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The relationship between maternal nutritional status during pregnancy and the incidence of stunting in toddlers aged 0-24 months in the tawiri health center work area

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Abstract

Background: Mothers who experience poor nutritional status are at risk of giving birth to stunted children. The purpose of this study was to analyze the relationship between maternal nutritional status during pregnancy and the incidence of stunting in toddlers aged 0-24 months in the Tawiri Health Center work area. **Method:** This study used a retrospective method to analyze the relationship between maternal nutritional status during pregnancy and the incidence of stunting in toddlers aged 0-24 months in the Tawiri Health Center work area. **Result:** The results showed that most mothers experienced poor nutritional status during pregnancy. Mothers with poor nutritional status during pregnancy are at higher risk of giving birth to children who experience stunting. **Conclusion:** Maternal nutritional status during pregnancy is related to the incidence of stunting. Therefore, it is necessary to conduct socialization of health education about stunting and fulfillment of nutritional needs during pregnancy to health workers at the Tawiri Health Center.

Keywords: Maternal Nutritional Status, Stunting in Toddlers, Pregnancy Nutrition

1. Introduction

Stunting is one of the chronic nutritional problems that is still a global health challenge, especially in developing countries. According to the World Health Organization (WHO), stunting is defined as a condition of failure to thrive due to chronic malnutrition, recurrent infections, and inadequate stimulation in the first 1,000 days of life (WHO, 2020). Children who experience stunting are at risk of having lower cognitive development, impaired physical growth, and an increased risk of non-communicable diseases in adulthood (Black et al., 2013).

One of the main factors contributing to the incidence of stunting is the nutritional status of the mother during pregnancy. Mothers with poor nutritional status during pregnancy tend to give birth to babies with low birth weight (LBW), which is a major risk factor for stunting (Victora et al., 2016). Deficiencies in macro and micro nutrients, such as protein, iron, and folic acid, can inhibit fetal growth in the womb, thus impacting child growth in the first years of life (Prendergast & Humphrey, 2014).

Indonesia still faces high stunting rates. Data from the 2022 Indonesian Nutritional Status Survey (SSGI) shows that the national stunting prevalence reached 21.6%, although it has decreased compared to previous years (Ministry of Health of the Republic of Indonesia, 2022). In the Tawiri Health Center working area, the incidence of stunting is still a major concern in efforts to improve children's nutritional status. Therefore, it is important to understand the relationship between maternal nutritional status during pregnancy and the incidence of stunting in children aged 0-24 months.

This study aims to analyze the relationship between maternal nutritional status during pregnancy and the incidence of stunting in toddlers aged 0-24 months in the Tawiri Health Center working area. It is hoped that the results of this study can be the basis for developing more effective nutritional intervention strategies to reduce stunting rates and improve maternal and child health.

2. Materials and Methods

This study is a retrospective study that aims to analyze the relationship between maternal nutritional status during pregnancy and the incidence of stunting in toddlers aged 0-24 months in the Tawiri Health Center work area. Retrospective design is used to see the cause-and-effect relationship by tracing back data and events that have occurred previously (Notoatmodjo, 2005). The population in this study were all mothers who had children aged 0-24 months in the Tawiri Health

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Center work area. The sampling technique was carried out using the purposive sampling method, namely the selection of samples based on the inclusion and exclusion criteria that had been set. The inclusion criteria in this study included mothers who had documented nutritional status data during pregnancy at the Tawiri Health Center, were willing to participate in the study, and had children aged 0-24 months with complete anthropometric data. Meanwhile, the exclusion criteria included mothers who did not have a completely documented pregnancy history and children with congenital abnormalities or chronic diseases that could affect nutritional status and growth. Data collection was conducted through medical records of pregnant women documented at the Tawiri Health Center and interviews with mothers using structured questionnaires. Data on maternal nutritional status during pregnancy were obtained from medical records that recorded weight before and during pregnancy, while data on stunting incidence were obtained by measuring the child's height using WHO standards. The collected data were analyzed using the Chi-Square statistical test to see the relationship between maternal nutritional status during pregnancy and the incidence of stunting in toddlers. The statistical test was conducted with a significance level of $\alpha = 0.05$, which means the relationship is considered significant if the p value <0.05 (Field, 2018).

3. Results

3.1 Distribution of Respondents based on characteristics in the Tawiri Health Center work area

Table 1 Distribution of Respondents based on characteristics in the Tawiri Health Center work area

Respondent Characteristics	f	%
Umur		
< 20 Tahun	11	29.7
20 – 35 Tahun	20	54.1
> 35 Tahun	6	16.2
Education		
Primary School	7	18.9
Junior High School	11	45.0
Senior High School	17	29.7
College	2	5.4

Based on the results of the analysis in table 1, it was found that of the 37 respondents who were mothers of stunted toddlers in the Tawiri Health Center work area, the majority, namely 54.1% or 20 respondents were aged 20-35 years. The results of the analysis of respondent characteristics also showed that the majority, namely 45% or 17 respondents, had junior high school education.

3.2 Nutritional Status of Mothers During Pregnancy

Table 2. Frequency Distribution of Maternal Nutritional Status during Pregnancy in the Tawiri Health Center work area

Nutritional Status of Mothers During Pregnancy	f	%
Less	30	81.1
Normal	7	9.9
Total	37	100

Based on the results of the analysis in table 2, it was found that of the 37 respondents who were mothers of stunted toddlers in the Tawiri Health Center work area, most of them had a thin BMI, namely 81.1% or 30 mothers.

3.3 Stunting Category

Table 3. Frequency Distribution of Stunting Categories in the working area of Tawiri Health Center

Stunting Category	f	%
Very Short	22	59.5
Short	15	40.5
Total	37	100

Based on the results of the analysis in table 5.3, it was found that of the 37 respondents who were stunted toddlers in the Tawiri Health Center work area, most of them were in the very short category, namely 59.5% or 22 toddlers.

3.4 The Relationship between Maternal Nutritional Status During Pregnancy and the Incidence of Stunting in the Tawiri Health Center Work Area

Table 4. The Relationship between Maternal Nutritional Status During Pregnancy and the Incidence of Stunting in the Tawiri Health Center Work Area

Nutritional Status of Mothers During Pregnancy	Stunting Category				Total		P
	Very short	%	short	%	f	%	
Less	20	54,1	10	27,0	30,7	81,1	0.000*
Normal	2	5,4	5	13,5	37	18,9	
Total	22	59,5	15	40,5		100	

**Uji Chi-squre*

Based on table 4, it was obtained that 30 people (81.1%) of thin mothers had stunted children. Based on the results of the chi-square test, H0 was rejected with a value of a <0.05 (P = 0.000), which means that there is a relationship between maternal nutritional status during pregnancy and the incidence of stunting in toddlers aged 0-24 months in the Tawiri Health Center work area in November 2023.

4. Discussion

The results of the study showed that the majority of mothers who had stunted children were in the age range of 20-35 years (54.1%). Maternal age is one of the factors that can affect nutritional status during pregnancy and has an impact on the growth of the fetus and child after birth (Kramer et al., 2019). Mothers in this age range are generally in their optimal reproductive period, but other factors such as education and economic status also play a role in determining the quality of nutritional intake during pregnancy (Black et al., 2013).

The level of maternal education is also an important factor in the incidence of stunting. In this study, 45% of respondents only had a junior high school education. Lower education can have an impact on the lack of knowledge about balanced nutrition, the importance of pregnancy check-ups, and good parenting for children (Victora et al., 2010). Previous studies have shown that mothers with higher levels of education tend to have better access to health information and are better able to implement healthy eating patterns during pregnancy (Adekanmbi et al., 2013).

In terms of maternal nutritional status, the results of this study revealed that most mothers with stunted children had a BMI that was classified as thin (81.1%). Maternal nutritional status during pregnancy is one of the main determinants of fetal growth and child development after birth (Prentice et al., 2013). Malnutrition during pregnancy can cause intrauterine growth retardation (IUGR), which has an impact on low birth weight (LBW) and the risk of stunting in children later in life (Christian et al., 2013).

In addition, the results of the study showed that 59.5% of children experienced stunting in the very short category. This shows the severity of chronic nutritional problems faced by children in the Tawiri Health Center work area. Stunting not only affects physical growth but can also affect children's cognitive development and endurance, which can ultimately affect productivity in the future (de Onis & Branca, 2016).

The Chi-Square statistical test in this study showed a significant relationship between maternal nutritional status during pregnancy and the incidence of stunting in children aged 0-24 months ($p = 0.000$, $\alpha < 0.05$). This result is in line with previous studies that found that mothers with poor nutritional status during pregnancy have a higher risk of giving birth to children with stunted growth (Black et al., 2013; Christian et al., 2013). Therefore, interventions that focus on improving the nutritional status of pregnant women through nutritional education, iron and folic acid supplementation, and increasing access to health services are very important to prevent stunting from pregnancy (Bhutta et al., 2013).

5. Conclusions

The results of this study indicate that there is a significant relationship between maternal nutritional status during pregnancy and the incidence of stunting in children aged 0-24 months in the Tawiri Health Center working area ($p = 0.000$, $\alpha < 0.05$). The majority of mothers who have stunted children are in the age range of 20-35 years, with low levels of education and poor nutritional status (thin BMI of 81.1%). In addition, most children who experience stunting are included in the very short category (59.5%), which reflects serious chronic nutritional problems.

These findings confirm that maternal nutritional status during pregnancy plays an important role in the growth and development of children. Therefore, efforts to prevent stunting must be focused on improving the nutritional status of pregnant women through nutritional education, monitoring pregnancy health, and better access to maternal and child health services. Intervention programs such as iron and folic acid supplementation, providing nutritious additional food, and increasing public awareness of the importance of fulfilling nutrition during pregnancy need to be strengthened in order to reduce the incidence of stunting in the future.

Conflict of Interest

There is no conflict of interest

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