types of nutritious food that are important to eat and make them full. Eat rice twice and then eat snacks.	When I was pregnant, I rarely ate, at most twice a day I snacked a lot outside.	Some pregnant women do not pay attention to healthy food and do not pay attention to food diversity, both portions and food frequency, during pregnancy.
exclusive breastfeeding	Some mothers do not give exclusive breast milk for the first 6 months, there are even some mothers who do not give exclusive breast milk at all but only give formula milk.	Can only give breast milk after 2 days of age. Because at that time, my child was short of breath	Some children receive exclusive breast milk
Food or daily nutritional intake of children	Some mothers need to pay more attention to the type of nutritious food their children will consume, often giving them non-nutritious snacks such as ciki-cikin because their children will not be fussy when they cook.	"My child only eats rice in the morning at nine o'clock at night and after sunset. During the day my child only drinks milk."	The mother's knowledge could be better about how to feed children properly, and the child's frequency of eating is small when given food. Food diversity needs to be met because children often eat eggs and rarely fish, especially as many do not like green vegetables.
How to serve complementary food	It can be seen that the mother only prepares food without thinking about her child's nutritional needs.	“I cook omelettes and fried eggs. In the end, I only ate a third at most.	Mothers prepare food for their children by cooking rice, just side dishes without vegetables and fruit. No diversity of food is safe for children to consume
Frequency of Children's Meals in a Day	Some children eat 2-3 times a day	"Sometimes 2 times a day, sometimes 3 times but more often just in the morning and evening."	The frequency of children's meals is not too frequent, 2-3 a day
problems in providing children's daily nutritional intake	Some children are difficult to feed, often play while eating, spill food, etc.	"My child is a little fussy when given food and takes a long time to finish."	Some mothers have problems feeding their children because they are often fussy and often don't finish their food.

Based on the Table above, it can be seen that some pregnant women do not pay attention to healthy food during pregnancy or food diversity, both portions and frequency of food during pregnancy. Not only that, some children do not receive exclusive breastfeeding for various reasons, such as considering their breast milk production to be low, which ultimately fails to provide breast milk during the first 6 months. Some children also do not receive good parenting in providing nutritious food to meet their body's needs.

It is known that some mothers do not prepare food for their children by cooking rice side dishes without vegetables and fruit. It was also found that some children did not eat too often. Furthermore, some mothers have problems in providing food intake to their children.

Table 6. Conclusion Matrix of In-depth Interview Results with Mothers Who Have Non-Stunted Children

Thematic	Observation	Interview	Conclusion
Maternal Nutritional Intake During Pregnancy	Some mothers do not maintain a nutritious diet during pregnancy.	"I eat normally 3 times a day but rarely eat vegetables."	Some mothers do not maintain nutritious food patterns
Exclusive breastfeeding	Some mothers do not breastfeed exclusively for the first 6 months	Some mothers do not maintain their diet, eating nutritious food twice daily, while the rest often shop for food outside.	Most mothers do not give exclusive breast milk to their children for various reasons.
Children's daily food or nutritional intake	Some children eat 2-3 times a day but often don't finish it	"My child is fed rice and stir-fried shrimp, about 4 tablespoons of rice and 2 shrimp, in the morning and then in the evening, he rarely eats and only drinks milk.	Some children only eat twice a day and drink milk the rest Some children do not receive good parenting because their mothers are busy working.
How to serve complementary food	After checking the rice cover, the mother rarely cooked for her child.	I like to cook quickly. The fish and vegetables I cook are often not cooked. When I cook fish, I just boil it so it's quick.	Children are lazy to eat because the chilli sauce is spicy.
Children's Eating Frequency in a Day	Children snack outside more often than eating at home. So children rarely eat rice and side dishes because they are already full of other foods.	“Sometimes there are 2 times a day, sometimes 3 times. That depends on him.	Children only eat 2-3 times a day, the rest of the time children often eat snacks that have no nutritional content.
Problems in providing children's daily nutritional intake	Children often throw away the rice they eat, because they don't like cooked fish, often fruit and used as toys	"Yes, the children are eating and often playing and sometimes they are often fussy, ma'am."	Children often fuss when given food.

Based on the results of the Table above, it can be seen that the cause of stunting in the working area of the Air Bangis health centre is caused by some pregnant women not paying attention to healthy food for pregnant women, not paying attention to food diversity, both portions and frequency of food during pregnancy. Researchers also found that some children did not receive exclusive breastfeeding for various reasons, such as considering their breast milk production to be low, which ultimately failed to breastfeed during the first 6 months.

Other findings found that the frequency of food intake given to children is 2-3 times a day, but children are still fussy or act a lot when given food. And the frequency of children's meals in a day. On average, children eat 2-3 times a day. Some children are often left in the

care, so the mother does not know how often the child eats in a day. Based on the various research and studies above, it aligns with the research results by researchers in the field.

DISCUSS

Relationship between food intake and incidence of stunting

Food intake describes the consumption of nutrients; low intake of nutrients is a very complex factor causing stunting in toddlers (Batubara et al., 2023). Proper parenting of eating habits must pay attention to energy adequacy, balanced menu patterns, child portions, and personal hygiene to improve children's nutritional status (Sari et al., 2022). The analysis results showed a significant relationship between toddler food intake and the incidence of stunting at the Air Bangis Health Center.

The results of this study are in line with Hina & Picauly (2021) research, which found that food intake was significantly associated with the incidence of stunting ($p<0.05$). In line with the research of Ayuningtyas et al., (2018) which shows that there is a significant relationship between energy intake and the incidence of stunting in toddlers with a p value = 0.001 ($p <0.05$). toddlers with a p value = 0.001 ($p <0.05$).

This research is not in line with research conducted by Yuliantini et al., (2022) namely, there is a relationship between energy, protein, fat, carbohydrate and zinc intake on the incidence of stunting in toddlers ($p < 0.05$), and there is no relationship between iron intake and the incidence of stunting in toddlers ($p > 0.05$).

Consumption of protein sources for children under five in the Puger Wetan fishing village, ingredient groups. This research has found that children under five do not like to eat side dishes and vegetables, toddlers only consume rice with vegetable sauce. The types of vegetables that are often used and consumed are local vegetables and green vegetables such as kale, spinach, watercress and lumai 1-2 times which are widely available on the coast of Bengkulu City. The mother's habit of not varying the processing of vegetables, only boiling or sautéing, causes children to dislike vegetables less. Vegetables are one source of zinc intake for toddlers. During the growth period, toddlers need zinc. Lack of zinc consumption is a predictor of stunting.

The researcher's assumption from the findings is that this occurs due to the unmet need for food containing nutritious substances. Some mothers with toddlers have problems in parenting and lack maternal knowledge in serving nutritious food to their children. Mothers who are busy working are also one of the causes of low nutritional intake for children. Irregularity, whether in small quantities or food frequency of less than 3 times a day, also

causes children's nutritional needs to be inadequate. Some mothers do not provide exclusive breastfeeding during 0-6 months or provide complementary foods too early, which also causes nutritional deficiencies.

The Relationship between Sanitation and Stunting Incidents

One of the indirect factors that can cause stunting is the state of the physical environment and sanitation around the house which affects the health of the occupants of the house including the nutritional status of under-five children (Cahyono F., Manongga S.P., 2016). Indirect causes of stunting can also be caused by poor environmental sanitation. Environmental sanitation is seen in drinking water sources, family latrines, waste water drainage channels and waste disposal facilities. The analysis results showed a significant relationship between sanitation and the incidence of stunting at the Air Bangis Health Center.

This research is in line with research conducted by Soraya et al., (2022). The results of statistical tests show that there is a relationship between latrine sanitation (p=0.000; PR=15.534), clean water facilities (p=0.000; PR=4.427), wastewater disposal channels (p=0.000; PR=6.791) and waste management (p =0.000; PR=10.805) with stunting. This is caused by 37.3% of respondents having poor clean water facilities, 46.5% having poor wastewater drainage channels and 38.2% of respondents managing waste poorly.

This research is in line with Dewi et al., (2023) with the results of the chi-square statistical test, it can be concluded that there is a significant relationship between environmental sanitation and the incidence of stunting in toddlers with a p-value of 0.000. It can be concluded that only 1 independent variable has a significant relationship between environmental sanitation and the incidence of stunting. This study is in line with the research of Mariana et al., (2021) with the results of the chi square statistical test it can be concluded that there is a significant relationship between latrine conditions, clean water facilities, garbage disposal, and waste water disposal facilities with stunting ($p<0.05$).

Based on the results of direct interviews and surveys, researchers found that several people who live on the coast do not have latrines and do not have rubbish dumps. The people do not want to build toilets because the land they live on does not belong to them but to the government. Beachside communities also have the habit of throwing rubbish onto the beach. According to Al-firdausyah et al., (2021), open defecation behavior due to not having healthy latrine facilities is closely related to the high incidence of diarrhea which can affect the growth and development of infants. Therefore, it is important for every family to have a toilet to maintain the health of their family.

Influence of Food Intake on Stunting

Food intake is a necessity that plays a role in the growth process, especially in brain development. A person can develop their motor nerves through balanced nutritional intake (Juliandara et al., 2022). Lack of energy intake or inadequate consumption of essential nutrients required by the body will usually lead to decreased activity. Energy functions as a power source for metabolism, growth, body temperature regulation, and physical activity. physical activities (Fikawati et al., 2017).

The results of the study show that the most dominant variable related to the incidence of stunting is the variable with the highest POR value, namely food intake with a significant ρ-value of 0.061 and POR of 2.220, which means that respondents who provide less food intake are 2.220 times more likely to experience stunting than with respondents who provide good food intake.

Nutritional Insufficiency and Nutrients in Children's Additional Food

Based on the results of quantitative research conducted by researchers on the causes of stunting in fishermen children aged 12-24 months in the Air Bangis Health Center Working Area in 2022, it appears that the most dominant variable is the food intake factor consumed daily by families, especially for children under five. Parents must be aware of the importance of adequate and balanced food intake so that the number of stunting cases, especially in Air Bangis, can continue to decline

Various previous studies also show that food intake is the main factor in stunting in toddlers. Low food intake of protein, energy and micronutrients such as iron, zinc and vitamin A can increase the risk of stunting in toddlers (Apriluana et al., 2018). Globally, a similar study was also conducted with a sample of 339 children aged 6-36 months in Ghana. Insufficient food intake can affect toddler growth delays (Suherman et al., 2020). Likewise, studies have shown that stunted children have lower food intake than children of normal height (Yuwanti et al., 2021).

Based on the various research and studies above, it aligns with the research results by researchers in the field. Therefore, in this chapter, the researcher will explain the food intake factor as the dominant cause of stunting cases in fishermen aged 12-24 months in the Air Bangis Health Center Working Area in 2022 in a descriptive qualitative manner. In this chapter, we will explain in detail and in-depth what factors cause a lack of food intake among children with stunting in Air Bangis.

CONCLUSIONS

Based on the analysis results and findings regarding factors related to the incidence of stunting in fishermen aged 12-24 months in the working area of the Air Bangis Health Center, it was found that less than half of children experienced stunting in children aged 12-24 months. Apart from that, food intake and sanitation are related to the incidence of stunting. Not only that, factors influencing the incidence of stunting were food intake, sanitation, maternal education and family per capita income.

The advice that researchers can give is that it is hoped that both parents, especially mothers who have children under five, can apply nutritious feeding methods starting from the time the child is in the womb and provide complete immunization so that the child is not easily infected with the disease and for nutrition or health workers at the health centre to always provide education through counselling, counselling, motivating them to carry out routine monitoring, and providing appropriate action for children who are detected as stunting.

REFERENCE

Achadi, E. L., Achadi, A., & Aninditha, T. (2020). *Pencegahan Stunting Penringnya Peran 1000 Hari Pertama Kehidupan*. Depok : Rajawali Press.

Al-firdausyah, K. S. P., Thaha, A. R., Dachlan, D. M., Virani, D., & Battung, S. M. (2021). Hubungan Sanitasi Lingkungan dan Riwayat Penyakit Infeksi dengan Kejadian Stunting pada Anak Usia 6-23 Bulan di Wilayah Kerja Puskesmas Patimpeng Kabupaten Bone. *The Journal of Indonesian Community Nutrition*, *10*(1), 52–66.

Apriluana, G., & Fikawati, S. (2018). Analisis Faktor-Faktor Risiko terhadap Kejadian Stunting pada Balita (0-59 Bulan) di Negara Berkembang dan Asia Tenggara. *Media Penelitian Dan Pengembangan Kesehatan*, *28*(4), 247–256. https://doi.org/10.22435/mpk.v28i4.472

Ayuningtyas, A., Simbolon, D., & Rizal, A. (2018). Asupan Zat Gizi Makro dan Mikro terhadap Kejadian Stunting pada Balita. *Jurnal Kesehatan*, *9*(3), 445. https://doi.org/10.26630/jk.v9i3.960

Batubara, N., Hadi, A. J., Ahmad, H., & B, O. W. (2023). Analisis Faktor Risiko Stunting pada Balita di Kecamatan Padangsidimpuan Batunadua Kota Padangsidimpuan. *MPPKI:Media Publikasi Promosi Kesehatan Indonesia*, *6*(7), 1408–1414. https://doi.org/10.56338/mppki.v6i7.3703

Cahyono F., Manongga S.P., P. I. (2016). Faktor Penentu Stunting Anak Balita Pada. *Jurnal Gizi Pangan*, *11*(1), 9–18.

Dewi, I., & Sumi, S. S. (2023). Eksplorasi Adaptasi Ibu dalam Upaya Pengentasan Stunting. *Journal of Telenursing (JOTING)*, *5*(1), 153–161. https://doi.org/10.31539/joting.v5i1.5389

Fikawati, S., Syafiq, A., & Veratamala, A. (2017). *Gizi anak dan remaja*. PT Raja Grafindo Persada.

Hina, S. B. G. J., & Picauly, I. (2021). Hubungan Faktor Asupan Gizi, Riwayat Penyakit Infeksi Dan Riwayat Asi Eksklusif Dengan Kejadian Stunting Di Kabupaten Kupang. *Jurnal Pangan Gizi Dan Kesehatan*, *10*(2), 61–70. https://doi.org/10.51556/ejpazih.v10i2.155

Husnaniyah, D., Yulyanti, D., & Rudiansyah, R. (2020). Hubungan Tingkat Pendidikan Ibu

dengan Kejadian Stunting. *The Indonesian Journal of Health Science*, *12*(1), 57–64. https://doi.org/10.32528/ijhs.v12i1.4857

Juliandara, R., Aramico, B., & Ramadhaniah. (2022). Faktor-Faktor Yang Berhubungan Dengan Kejadian Stunting Pada Balita Di Wilayah Kerja Puskesmas Simpang Kiri Desa Belegen Mulia Kota Subulussalam Tahun 2021. *Faktor-Faktor Yang Berhubungan Dengan Kejadian Stunting Pada Balita Di Wilayah Kerja Puskesmas Simpang Kiri Desa Belegen Mulia Kota Subulussalam Tahun 2021*, *1*(1), 117–125.

Kemenkes RI. (2022). *Buku Saku Hasil Survei Status Gizi Indonesia (SSGI) Tahun 2022*. Jakarta : Kementerian Kesehatan RI.

Mariana, R., Nuryani, D. D., & ... (2021). Hubungan sanitasi dasar dengan kejadian stunting di wilayah kerja puskesmas Yosomulyo kecamatan Metro pusat kota Metro tahun 2021. *JOURNAL OF Community …*, 1–18. http://e-jurnal.iphorr.com/index.php/chi/article/view/99

Sari, H. P., Natalia, I., Sulistyaning, A. R., & Farida, F. (2022). Hubungan Keragaman Asupan Protein Hewani, Pola Asuh Makan, Dan Higiene Sanitasi Rumah Dengan Kejadian Stunting. *Journal of Nutrition College*, *11*(1), 18–25. https://doi.org/10.14710/jnc.v11i1.31960

Sari, Y. W., Wirjatmadi, B., & Setyaningtyas, S. W. (2020). Hubungan Tingkat Kecukupan Zat Gizi Makro , Personal Hygiene Ibu , Sanitasi Lingkungan Dan Diare Dengan Kejadian Stunting Balita Usia 24-59 Bulan. *Jurnal Kesehatan Masyarakat*, *11*(2), 94–104.

Soeracmad, Y., Ikhtiar, M., & S, A. B. (2019). Hubungan Sanitasi Lingkungan Rumah Tangga Dengan Kejadian Stunting Pada Anak Balita Di Puskesmas Wonomulyo Kabupaten polewali Mandar Tahun 2019. *Jurnal Kesehatan Masyarakat*, *5*(2), 138–150. https://doi.org/10.35329/jkesmas.v5i2.519

Soraya, S., Ilham, I., & Hariyanto, H. (2022). Kajian Sanitasi Lingkungan Terhadap Kejadian Stunting di Wilayah Kerja Puskesmas Simpang Tuan Kabupaten Tanjung Jabung Timur. *Jurnal Pembangunan Berkelanjutan*, *5*(2), 98–114. https://doi.org/10.22437/jpb.v5i1.21200

Suherman, R., & Nurhaidah, N. (2020). Analisis Faktor Determinan Stunting di Desa Pesa Kecamatan Wawo Kabupaten Bima. *Jurnal Manajemen Kesehatan Indonesia*, *8*(2), 120–126. https://doi.org/10.14710/jmki.8.2.2020.120-126

UNICEF. (2019). *The State of the World's Children 2019. Children, Food and Nutrition: Growing well in a changing world*.

WHO. (2020). *Title levels and trends in child malnutrition*.

Yuliantini, E., Kamsiah, K., Maigoda, T. C., & Ahmad, A. (2022). Asupan makanan dengan kejadian stunting pada keluarga nelayan di Kota Bengkulu. *AcTion: Aceh Nutrition Journal*, *7*(1), 79–88. https://doi.org/10.30867/action.v7i1.579

Yuwanti, Y., Mulyaningrum, F. M., & Susanti, M. M. (2021). Faktor – Faktor Yang Mempengaruhi Stunting Pada Balita Di Kabupaten Grobogan. *Jurnal Keperawatan Dan Kesehatan Masyarakat Cendekia Utama*, *10*(1), 74–84. https://doi.org/10.31596/jcu.v10i1.704