The Analysis of Risk Factors in Toddlers on The Occurrence of Stunting In Pidie

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KEYWORDS
Stunting, Antenatal, Exclusive Breastfeeding, Nutrition, Parenting

ABSTRACT
Nutritional issues in toddlers continue to be a primary concern in population settings. Among these issues are stunting, wasting, and overweight (World Health Organization, 2020). Stunting remains a major nutritional problem in developing countries such as Indonesia. Stunting, or chronic malnutrition, is a nutritional issue resulting from prolonged inadequate nutrient intake from food (Andriani et al., 2017). Short stature in toddlers (stunting) is determined by body length or height that is less than -2 SD according to WHO global references for children compared to other children of the same age (World Health Organization, 2013). The global prevalence of stunted toddlers, according to WHO, is 21.9%. According to the Indonesian Nutrition Status Survey (SSGI) by the Ministry of Health, the prevalence of stunted toddlers in this province was 31.2% last year. The highest incidence of stunting in Aceh is in Kota Subulussalam, which had the highest prevalence of stunted toddlers in Aceh in 2022, reaching 47.9%. This number jumped 6.1 points from 41.8% in 2021. Pidie Regency, with 27.8%, ranks fifth highest in Aceh. This study used a cross-sectional design with a sample of 334 toddlers chosen using the Slovin formula. Sampling was conducted randomly among mothers of underweight toddlers in local health center in Pidie Regency, which has a toddler population of 1,979. Statistical software SPSS 23 with Chi-square was used for data analysis. The findings from this study, derived from bivariate statistical analysis using the Chi-square test at a 95% confidence level, yielded a p-value of 0.268 ($p > 0.05$). This indicates that the Antenatal Care variable does not affect the risk of stunting. For the immunization variable, the test results showed a p-value of 0.515 ($p > 0.05$), indicating no relationship between immunization and the risk of stunting. For the exclusive breastfeeding variable, a p-value of 0.038 ($p < 0.05$) was obtained, indicating that exclusive breastfeeding affects the risk of stunting. The maternal nutrition during pregnancy variable resulted in a p-value of 0.037 ($p < 0.05$), indicating that maternal nutrition affects the risk of stunting. As for the parenting pattern variable, the test resulted in a p-value of 0.007 ($p < 0.05$), indicating that parenting patterns greatly influence the risk of stunting.

1. Introduction

Nutritional issues in toddlers remain a primary concern in population settings. Among these issues are stunting, wasting, and overweight (World Health Organization, 2020). Stunting remains a major nutritional problem in developing countries like Indonesia. Stunting, or chronic malnutrition, results from prolonged inadequate nutrient intake from food (Andriani et al., 2017). Short stature in toddlers (stunting) is determined by body length or height that is less than -2 SD according to WHO global references for children compared to other children of the same age (World Health Organization, 2013).

Stunting can be caused by multidimensional factors, not only due to malnutrition experienced during pregnancy, it can also happened when the child is under the age of five Meanwhile, the global prevalence of stunted toddlers, according to WHO, is 21.9%. The majority of these stunted toddlers come from Asia (World Health Organization, 2020). In 2019, the incidence of stunting in ASEAN countries was recorded as 10.5% in Thailand and 20.7% in Malaysia (TNP2K, 2017). According to data from the 2021 Indonesian Toddler Nutrition Status Survey (SSGBI), the prevalence of stunted toddlers in Indonesia decreased from 27.67% in 2019 to 24.4% in 2021. The incidence of stunting in Aceh province was the fifth highest in Indonesia in 2022.

According to the Indonesian Nutrition Status Survey (SSGI) by the Ministry of Health, the prevalence of stunted toddlers in this province was 31.2% last year. The highest incidence of stunting in Aceh is in Kota Subulussalam, which had the highest prevalence of stunted toddlers in Aceh in 2022, reaching 47.9%. This number jumped 6.1 points from 41.8% in 2021. Pidie Regency, with

27.8%, ranks fifth highest in Aceh.

Literature Review

According to WHO (2015), stunting is a growth and development disorder in children due to chronic malnutrition and repeated infections, characterized by height being below the standard. Furthermore, according to WHO (2020), stunting is defined as short or very short stature based on height-for-age less than -2 standard deviations (SD) on the WHO growth curve, resulting from irreversible conditions due to inadequate nutritional intake and/or repeated or chronic infections occurring during the first 1000 days of life. Not all short toddlers are stunted, so pediatricians need to differentiate them, but stunted children are always short. The impact of stunting in Indonesia can have direct health consequences, including growth failure (low birth weight, small stature, thinness), cognitive and motor development impediments, and metabolic disturbances in adulthood that increase the risk of non-communicable diseases (diabetes, obesity, stroke, heart disease, etc.). The second impact of stunting is economic, potentially causing annual losses of around 2 to 3% of GDP.

2. Method

This study uses a cross-sectional design. The study population consisted of mothers with toddlers in Pidie Regency. The number of mothers with wasting toddlers who received education was 1,979. The sample in this study included mothers with toddlers in Pidie Regency, selected using the Slovin formula (1960), totaling 334 samples. The data analysis technique in this study employed univariate and bivariate analysis, with the bivariate analysis using the Chi-square test.

3. RESULTS and Discussion

1. Results of Variable Data Analysis

Table 1. Antenatal Data Analysis

Antenatal	F	%
Incomplete	280	83,8
Complete	54	16,2
Total	334	100

From the table above, can be seen that the Antenatal care variable for stunting risk prevention shows that 280 respondents (83.8%) had incomplete antenatal care, and 54 respondents (16.2%) had complete antenatal care.

Table 2. Immunization Data Analysis

Immunization	F	%
Incomplete	46	13,8
Complete	288	86,2
Total	334	100

From the table above, can be seen that the immunization variable for the risk of stunting incidence is mostly in the complete category, with 288 respondents (86.2%) having complete immunization, while 46 respondents (13.8%) had incomplete immunization.

Table 3. Exclusive Breastfeeding Data Analysis

Exclusive Breastfeeding	F	%
No	38	11,4
Yes	296	88,6
Total	334	100

From the table above, for the exclusive breastfeeding variable, 296 respondents (88.6%) reported giving exclusive breastfeeding, while 38 respondents (11.4%) did not give exclusive breastfeeding to their toddlers.

Table 4. Maternal Nutrition Data Analysis

Maternal Nutrition	F	%
Inadequate	179	53,6
Adequate	155	46,4
Total	334	100

From the table above, can be seen the maternal nutrition during pregnancy variable shows that 61 respondents (18.3%) had inadequate nutrition, while 273 respondents (81.7%) had adequate nutrition during pregnancy.

Table 5. Parenting Data Analysis

Parenting Pattern	F	%
Poor	112	33,5
Good	222	66,5
Total	334	100

From the table above, the parenting pattern variable for stunting incidence shows that 307 respondents (91.9%) had good parenting patterns, while 27 respondents (8.1%) had poor parenting patterns.

2. Dependent Variable

The results of data analysis conducted for the dependent variable (Recurrence) are shown in the table below:

Table 6. Stunting Analysis Results

Stunting	F	%
Stunting	76	22,8

Not Stunting	258	77,2
Total	334	100

From the table above, for the variable Stunting, there are 76 respondents (22.8%) with Stunting condition and 258 respondents (77.2%) without Stunting.

3. Bivariate Test Results

The bivariate test results are to identify factors such as Antenatal, Immunization, Exclusive Breastfeeding, Maternal Nutrition, and Parenting Style affecting Stunting incidence in Pidie Regency. The results can be seen in the following tables:

Table 7. Bivariate Test of Antenatal with Stunting Risk

Antenatal	***Stunting***		**Total**
	Ya	Tidak	
	F	F	Total
Incomplete	66	214	280
complete	10	44	220
Total	76	258	334
Analisa Antenatal dengan Stunting *P- Value* = 0,268			

From the table above, it can be concluded that among those with incomplete Antenatal care, there are 66 children respondents with stunting and 214 children respondents without stunting. Meanwhile, among those with complete Antenatal care, there are 10 children respondents with stunting and 44 children respondents without stunting. Based on the statistical analysis using bivariate chi-square test at a 95% confidence level with p = 0.268 (p > 0.05), there is no correlation between the Antenatal examination variable and the risk of stunting occurrence.

Table 8. Bivariate Test of Immunizationwith Stunting Risk

Immunization	**Stunting**		Total
	Yes	No	
	F	F	Total
Incomplete	10	36	46
Complete	66	222	288
Total	76	258	334
Analysis of Immunization with Stunting Risk P-Value = 0.515			

From the table above, it can be concluded that the incomplete Immunization variable has 10 respondents with Stunting and 36 respondents without Stunting, while the complete Immunization variable has 66 respondents with Stunting and 222 respondents without Stunting. Based on the statistical analysis using bivariate chi-square test at a 95% confidence level with p = 0.515 (p > 0.05), there is no effect of the Immunization variable on the risk of Stunting.

Table 9. Bivariate Test of Exclusive Breastfeeding with Stunting Incidence

Exclusive Breastfeeding	**Stunting**		**Total**
	Yes	No	
	F	F	Total
Not Exclusive	14	24	38
Exclusive	62	234	296
Total	76	258	334
Analysis of Exclusive Breastfeeding with Stunting in infants P-Value = 0.027			

From the table above, it can be concluded that the variable of incomplete Exclusive Breastfeeding has 14 respondents with Stunting and 24 respondents without Stunting, while complete Exclusive Breastfeeding has 62 respondents with Stunting and 234 respondents without Stunting. Based on the statistical analysis using bivariate chi-square test at a 95% confidence level with p = 0.027 (p < 0.05), there is an effect of the Exclusive Breastfeeding variable on the incidence of Stunting in infants.

Table 10. Bivariate Test of Maternal Nutrition with Stunting Incidence

Maternal Nutrition	**Stunting**		**Total**
	Yes	No	
	F	F	Total
Imbalanced	39	140	179
Balanced	37	118	155
Total	76	258	334
Analysis of Maternal Nutrition with Stunting in infants P-Value = 0.037			

From the table above, it can be concluded that the variable of imbalanced Maternal Nutrition has 39 respondents with Stunting and 140 respondents without Stunting, while balanced Maternal Nutrition has 37 respondents with Stunting and 118 respondents without Stunting. Based on the statistical

analysis using bivariate chi-square test at a 95% confidence level with p = 0.037 (p < 0.05), there is an effect of the Maternal Nutrition variable on the incidence of Stunting in infants.

Table 10. Bivariate Test of Parenting Style with Stunting Incidence

Parenting	Stunting		Total
	Yes	No	
	F	F	Total
Poor	35	77	112
Good	41	181	222
Total	76	258	334
Analysis of Parenting Style with Stunting in infants P-Value = 0.007			

From the table above, it can be concluded that the variable of Poor Parenting Style has 35 respondents with Stunting and 77 respondents without Stunting, while Good Parenting Style has 41 respondents with Stunting and 181 respondents without Stunting. Based on the statistical analysis using bivariate chi-square test at a 95% confidence level with p = 0.007 (p < 0.05), there is an effect of the Parenting Style variable on the incidence of Stunting in infants.

Antenatal Variable

Antenatal care (ANC) is a pregnancy check-up aimed at optimizing the physical and mental health of pregnant women. This check-up helps ensure the well-being of both the fetus and the pregnant woman. During pregnancy, ANC should be conducted at least four times: once in each of the first and second trimesters, and twice in the third trimester.

The study results concluded that among those with incomplete antenatal care, there were 66 child respondents with stunting and 214 child respondents without stunting. Meanwhile, among those with complete antenatal care, there were 10 child respondents with stunting and 44 child respondents without stunting.

Based on the statistical analysis using a bivariate chi-square test at a 95% confidence level with p = 0.268 (p > 0.05), there is no correlation between the antenatal examination variable and the risk of stunting occurrence.

Immunization Variable

The immune system of the body, known as immunity, provides protection against various diseases. It is crucial for every individual to maintain a strong immune system; otherwise, they become more susceptible to illnesses. The goal of immunization is to protect individuals from contagious and harmful diseases, enhance immunity, especially in young children whose immune systems are not yet fully developed, support optimal growth in children, bring joy to families, and provide safety to the community, particularly children, through a robust immune system.

Research results show that among 10 respondents with incomplete immunization, some experienced stunting while others did not, whereas, with complete immunization, 66 respondents experienced stunting while 222 did not. Statistical analysis using the chi-square test at a 95% confidence level with p = 0.515 (p > 0.05) indicates no significant effect of immunization status on the risk of

stunting. This result aligns with the study by Ritana Arifa Varesa and Budi Kurniawan, which found that children with incomplete immunization still had normal growth, while those with complete immunization experienced stunting. There was no significant relationship between immunization and stunting occurrence, with a Chi-Square result showing p = 0.12 (p > 0.05) at Puskesmas Sungai Aur, Pasaman Barat, West Sumatra in 2021.

Exclusive Breastfeeding Variable

Exclusive breastfeeding is defined as providing only breast milk to an infant, without any supplemental foods or drinks, except for medications. After six months, breast milk alone may not meet the infant's needs for minerals like iron and zinc, so complementary foods rich in iron, known as MP-ASI (Exclusive Breastfeeding Supplement), are introduced to fulfill these needs.

Research findings indicate that among 14 respondents with incomplete exclusive breastfeeding, some experienced stunting while others did not. In contrast, among 62 respondents who practiced exclusive breastfeeding, 234 did not experience stunting. Statistical analysis using the chi-square test at a 95% confidence level showed p = 0.027 (p < 0.05), indicating a significant impact of exclusive breastfeeding on stunting.

This result is consistent with research by Sr. Anita Sampe, SJMJ, which also used chi-square and odds ratio tests. The chi-square test yielded p = 0.000 (p < 0.05), showing a relationship between exclusive breastfeeding and stunting. The odds ratio was 61, indicating that infants not receiving exclusive breastfeeding are 61 times more likely to experience stunting compared to those who are exclusively breastfed.

Maternal Nutrition Variable

A pregnant woman is defined as someone who is carrying a fetus from conception (the meeting of the egg and sperm) until the baby is born. The normal duration of pregnancy is 280 days (40 weeks or 9 months and 7 days), counted from the first day of the last menstrual period (LMP).

Research findings indicate that among 39 respondents with imbalanced nutrition, some experienced stunting while 140 did not. In contrast, among 37 respondents with balanced nutrition, 118 did not experience stunting. Statistical analysis using the chi-square test at a 95% confidence level showed p = 0.027 (p < 0.037), indicating a significant impact of maternal nutrition on stunting. This result is consistent with research by Rikayani and Dian Rahmi, titled "The Relationship Between Maternal Nutrition Status During Pregnancy and Stunting in Infants Aged 0-36 Months in the Si Junjung Health Center Area" in 2022. It found that most mothers had poor nutritional status during pregnancy, which increased the risk of stunting in their children. The Spearman rho test showed a correlation between maternal nutritional status and stunting with $\rho = 0.000$ ($\rho < \alpha = 0.05$).

Parenting Variable

Parenting style refers to the attitudes and behaviors of parents towards their children, which influence various aspects of the child's development, including emotional, social, and intellectual competencies.

Research results indicate that among 35 respondents with poor parenting styles, some experienced stunting while 77 did not. In contrast, among 41 respondents with good parenting styles, 181 did not experience stunting. Statistical analysis using the chi-square test at a 95% confidence level showed p = 0.007 (p < 0.05), indicating a significant impact of parenting style on stunting. Overall, these studies suggest that parenting style significantly influences the incidence of stunting in children.

4. Conclusion

The purpose of this study was to assess the risk of stunting based on factors such as antenatal care, immunization, exclusive breastfeeding, maternal nutrition during pregnancy, and parenting style. The findings reveal that exclusive breastfeeding, maternal nutrition during pregnancy, and parenting style

are significantly related to the occurrence of stunting in toddlers. Therefore, there is a need for improved family support.

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