The Influence Of Maternal Parenting Patterns During Pregnancy On The Incidence Of Stunting In West Aceh District

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Abstract

Stunting is a condition of growth failure in children under five caused by chronic malnutrition, particularly during the first 1,000 days of life. Stunting affects both physical growth and brain development. Various factors contribute to stunting, including inadequate parenting practices. Maternal parenting patterns during pregnancy play a crucial role in preventing stunting. This study aims to analyze the influence of maternal parenting patterns during pregnancy on the incidence of stunting in West Aceh District. The research employs an analytical survey method with a cross-sectional study design. The study was conducted in West Aceh District from September 2023 to March 2024. The population includes all mothers with children aged 0–24 months, totaling 3,785 individuals. A sample size of 320 mothers was determined using the Issac and Michael table. The sampling technique used multistage random sampling. Data analysis consisted of univariate and multivariate analyses, with the latter using multiple logistic regression tests at a 95% confidence level (α=0.05). The study results indicate that maternal parenting patterns significantly influencing stunting include maternal dietary intake (p=0.001; ExpB=43.601), environmental health (p=0.001; ExpB=41.250), healthcare services (p=0.001; ExpB=41.250), maternal knowledge (p=0.001; ExpB=29.561), maternal attitudes (p=0.001; ExpB=60.539), and maternal actions (p=0.001; ExpB=69.996). Recommendations include encouraging couples to pay more attention to maternal health during pregnancy. Health services, such as health departments and community health centers, are advised to implement programs emphasizing the importance of proper maternal parenting during pregnancy and to establish community groups that focus on maternal health.

Keywords: Maternal Health, Stunting Incidence, Parenting Patterns

Introduction

Stunting is a condition of growth failure in toddlers due to chronic malnutrition, particularly during the first 1,000 days of life (1)(2). Stunting affects both growth and brain development. Stunted children also have a higher risk of suffering from chronic diseases in adulthood. Additionally, stunting impacts intelligence levels, increases vulnerability to diseases, reduces productivity, and subsequently hinders economic growth, contributing to increased poverty and inequality (3).

Globally, 21.3% or 144 million toddlers are stunted, with more than half (54%) residing in Asia as of 2019 (4). Research in several countries also indicates high rates of stunting among toddlers, with 49.4% in

Ethiopia (5), 38% in Mumbai, India (6), and 37% in Punjab, Pakistan (7). In Indonesia, the prevalence of stunting is 30.8% (8).

Stunting is a significant health issue in Indonesia, particularly in regions such as Aceh Province. According to the Indonesian Nutritional Status Survey Data for 2022, Aceh Province ranks fifth with a stunting prevalence of 31.2%, down from third place the previous year, which had a prevalence of 33.2%. In 2023 (8), based on the Indonesian Health Survey Data for 2023, the incidence of stunting has decreased to 29.3%. The prevalence of stunting across all regencies and cities in Aceh Province ranges from 19% to 39%. According to WHO criteria, the average prevalence of stunting in Aceh Province falls into the very high and high categories, with only one regency classified as medium, having a prevalence of 19.9%, which is Aceh Jaya Regency.

According to the basic health research data from 2019, West Aceh Regency is one of 23 regencies and cities with a stunting prevalence exceeding 20%, specifically at 27.3% (9). However, based on data from 2021, the stunting prevalence in West Aceh Regency increased slightly to 27.4%, categorized as high (10). In 2022, this figure rose significantly to 30.4%, categorized as very high (11), By 2023, the stunting rate in West Aceh Regency continued to rise to 33.4% (12).

The factors contributing to stunting are diverse, including inadequate caregiving practices (13). According to other research results, the factors influencing stunting can be classified into two categories: direct factors, which include food intake and infectious diseases, and indirect factors, which encompass parenting patterns, the environment, culture, healthcare services, and food availability (14).

Maternal parenting patterns during pregnancy and child-rearing play a crucial role in preventing stunting (14)(15). During pregnancy, mothers need to ensure adequate nutritional intake to support fetal growth (15)(16)(17). Nutritional deficiencies in pregnant women can increase the risk of low birth weight, which is one of the primary factors contributing to early childhood stunting (16)(18).

Based on preliminary observations, it was found that in West Aceh District, including rural areas, limited access to health and nutrition information often leads to suboptimal parenting practices during pregnancy. The high prevalence of poor nutritional status among pregnant women contributes to the incidence of low birth weight (LBW), where maternal knowledge about nutrition indirectly influences the occurrence of stunting in children. This indicates that parental factors, particularly the condition of mothers during pregnancy, are a major determinant of stunting. This study aims to analyze the influence of maternal parenting patterns during pregnancy on the incidence of stunting in West Aceh District.

Methods

This research employs an analytical survey method with a cross-sectional study design. The study was conducted in West Aceh District from September 2023 to March 2024. The population included all mothers with children aged 0–24 months, totaling 3,785 individuals. The sample size of 320 mothers was determined

using the Issac and Michael table with a 5% margin of error. The sampling technique employed multistage random sampling, where random selection was conducted at each stage, including clusters and sampling units. The sampling process followed two criteria: Inclusion Criteria: Mothers who delivered at health facilities and were assisted by healthcare professionals, and Exclusion Criteria: Mothers who experienced illnesses lasting more than one week during the first four months postpartum. Data collection was conducted through the distribution of questionnaires. The dependent variable was stunting incidence, measured on an ordinal scale (categorical data). The independent variables included maternal parenting patterns during pregnancy, which comprised the following: maternal dietary intake, environmental health, maternal knowledge, maternal health history, maternal attitudes, and maternal actions, all measured on an ordinal scale (categorical data). Data analysis was performed using SPSS version 27. The analysis involved two stages: univariate analysis to describe the characteristics of the data, multivariate analysis using multiple logistic regression tests at a 95% confidence level ($\alpha = 0.05$).

The principal investigator obtained ethical approval from the Health Research Ethics Committee of the University of North Sumatra Hospital (No: 68/KEPK/USU/2024). Permission from academic administrators and relevant authorities was secured before data collection to ensure compliance and ethical standards. Additionally, informed consent was obtained from all respondents prior to questionnaire distribution.

Results

The following is the frequency distribution of stunting incidence among children aged 0-24 months in West Aceh District, as shown in the table below:

Table 1. Frequency Distribution of Stunting Incidence Among Children Aged 0-24 Months in West Aceh District

Stunting Incidence	n	%
Stunting	116	36.3
Not Stunting	204	63.8
Total	320	100.0

Source: Primary Data

Based on the table above, the frequency distribution of stunting incidence among children aged 0-24 months in West Aceh District shows that the majority of toddlers do not experience stunting, accounting for 63.8%, while 36.3% are affected by stunting. Below is the frequency distribution of parenting practices during pregnancy in West Aceh District, as shown in the table below:

Table 2. Frequency Distribution of Parenting Practices During Pregnancy in West Aceh District

Parenting Practices During Pregnancy	n	%
Maternal Food Intake		
Not Met	71	22.2
Met	249	77.8
Maternal Environmental Health		
Poor	49	15.3
Good	271	84.7

Parenting Practices During Pregnancy	n	%
Maternal Healthcare Services		
Poor	74	23.1
Good	246	76.9
Maternal Knowledge		
Poor	77	24.1
Good	243	75.9
Maternal Attitudes		
Poor	79	24.7
Good	241	75.3
Maternal Actions		
Poor	131	40.9
Good	189	59.1

Source: Primary Data Source: Primary Data

Based on the table above, the frequency distribution of parenting practices during pregnancy reveals that the majority of pregnant women have adequate food intake, accounting for 77.8%, while approximately 22.2% have inadequate food intake. The majority of pregnant women live in a healthy environment, with 84.7% reporting good health conditions; however, 15.3% live in less healthy environments. The quality of healthcare services for pregnant women is considered good by 76.9% of respondents, while 23.1% rate the services as inadequate, indicating that these mothers feel there are still shortcomings. Most pregnant women have good knowledge about health, with 75.9% demonstrating adequate understanding, while 24.1% have poor knowledge. A significant majority of pregnant women also exhibit positive attitudes towards their health, amounting to 75.3%, whereas 24.7% display negative attitudes. Additionally, the majority of pregnant women take appropriate actions regarding their pregnancy, with 59.1% acting responsibly, while 40.9% engage in less appropriate behaviors.

The influence of maternal parenting practices during pregnancy on the incidence of stunting in children in West Aceh District can be seen in the following table:

Table 3. Analysis of the Influence of Maternal Parenting Practices During Pregnancy on the Incidence of Stunting in Children in West Aceh District

Parenting Practices During Pregnancy	β	Exp B	Pvalue	Confidence Interval (95% CI) for Exp B	
				Lower	Upper
Maternal Food Intake	3.780	43.601	0.001	18.784	102.134
Maternal Environmental Health	0.066	0.327	0.839	0.563	2.027
Maternal Healthcare Services	3.720	41.250	0.001	18.410	92.424
Maternal Knowledge	3.386	29.561	0.001	14.372	60.804
Maternal Attitudes	4.103	60.539	0.001	25.753	142.309
Maternal Actions	4.248	69.996	0.001	31.059	157.748

Source: Data Primer Correlation Test Results Between Independent Variables and Dependent Variables

Based on the results from Table 4, the analysis of the influence of maternal food intake on the incidence of stunting in West Aceh District shows that the ExpB value is 43.601, indicating that maternal food intake has a 43.6 times higher likelihood of influencing stunting. The statistical test result shows a p-value of 0.001, indicating a significant influence of maternal food intake on the incidence of stunting in West Aceh District.

The influence of maternal environmental health on the incidence of stunting in West Aceh District has

an ExpB value of 0.327, indicating that maternal environmental health influences stunting by 0.3 times. The statistical test result shows a p-value of 0.839, indicating no significant influence of maternal environmental health on the incidence of stunting in West Aceh District.

The influence of maternal healthcare services on the incidence of stunting in West Aceh District shows an ExpB value of 41.250, indicating that maternal healthcare services have a 41.2 times higher likelihood of influencing stunting. The statistical test result shows a p-value of 0.001, indicating a significant influence of maternal healthcare services on the incidence of stunting in West Aceh District.

The influence of maternal knowledge on the incidence of stunting in West Aceh District has an ExpB value of 29.561, indicating that maternal knowledge has a 29.5 times higher likelihood of influencing stunting. The statistical test result shows a p-value of 0.001, indicating a significant influence of maternal knowledge on the incidence of stunting in West Aceh District.

The influence of maternal attitudes on the incidence of stunting in West Aceh District shows an ExpB value of 60.539, indicating that maternal attitudes have a 60.5 times higher likelihood of influencing stunting. The statistical test result shows a p-value of 0.001, indicating a significant influence of maternal attitudes on the incidence of stunting in West Aceh District.

The influence of maternal actions on the incidence of stunting in West Aceh District has an ExpB value of 69.996, indicating that maternal actions have a 69.9 times higher likelihood of influencing stunting. The statistical test result shows a p-value of 0.001, indicating a significant influence of maternal actions on the incidence of stunting in West Aceh District.

Discussion

Stunting is the most common form of malnutrition globally and a major public health concern (19). Many factors influence the occurrence of stunting, one of which is maternal care during pregnancy, which includes maternal food intake, maternal environmental health, maternal healthcare services, maternal knowledge, maternal attitudes, and maternal actions (20)(21).

There is a significant influence of maternal food intake on the incidence of stunting among children aged 0-24 months in West Aceh District. When a pregnant woman experiences nutritional deficiencies, the fetus does not receive optimal nutrition for growth. Maternal nutrition plays a crucial role in the development of the fetus and the health of the newborn. During pregnancy, the need for energy and nutrients increases to support fetal growth and development, as well as to maintain maternal health. The lack of adequate nutrition can lead to low birth weight (LBW), which is a major risk factor for stunting.

Nutritional deficiencies, especially in protein, calories, and micronutrients such as iron and calcium, can impair the formation of the fetus's body cells, including the brain, vital organs, and bones (22)(23)(24). Growth restriction during the fetal stage often continues after birth, which can increase the risk of stunting in the long term (25)(26)(27) .

There is also a significant influence of maternal healthcare services on the incidence of stunting among

children aged 0-24 months in West Aceh District. The quality and coverage of healthcare services during pregnancy greatly affect the health of the fetus and the development of the child after birth. Maternal healthcare services include various interventions aimed at ensuring a healthy pregnancy and optimal birth conditions.

Some key services that pregnant women receive include Antenatal Care (ANC), tetanus toxoid immunization, nutritional supplementation, disease detection and treatment, and monitoring maternal weight gain (28)(29)(30). Routine health check-ups during pregnancy allow for early detection of issues such as anemia, infection, or hypertension, which can affect fetal growth (31)(32)(33). If these issues are not properly managed, the fetus is at risk of low birth weight (LBW), a major risk factor for stunting (31)(34)(35).

There is a significant influence of maternal knowledge on the incidence of stunting in West Aceh District. Mothers with better knowledge are more likely to meet their nutritional needs during pregnancy, attend routine prenatal check-ups, and provide appropriate care for their children.

A pregnant mother's knowledge about nutrition, health, and infant care plays a significant role in preventing stunting in children aged 0-24 months (36)(37)(38). Mothers with greater knowledge and understanding are more likely to take better actions to maintain their health and that of their fetus (39)(40)(41).

There is also a significant influence of maternal attitudes on the incidence of stunting in West Aceh District. Pregnant women with positive attitudes toward the importance of balanced nutrition are more likely to pay attention to their diet, which supports optimal fetal growth.

Mothers with positive attitudes toward nutrition during pregnancy are more likely to consume nutrient-rich foods such as proteins, carbohydrates, healthy fats, vitamins, and minerals (38)(42)(43). A pregnant mother's attitude toward nutritional intake during pregnancy is one of the key factors in determining the risk of stunting in children (40)(41)(44). A positive and proactive attitude in maintaining the health of both the mother and the fetus during pregnancy can reduce the risk of giving birth to a child with low birth weight, malnutrition, and infections that contribute to stunting (43)(44)(45).

There is a significant influence of maternal actions during pregnancy on the incidence of stunting in West Aceh District. Positive maternal actions during pregnancy play an important role in preventing stunting in children, as the various steps taken by the mother directly affect the health and development of the fetus.

Maternal actions during pregnancy, including nutritional intake, healthcare services, hygiene, and lifestyle, greatly influence fetal development and the risk of stunting in children aged 0-24 months (46)(40)(47). Mothers who take proactive measures to maintain their health and that of their fetus through proper nutrition, regular prenatal check-ups, and maintaining hygiene and mental well-being are more likely to give birth to children with optimal growth (48)(49).

Conclusion

The results of the study concluded that maternal parenting patterns during pregnancy significantly influencing stunting in West Aceh District include maternal dietary intake (p=0.001; ExpB=43.601), maternal

environmental health (p=0.001; ExpB=41.250), maternal healthcare services (p=0.001; ExpB=41.250), maternal knowledge (p=0.001; ExpB=29.561), maternal attitudes (p=0.001; ExpB=60.539), and maternal actions (p=0.001; ExpB=69.996).

Recommendations include encouraging couples to be more attentive to pregnancy care and to perform regular antenatal check-ups. Health services in West Aceh District, such as the Health Office and community health centers, are advised to implement programs emphasizing the importance of proper maternal parenting during pregnancy. Additionally, community groups should be established to support pregnant women, providing a platform where they can share experiences, access information, and support one another in practicing proper parenting during pregnancy. The West Aceh District government is encouraged to conduct regular monitoring of maternal health status and to develop appropriate intervention programs addressing maternal nutritional status. Continuous monitoring and evaluation of these programs should also be conducted to ensure their effectiveness in improving maternal health outcomes..

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