Family Assistance and Determinants of Stunting: An Operational Study in Donggala Regency

Fahmi Hafid[1], Taufiqurrahman[1], Nasrul[2], Syahriar[3], Ilham[3], Sarina Sariman[4]

[1]Department of Nutrition, Poltekkes Kemenkes Surabaya, Surabaya, Indonesia
[2]Nursing of Nutrition, Poltekkes Kemenkes Palu, Palu, Indonesia
[3]Dinas Kesehatan, Pemerintah Kabupaten Donggala, Banawa, Indonesia
[4]Faculty of Health and Life Sciences, Management and Science University, Malaysia
Email: hafid.fahmi79@gmail.com

ARTICLE INFO

ABSTRACT

Stunting is still a significant public health problem in Donggala Regency, with a long-term impact on the quality of human resources. This study aims to analyze the determinants of stunting in Donggala Regency through a family-based approach. Cross-sectional quantitative descriptive survey on November 13-18, 2024 in Donggala Regency. The population of this study is all families at risk of stunting with a sample of 908 families. Demographic data, child characteristics, parenting, family assistance and nutritional status data. Data analysis of Chi-Square Test, Logistic Regression and T Test, Stunting data was obtained by measuring body length using Length Board Measuring (LMB) and measuring age by reading the birth certificate or KIA book of the respondent's child. Other data was obtained by filling in the questionnaire. Data analysis using the STATA program. To determine the Z-Score TB/U value, WHO-Antro 2005 software was used. The results showed that the respondents were housewives (90.7%), educated >9 years (80.1%), and ≥20 years old (94.4%). Living in rural areas (93.6%). The prevalence of stunting was lower in the family group that received assistance (22.7%) compared to the control group (30%). Access to proper sanitation and clean water also contributed to the reduction in stunting prevalence, with a prevalence of 24.1% in families with access compared to 63.6% in families without access. Boys aged 12-23 months are the most vulnerable group to stunting. Mentoring has proven to be effective in increasing family understanding regarding balanced diets and environmental cleanliness.

Family assistance is an effective strategy to reduce the prevalence of stunting in Donggala Regency. The combination of nutrition education interventions, increasing access to sanitation and clean water, and strengthening the role of posyandu has a positive impact on children's nutritional status. It is recommended to expand the scope of family assistance programs in areas with high stunting prevalence. Local governments need to accelerate the development of sanitation infrastructure and access to clean water, especially in vulnerable areas. In addition, posyandu needs to be strengthened to provide more intensive nutritional interventions, especially in children aged 12-23 months.

INTRODUCTION

Stunting remains a critical public health problem in Donggala, Indonesia, with rates exceeding the national average. Anthropometric stunting is a child's height according to age with a Z-score of <-2 elementary school according to the WHO standard[1–5]. Stunting is one of the most important public

health problems[6–9]. Stunting usually appears early in life, is a long-term linear growth barrier and is difficult to recover for subsequent growth[8,10–12]. Multifactorial stunting risk[7,13–18]. Children affected by stunting face not only physical growth challenges but also cognitive and productivity limitations that affect their future potential and their overall quality of life. The high prevalence of stunting in Donggala Regency highlights the need for effective interventions that target family-level factors.

Research shows that family-focused health interventions can be highly effective in reducing stunting rates by empowering parents with the knowledge and skills necessary to provide adequate nutrition and care for their children. The involvement of public health officials and consistent monitoring have also proven successful in ensuring compliance with nutrition guidelines and health practices. However, gaps in access and knowledge in remote areas remain substantial barriers. The hypothesis of this study is that structured and family-centered interventions, which include nutrition education, routine health monitoring, and access to health services, will lead to a significant reduction in stunting rates among children in Donggala.

This study contributes to the field by focusing on the role of family support in overcoming stunting and offers a new perspective in integrating community health workers into family-based interventions. This community-centred approach aims to generate actionable insights that policymakers can incorporate into broader stunting prevention strategies. The purpose of this study is to analyze the determinants of stunting in Donggala Regency through a family-based approach.

MATERIALS AND METHODS

Quantitative descriptive survey research with a cross-sectional approach. The data collection on November 13-18, 2024 covers all areas in Donggala Regency such as Sirenja, Dampelas, South Banawa, Rio Pakava, Sindue, Labuan, Balaesang, Tanantovea, Banawa, Sindue Tobata, Central Banawa, Balaesang Tanjung, Sojol, North Sojol, Sindue Tombusabora, and Pinembani.

The population of this study is all families at risk of stunting in Donggala, especially those who have children under two years old or family members in the risk category (adolescents-to-be brides, pregnant women, and postpartum mothers). The sample size used the Lemeshow formula. Based on the 2024 Donggala Regency Bangda e-Monev data, the number of families at risk of stunting is 53.06% or 25,404 out of a total of 47,876 families in Donggala Regency. (https://aksi.bangda.kemendagri.go.id/emonev/ansit/kabupaten/data1).

Population (N) = 25.404

p = 53,06% or p=0,5306

Z = 1,96 (for confidence levels 95%)

d = 0,05 (margin of error or desired level of accuracy)

$$n = \frac{N \times Z^2 \times p \times (1 - p)}{d^2 \times (N - 1) + Z^2 \times p \times (1 - p)}$$

$$n = \frac{25404 \times (1,96)^2 \times 0,5306 \times (1 - 0,5306)}{(0,05)^2 \times (25404 - 1) + (1,96)^2 \times 0,5306 \times (1 - 0,5306)}$$

n = 377 family.

With a proportion of 53.06%, the minimum sample size required for a population of 25,404 is about 377 respondents to achieve a confidence level of 95% and a margin of error of 5%. In this study, the number of respondents can be obtained as many as 964, after going through the cleaning process as many as 908 data sets were obtained.

The data collected includes; Demographic data consisting of age, gender, last education level, occupation, and number of children in the household. The status of respondents in the family was also recorded, such as teenagers-to-be, pregnant women, postpartum mothers, or parents of children under two years old. The location of residence based on sub-district or village is also an important variable in understanding the environmental context and access to services.

Relevant characteristics of the child include the child's gender, length or height, and age. In terms of knowledge about nutrition, the variables include an understanding of stunting, the importance of nutrition for stunting prevention, and perceptions related to the importance of protein consumption for child growth. Parenting and eating habits are the focus of this research, with variables such as exclusive breastfeeding, regular feeding schedules, frequency of balanced feeding, and unhealthy snacking. The availability of health services used by families is also assessed, including the frequency of visits to Posyandu, perceptions of Posyandu service assistance, ease of access to health facilities, and access to proper drinking water and sanitation. The mentoring program includes variable frequency and type of mentoring received, such as nutrition consultation, parenting education, health checks, and child growth monitoring. Behavioral changes after mentoring were measured by looking at changes in diet, attention to nutritional intake, and changes in parenting. Respondents' perception of the effectiveness of socialization, the level of satisfaction with the mentoring program, and the willingness to continue this mentoring for other families were also part of this study. For data analysis, the Chi-Square Test is used to analyze the relationship between categorical variables. Logistic Regression to look at predictive factors for stunting risk in children. The T-test is to see the average comparison between groups, for example, the comparison of the average height by age of the child in the group that receives assistance compared to the group that does not receive assistance.

Stunting data was obtained by measuring body length using Length Board Measuring (LMB) and measuring age by reading the respondent's child's birth certificate or KIA book. Other data was

obtained by filling in the questionnaire. Data analysis using the STATA program. To determine the Z-Score TB/U value, WHO-Antro 2005 software was used. Tools or tools that can be used in the implementation of work with the following details: Weight and Height Measuring Tools, Digital Scales and Height Measures, Counseling Materials on Nutrition and Child Parenting. Data Recording Tools, Laptops and software for data analysis. Other Supporting Tools.
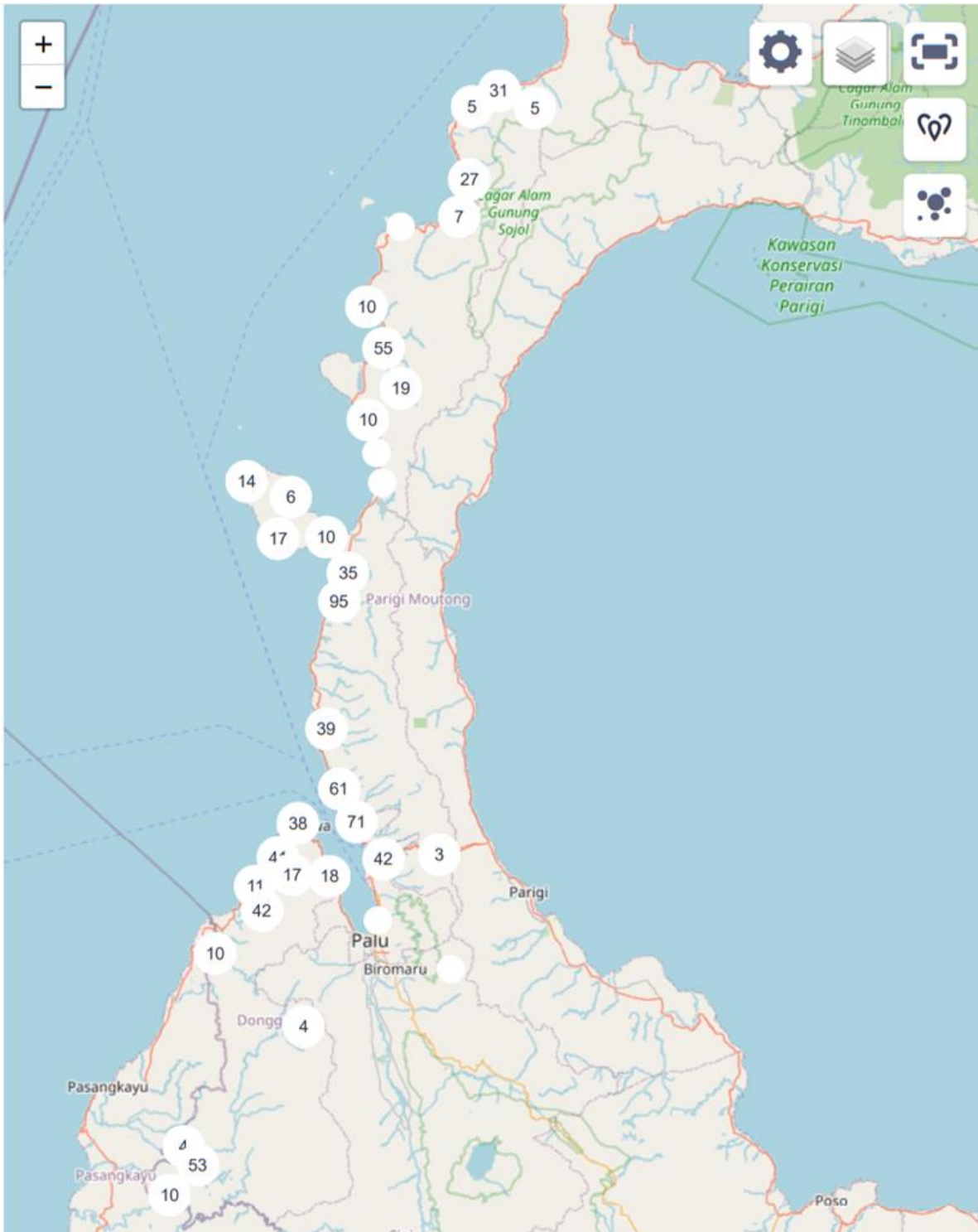

Image 1. Map of the Research Location

RESULTS

This study involved 908 families as respondents, spread across urban and rural areas of Donggala. The majority of respondents were housewives (90.7%) with education >9 years (80.1%) and ≥20 years old (94.4%). The proportion of families living in rural areas is very dominant (93.6%), reflecting the geographical characteristics of Donggala which is dominated by non-urban areas. Most of the children studied were aged 0-11 months (48.9%) and 12-23 months (51.1%), with the sex distribution almost evenly between males (48.5%) and females (51.5%). Some important points are that as many as 68.1% of families received assistance related to stunting prevention. Access to assistance programs is available to 59% of families. The availability of proper sanitation and clean water was found in 89.6% of households, showing progress in the aspect of basic infrastructure. Only 1.2% of households do not have access to clean water or proper sanitation, which is a high-risk group.

There was a significant difference in the nutritional status of clown children between the group that received family assistance and those who did not receive family assistance. In the indicator of Z TB/U Value (height by age), the group that received assistance had a higher average (-1.08) than the group that did not receive assistance (-1.37), with an average difference of 0.30 and a p-value of 0.002. This shows that family assistance plays an important role in improving children's nutritional status based on height according to age. Similarly, in the indicator of Z Score Weight for Age, the group that received assistance showed an average of -1.05, while the group that did not receive assistance had an average of -1.22, with an average difference of 0.17 and a p value of 0.026. This confirms that family assistance also contributes positively to the nutritional status of children based on weight according to age. Overall, family assistance has proven to be effective in improving children's nutritional status on two main indicators, namely height and weight according to age.

Families who received assistance had a lower prevalence of stunting (22.7%) compared to those who did not (30.0%) with a value of p = 0.017. This emphasizes the importance of mentoring programs to increase family knowledge and awareness about stunting prevention. Not receiving postpartum services increased the prevalence of stunting by 40.0% compared to 23.9% in families receiving services (p value = 0.005). This service is important to ensure monitoring of children's growth and development from an early age. Families without access to adequate sanitation had the highest prevalence of stunting (63.6%), while families with adequate sanitation only recorded a prevalence of 24.1% (p value = 0.009). This shows the great impact of environmental cleanliness on children's health. Families who access assistance programs have a higher prevalence of stunting (28.0%) than those who do not access (20.7%) with a value of p = 0.013. These findings show that the implementation of the program is according to the needs of the beneficiary families.

Multivariate analysis was used to identify the independent factors that most significantly affected stunting after controlling for other variables. The main findings are as follows: Mothers with low education (elementary to high school) have a higher chance of their children experiencing stunting compared to mothers with higher education. The adjusted odds ratio (AOR) value ranges from 2.3 to 2.6 ($p < 0.05$).

Children aged 12-23 months had a 2.3 times higher risk of stunting than children aged 0-11 months (AOR = 2.3; $p < 0.001$). Boys had a higher risk of stunting (AOR = 1.5; $p = 0.016$). Families belonging to risk groups (poverty, limited access) have a 1.8 times higher chance of having stunted children (AOR = 1.8; $p = 0.001$). Not receiving postpartum services increased the risk of stunting by almost two times (AOR = 1.9; $p = 0.025$). Families without access to sanitation deserve to have the highest risk of stunting (AOR = 6.4; $p = 0.005$). These findings support the importance of basic infrastructure to prevent infectious diseases that contribute to stunting.

Table 1. Tabulation of the characteristic's respondents

Variable	Family Assistance				P value
	Yes		No		
	n=618	68.1%	n=290	31.9%	
Home Location					
Urban	30	51.7	28	48.3	0.006
rural	588	69.2	262	30.8	
Topography of the residence					
Mountains	96	49.0	100	51.0	<0.001
Shore	286	72.4	109	27.6	
Inland Areas	168	73.4	61	26.6	
other	68	77.3	20	22.7	
Families at risk of stunting					
Yes	316	66.0	163	34.0	0.153
No	302	70.4	127	29.6	
Give more attention to daily nutrition					
Yes	599	78.6	163	21.4	<0.001
No	19	13.0	127	87.0	
Understand the risks and the impact of stunting					
Very understanding	124	79.5	32	20.5	<0.001
understanding	358	71.6	142	28.4	
Lack of understanding	122	56.2	95	43.8	
Don't understand	14	40.0	21	60.0	
Changes in parenting style					
Very large	246	86.0	40	14.0	<0.001
Quite large	334	70.5	140	29.5	
Lack of understanding	24	30.0	56	70.0	
No changes	14	20.6	54	79.4	
Access to assistance programs					
No	236	63.4	136	36.6	0.013
Yes	382	71.3	154	28.7	

Source: Primary Data, 2024

Family assistance is more received by families living in rural areas (69.2%) compared to those living in urban areas (51.7%). Families living in rural areas (73.4%) and others (77.3%) receive more family assistance, while those living in mountainous areas (49%) tend to receive less assistance. Although at-risk families had slightly lower levels of mentoring (66%) than non-at-risk families (70.4%), this difference was not statistically significant (p=0.153). Attention to daily nutrition shows a very significant relationship with family mentoring. Families that pay more attention to their children's daily nutrition tend to receive more assistance (78.6%), while those who do not pay more attention to nutrition only have a very low level of assistance (13%). This shows that families who are more concerned about their child's nutrition are more likely to be involved in family mentoring programs. In the variable of understanding the risks and impacts of stunting, families who are very knowledgeable about the impact of stunting tend to receive more assistance (79.5%), while families who do not understand or do not understand the impact of stunting receive less assistance, with a decreasing proportion along with low levels of understanding. This emphasizes the importance of knowledge in increasing participation in mentoring programs.

Changes in parenting also show a significant relationship with family mentoring. Families that experienced very large parenting changes received more assistance (86%) compared to those who experienced smaller or no parenting changes at all (20.6%). This indicates that family assistance plays an important role in encouraging better parenting changes, especially related to efforts to reduce stunting rates. Finally, access to assistance programs also has a significant effect on the level of family assistance. Families who have access to assistance programs receive more family assistance (71.3%) than those who do not have access (63.4%). This suggests that access to assistance programs can increase participation in family mentoring, which in turn contributes to the improvement of children's nutritional status.

Overall, family assistance was positively related to variables such as home location, topography of residence, attention to daily nutrition, understanding of the risks and impacts of stunting, changes in parenting, and access to assistance programs. These factors influence each other, with families who are more concerned about nutrition and more knowledgeable about stunting tend to be more receptive to mentoring, which can ultimately contribute to a decrease in the incidence of stunting in children.

Table 2. Cross-tabulation between research variables and the incidence of stunting in Family Assistance Research in the Context of Stunting Reduction in Donggala 2024

Variable	Stunting Status				p-value
	Normal		Stunting		
	n=681	75.0%	n=227	25.0%	
Mother's age					
<20 years	36	70.6	15	29.4	0.454
>=20 years	645	75.3	212	24.7	
Maternal Education					
<=9 years	130	71.8	51	28.2	0.270
>9 years	551	75.8	176	24.2	
Maternal Education					
Not in school	7	70.0	3	30.0	0.071
Primary school	123	71.9	48	28.1	
Junior high school	173	72.7	65	27.3	
High school	294	75.0	98	25.0	
College	84	86.6	13	13.4	
Mother's Work					
Housewives	607	73.7	217	26.3	0.056
freelancers	8	100.0	0	0.0	
Civil servants	23	85.2	4	14.8	
Self employed	13	86.7	2	13.3	
Other	30	88.2	4	11.8	
Number of children					
1-2 children	480	75.7	154	24.3	0.452
>2 children	201	73.4	73	26.6	
Child's age					
0-11 months	366	82.4	78	17.6	<0.001
12-23 months	315	67.9	149	32.1	
Child gender					
Male	316	71.8	124	28.2	0.032
Female	365	78.0	103	22.0	
Home location					
Urban	44	75.9	14	24.1	0.875
Rural	637	74.9	213	25.1	
Topography of the residence					
Mountains	145	74.0	51	26.0	0.344
Shore	289	73.2	106	26.8	
Inland Areas	182	79.5	47	20.5	
other	65	73.9	23	26.1	
Getting family assistance					
Yes	478	77.3	140	22.7	0.017
No	203	70.0	87	30.0	
Families at risk of stunting					
Yes	339	70.8	140	29.2	0.002
No	342	79.7	87	20.3	
Access to assistance programs					
No	295	79.3	77	20.7	0.013
Yes	386	72.0	150	28.0	
Postnatal care					
Yes	645	76.1	203	23.9	0.005
No	36	60.0	24	40.0	
Sanitation					
Neither is available	4	36.4	7	63.6	0.009
only decent sanitation	8	88.9	1	11.1	
only decent drinking water	51	68.9	23	31.1	
Available both	618	75.9	196	24.1	

Source: Primary Data, 2024

The maternal age variable showed no significant difference in the incidence of stunting based on maternal age (p=0.454). Mothers aged less than 20 years and over 20 years have almost the same proportion of stunting, which is around 29% and 24%, respectively. Likewise, maternal education, which shows that both mothers with ≤9 years and >9 years of education have relatively similar stunting incidence rates, with a value of p=0.270, indicating that maternal education is not significantly related to stunting. However, when viewed based on the mother's education level, there is a more obvious difference. Mothers who have never attended school or have low education (elementary, junior high, high school) tend to have a higher proportion of stunting compared to mothers with a higher education (p=0.071). Maternal employment also showed an insignificant trend (p=0.056), with housewives having a slightly higher proportion of stunting compared to freelance mothers or in other sectors.

Another factor that shows a significant association is the age of the child. Children aged 0-11 months had a lower prevalence of stunting (17.6%) compared to children aged 12-23 months (32.1%), with a p value of 0.001 <. This shows that older children tend to be at higher risk of stunting. Child sex was also shown to be significantly related to the incidence of stunting (p=0.032), with boys having a higher prevalence of stunting than girls. Factors related to house location and residential topography did not show a significant relationship with the incidence of stunting (p=0.875 and p=0.344, respectively). On the other hand, family assistance has a significant relationship with the incidence of stunting, where children who receive family assistance have a lower prevalence of stunting (22.7%) compared to those who do not receive assistance (30%), with a value of p=0.017. This shows that family assistance can be an important factor in reducing stunting rates.

The existence of access to assistance programs is also related to the incidence of stunting (p=0.013), where families who have access to assistance have a lower prevalence of stunting than those who do not have access. In addition, postpartum services showed a significant relationship with the incidence of stunting, where mothers who received postpartum services had a lower prevalence of stunting (23.9%) than those who did not receive it (40%), with a value of p=0.005.

Finally, sanitation became a significant factor (p=0.009). Families with inadequate sanitation (both clean water and proper sanitation) show a higher prevalence of stunting. Overall, these findings suggest that variables such as family assistance, access to assistance programs, postpartum services, and sanitation have a significant influence on the incidence of stunting, while factors such as maternal age, maternal education, maternal employment, home location, and residential topography do not show a significant relationship.

Table 3. Multivariate Analysis of Stunting Incidence and Donggala Family Assistance 2024

Variable	P value	AOR	95%CI
Maternal Education			
Not in school	0.095	2.3	0.7-11.6
Primary school	0.011	2.5	1.2-5.0
Junior high school	0.005	2.6	1.3-5.1
High school	0.013	2.3	1.2-4.3
College	Reff		
Child's age			
0-11 months	Reff		
12-23 months	<0.001	2.3	1.7-3.2
Child gender			
Male	0.016	1.5	1.1-2.0
Female	Reff		
Home location			
Urban	Reff		
Rural	0.073	1.6	0.8-3.3
Topography of the residence			
Mountains	Reff		
Shore	0.073	1.5	1.0-2.3
Inland Areas	0.551	0.9	0.5-1.4
other	0.466	1.3	0.7-2.4
Getting family assistance			
Yes	Reff		
No	0.107	1.3	0.9-1.9
Families at risk of stunting			
Yes	0.001	1.8	1.3-2.5
No	Reff		
Postnatal care			
Yes	Reff		
No	0.025	1.9	1.1-3.5
Sanitation			
Neither is available	0.005	6.4	1.7-23.5
only decent sanitation	0.454	0.4	0.1-3.7
only decent drinking water	0.723	1.1	0.6-2.0
Available both	Reff		

Source: Primary Data, 2024

Maternal education has been shown to be a significant risk factor for stunting. Mothers with elementary education levels (AOR 2.5, 95% CI 1.2-5.0), junior high school (AOR 2.6, 95% CI 1.3-5.1), and high school (AOR 2.3, 95% CI 1.2-4.3) have a higher likelihood of having a child with stunting compared to mothers with a college education (as a reference). This shows that the lower the level of maternal education, the greater the risk of stunting in children. Child age was also an important factor, with children aged 12-23 months having a 2.3-fold greater likelihood (AOR 2.3, 95% CI 1.7-3.2) of stunting compared to children aged 0-11 months, suggesting that older ages tended to be at higher risk of stunting.

In relation to the sex of the child, boys were 1.5 times more likely (AOR 1.5, 95% CI 1.1-2.0) to be stunted compared to girls, suggesting a difference in stunting risk by sex. The location of the house showed that living in the countryside was associated with an increased risk of stunting (AOR 1.6, 95% CI 0.8-3.3), although this did not reach a strong level of significance (p=0.073). On the other hand, living in urban areas did not show a significant influence on stunting incidence.

The topographic factor of residence also had an impact, especially for families living in coastal areas (AOR 1.5, 95% CI 1.0-2.3), although this was not statistically significant (p=0.073). On the other hand, rural areas (AOR 0.9, 95% CI 0.5-1.4) and others (AOR 1.3, 95% CI 0.7-2.4) did not show a significant effect on stunting risk. Family mentoring had an insignificant effect on stunting incidence (p=0.107, AOR 1.3, 95% CI 0.9-1.9), which suggests that although mentoring plays a role in reducing stunting, the effect is not strong enough in this multivariate analysis.Families at risk have been proven to have a significant influence on stunting. Families assessed as at risk were 1.8 times more likely (AOR 1.8, 95% CI 1.3-2.5) to have a child with stunting, suggesting that family risk factors played a significant role in stunting incidence.

Postpartum services are also associated with a reduction in stunting risk. Families who did not receive postpartum services were 1.9 times more likely (AOR 1.9, 95% CI 1.1-3.5) to experience stunting than those who received postpartum services, which underscored the importance of postpartum health support in stunting prevention. Finally, sanitation showed a significant effect on stunting, especially when there was no availability of proper sanitation or proper drinking water (AOR 6.4, 95% CI 1.7-23.5), which increased the risk of stunting by more than six times. Meanwhile, proper sanitation or proper drinking water did not show a significant effect on stunting incidence (AOR 0.4, 95% CI 0.1-3.7, and AOR 1.1, 95% CI 0.6-2.0, respectively).

Overall, factors such as maternal education, child age, child gender, at-risk families, postpartum services, and sanitation had a significant influence on the incidence of stunting, while family mentoring factors and several other geographic variables showed a weaker or less significant relationship. These findings underscore the importance of maternal education, health services, and sanitation conditions in an effort to reduce stunting.

DISCUSSION

The factors that affect stunting in children under two years old in Donggala Regency are very complex and interrelated. A total of 227 out of 908 Baduta children (25%) in Donggala Regency are stunted, indicating that about a quarter of the children in the area have nutritional problems that have the potential to impact their growth and development.

Family assistance has proven to be one of the most influential factors in reducing the prevalence of stunting. Children who received family assistance had better nutritional status, with a lower prevalence of stunting (22.7%) compared to those who did not receive assistance (30.0%). This indicates the importance of the role of the family in increasing knowledge and awareness about stunting prevention. In addition, these findings also confirm the importance of postpartum services, where mothers who receive these services have a lower prevalence of stunting in their children (23.9% compared to 40.0% in those who do not receive services).

Other factors that show a significant influence on the incidence of stunting include maternal education, child age, gender, access to proper sanitation, and family socio-economic conditions. Mothers with low education levels, especially those who only have elementary to high school education, have a higher risk of giving birth to children who are stunted. These findings are consistent with previous research that shows that maternal education has a significant influence on children's health [19–23].

The age of the child is also an important factor in the incidence of stunting. Children aged 12 to 23 months had a higher risk of stunting (AOR = 2.3) compared to children aged 0 to 11 months. This finding is also relevant to previous research which shows that the age of children affects stunting status [24–26]. The transition period from exclusive breastfeeding to supplemental foods at this age is a critical time in ensuring that children receive adequate nutrition. Malnutrition at this age can have long-term consequences on children's physical growth and brain development.

Gender also affects the prevalence of stunting. Based on the data, boys have a higher risk of stunting (AOR = 1.5) compared to girls. Relevant previous studies have shown that gender also affects the incidence of stunting[26–31]. This may be due to differences in energy needs between men and women as well as differences in their body's metabolism.

Poor sanitation conditions and lack of access to clean water are important factors that affect children's health. In this study, families who do not have access to decent sanitation show a very high prevalence of stunting, which is 63.6%. In contrast, families with adequate sanitation access have a lower prevalence of stunting (24.1%). These findings underscore that an unhealthy environment, especially with regard to sanitation and access to clean water, increases children's risk of developing infectious diseases that can worsen their nutritional status [32–36].

Family assistance plays an important role in stunting prevention. In this study, children who received family assistance had a lower prevalence of stunting (22.7%) compared to those who did not receive assistance (30%). Family assistance can increase parents' knowledge about the importance of proper nutrition, monitoring children's growth and development, and disease prevention measures that can worsen children's nutritional conditions. Intensive mentoring can change childcare, which in turn can reduce the prevalence of stunting [37–41].

Access to nutrition assistance programs and health services, such as postpartum services, is significantly associated with a decrease in the prevalence of stunting. Families who had access to assistance programs showed a lower prevalence of stunting (20.7%) compared to those who did not have access (28.0%). In addition, mothers who received postpartum services had a lower prevalence of stunting (23.9%) than those who did not receive services (40.0%). Postpartum health services are important to ensure early monitoring of children's growth and development and the provision of necessary interventions [42,43].

Meanwhile, although geographical factors such as home location (rural vs. urban) and residential topography (coastal vs. inland areas) do not show a significant relationship with stunting, there is a tendency that rural areas and hard-to-reach areas tend to have more families receiving assistance, although the distribution is uneven. These findings indicate that increasing the distribution of family assistance programs, especially in remote areas, can help reduce the prevalence of stunting more evenly.

Overall, family assistance, postpartum health services, adequate sanitation conditions, and maternal education are important factors in stunting prevention efforts in Donggala Regency. This study suggests the need for increased interventions that are more focused on at-risk families and increased access to basic health and sanitation services to reduce the prevalence of stunting in the area.

CONCLUSION

Children from assisted families have a lower prevalence of stunting (22.7%) than unassisted families (30%). Access to proper sanitation and clean water also plays an important role, with a lower prevalence of stunting in children who have such access (24.1% vs. 63.6%). The age group of 12-23 months, especially boys, is the most vulnerable group to stunting. The suggestions submitted include expanding family assistance programs, accelerating the development of sanitation infrastructure and access to clean water in vulnerable areas, as well as prioritizing nutrition interventions for children aged 12-23 months through the active posyandu program. In addition, nutrition education for pregnant women needs to be strengthened for prevention from an early age. This approach is expected to

reduce the prevalence of stunting and support the creation of a healthy and quality generation in Donggala.

ACKNOWLEDGMENTS

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