

Case Report

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The Influence of Nutritional Status of Pregnant Women with Stunting Incidence in Pantoloan HealthCenter, Palu City

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Abstract:

Poor maternal nutritional status during pregnancy and before pregnancy is a risk factor for stunting, because it causes limited intrauterine development resulting in less than optimal fetal development. According to WHO, stunting is if a child is short in stature and has a height for age of less than -2 standard deviations. This study aims to determine the influence of the nutritional status of pregnant women on the incidence of stunting at the Pantoloan Community Health Center. Case control research design. The total population was 956 toddlers and the sample was 88 toddlers, with stunting cases (44 toddlers) and control cases without stunting (44 toddlers). Sampling was taken using a purposive sampling technique and analyzed using the Chi-square test. There is no influence on the nutritional status of pregnant women based on Upper Arm Circumference in the Third Trimester on the incidence of stunting at the Pantoloan Community Health Center, Palu City (P value = 0.170, OR = 1.89). There is no influence on the nutritional status of mothers based on Body Mass Index (BMI) before pregnancy with the incidence of stunting at the Pantoloan Community Health Center, Palu City (P value = 0.400, OR = 1.7), and there is no influence on the nutritional status of pregnant women based on weight gain during pregnancy with the incidence of stunting at the Pantoloan Community Health Center, Palu City (P value = 0.437, OR = 1.5).

Keywords – Stunting, Nutritional Status, lack of protein energy, body mass index, weight gain

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Introduction

Stunting is calculated according to the World Health Organization (WHO) using a z-score on percentiles, stunting if a child is short in stature and has a height for age of less than -2 standard

deviations(1). Stunting is classified as a severe form of protein energy malnutrition and disorders of growth. The beginning of stunting is during the preconception period in pregnant women or

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teenagers who experience poor nutritional status and anemia (2). Stunting can increase the risk of illness, death and suboptimal brain development so that motor and mental development will be hampered (3).

Poor maternal nutritional status during pregnancy and before pregnancy is a risk factor for stunting, because it causes limited intrauterine development resulting in less than optimal fetal development. So you have to get attention while you are still in the womb. If nutritional deficiencies occur at the beginning of life, it will have an impact on later life, such as stunted fetal growth (PJT), low birth weight (LBW), small, thin, short, low immune system so that there can also be a risk of death (4).

Efforts made to overcome stunting can be carried out either as prevention or to reduce disturbances directly and indirectly (specific nutritional interventions). This intervention effort was carried out in the first 1000 days of life (HPK) group, namely pregnant women, breastfeeding mothers and children aged 0-23 months, because this age is also known as the golden period for preventing stunting. During this period, growth occurs, so if growth fails and is too late to be treated, there is a very high risk of stunting (5).

One of the nutritional problems in the world that occurs in toddlers is stunting. The prevalence of stunting in the world in children <5 years is around 20-25% (6). According to WHO, Indonesia is the country with the third highest prevalence in Southeast Asia with an average prevalence of 36.4% (2). Results of Basic Health Research Data (RISKESDAS), the prevalence of stunting in Central Sulawesi has decreased but has not yet met WHO standards. Several districts in Central Sulawesi with high incidence rates are Banggai Islands, Donggala and Morowali (7). Nationally, based on the results of the 2019 Indonesian Toddler Nutritional Status Study (SSGBI), the prevalence of stunting is 27.7%. Meanwhile, in Central Sulawesi it is 31.3%, which is included in the stunting data with the top

10 highest in Indonesia (8). This study aims to determine the effect of nutritional status of pregnant women based on third trimester Upper Arm Circumference (LiLA), BMI before pregnancy and weight gain body during pregnancy with the incidence of stunting at the Pantoloan Community Health Center. The results of this research are to increase the knowledge of the community, especially mothers, with the aim of reducing and preventing the incidence of stunting in order to increase human resources in the future.

I. Research Methods

This type of research is observational analytical research with a quantitative approach and a case control research design. The research was conducted in April-June 2023 at the Pantoloan Community Health Center, Palu City. The case sample was taken from all toddlers who experienced stunting, namely 44 people and a control group of toddlers who were not stunted, namely 44 people. Tool Data collection is in the form of questionnaires and KIA books. Data analysis in this study used univariate and bivariate analysis with the chi square test.

II. Results

2.1. Overview of Research Locations

Pantoloan Community Health Center is one of the community health service centers in the Pantoloan Village area, Tawaeli District. The Pantoloan Health Center is located approximately 23 km north of Palu City. The working area of the Pantoloan Community Health Center consists of 3 sub-districts, namely Pantoloan Village, Pantoloan Boya Village and Baiya Village.

2.2. Respondent Characteristics

The characteristics of the respondents examined in this study included the mother's age, the mother's age at the time of her first pregnancy, the gender of the toddler, the age of the toddler and the order of the children.

Table 1. Characteristic Responden

| Variable | Category | Case | | Control | | Total | |
|--------------|----------------------------------|------|------|---------|------|-------|------|
| | | n | % | n | % | n | % |
| Mother's Age | Risky (< 20 years or > 35 years) | 8 | 18,0 | 10 | 23,0 | 18 | 20,0 |

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| | | | | | | | |
|--|----------------------------------|------|-------|------|-------|------|-------|
| | Not Risky (20 - 35 years) | 36 | 82,0 | 34 | 77,0 | 70 | 80,0 |
| | Total | 44 | 100,0 | 44 | 100,0 | 88 | 100,0 |
| Mother's Age at First Pregnancy | Risky (< 20 years or > 35 years) | 13 | 30,0 | 12 | 27,0 | 25 | 28,0 |
| | Not Risky (20 - 35 years) | 31 | 70,0 | 32 | 73,0 | 63 | 72,0 |
| | Total | 44 | 100,0 | 44 | 100,0 | 88 | 100,0 |
| Toddler's Gender | Man | 21 | 48,0 | 23 | 52,0 | 44 | 50,0 |
| | Woman | 23 | 52,0 | 21 | 48,0 | 44 | 50,0 |
| | Total | 44 | 100,0 | 44 | 100,0 | 88 | 100,0 |
| Toddler Age | 24 - 36 months | 23 | 52,0 | 21 | 48,0 | 44 | 50,0 |
| | 37 - 48 months | 14 | 32,0 | 11 | 25,0 | 25 | 28,0 |
| | 49 - 59 months | 7 | 16,0 | 12 | 27,0 | 19 | 22,0 |
| | Total | 44 | 100,0 | 44 | 100,0 | 88 | 100,0 |
| | 1 | 14 | 32,0 | 16 | 36,0 | 30 | 34,0 |
| 2 | 10 | 23,0 | 12 | 27,0 | 22 | 25,0 | |
| 3 | 11 | 25,0 | 6 | 14,0 | 17 | 19,0 | |
| 4 | 7 | 16,0 | 6 | 14,0 | 13 | 15,0 | |
| 5 | 1 | 2,0 | 3 | 7,0 | 4 | 5,0 | |
| 6 | 1 | 2,0 | 1 | 2,0 | 2 | 2,0 | |
| Child Order | Total | 44 | 100,0 | 44 | 100,0 | 88 | 100,0 |

Source : Primary Data, 2023

Based on table 1, it was found that the majority of respondents were aged 20-35 years (80%), had their first pregnancy at the age of 20 - 35 years (72%), the age of toddlers was between 24 - 36 months (50%), the majority of respondents had only had 1 child. children (34%) with the same percentage of gender between boys and girls.

2.3.Univariate Analysis

The indicators for measuring maternal nutritional status used in this study were the measurement indicators of upper arm circumference (LiLA), body mass index (BMI) of the mother before pregnancy and weight gain during pregnancy.

Table 2. Description of the nutritional status of pregnant women at the Pantoloan Health Center, Palu City

| Variable | Category | n | % |
|--------------------------------|----------|----|------|
| Upper Arm Circumference | KEK | 28 | 31,8 |
| | No KEK | 60 | 68,2 |
| | Total | 88 | 100 |
| BMI Before Pregnancy | Thin | 16 | 18,2 |
| | Normal | 61 | 69,3 |
| | Fat | 11 | 12,5 |
| | Total | 88 | 100 |
| Weight Gain | Abnormal | 69 | 78,4 |
| | Normal | 19 | 21,6 |
| | Total | 88 | 100 |

Source : Primary Data, 2023

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Table 2 shows that for the upper arm circumference and BMI variables before pregnancy, the majority of respondents had no KEK status and normal BMI. However, the majority of pregnant women's weight gain is abnormal (78.4%).

Bivariate Analysis

Bivariate analysis is an analysis to see the relationship between the independent variable and

the dependent variable. This bivariate analysis was used to determine the influence between maternal nutritional status during pregnancy, namely maternal upper arm circumference, maternal BMI before pregnancy and weight gain during pregnancy on the incidence of stunting at the Pantoloan Community Health Center, Palu City, using the Chi-square statistical test.

Table 3. Relationship between the nutritional status of pregnant women and the incidence of stunting at the Pantoloan Health Center, Palu City

| Variabel Ibu Hamil | Nutritional Status | | | | | | p | OR |
|--------------------------------|--------------------|------|--------------|------|-------|-----|-------|------|
| | Stunting | | Not Stunting | | Total | | | |
| | n | % | n | % | n | % | | |
| Upper Arm Circumference | | | | | | | | |
| KEK | 17 | 60,7 | 11 | 39,3 | 28 | 100 | | |
| Tidak KEK | 27 | 45,0 | 33 | 55 | 60 | 100 | 0,17 | 1,89 |
| BMI Before Pregnancy | | | | | | | | |
| Thin | 10 | 62,5 | 6 | 37,5 | 16 | 100 | | |
| Normal | 30 | 49,2 | 31 | 50,8 | 61 | 100 | | |
| Fat | 4 | 36,4 | 7 | 63,6 | 11 | 100 | 0,4 | 1,7 |
| Weight Gain | | | | | | | | |
| Abnormal | 36 | 52,2 | 33 | 47,8 | 69 | 100 | | |
| Normal | 8 | 42,1 | 11 | 57,9 | 19 | 100 | 0,437 | 1,5 |

Source : Primary Data, 2023

Table 3 shows that there is no relationship between the nutritional status of pregnant women (upper arm circumference, BMI before pregnancy and weight gain during pregnancy) and the incidence of stunting in toddlers. However, mothers who experience Chronic Energy Deficiency (CED) in the third trimester pregnancy LILA measurement are at risk of giving birth to a stunted child 1.89 times, mothers who have a low BMI before pregnancy are at 1.7 times the risk of giving birth to a stunted child, and the increase in maternal BW those who are not normal during pregnancy are at risk of giving birth to a stunted child 1.5 times.

Discussion

The nutritional status of pregnant women is a physical condition which is the result of consumption, absorption and utilization of various

kinds of nutrients, both micro and macro (9). In Indonesia, to determine the nutritional status of mothers during pregnancy, one of the parameters is the anthropometric indicator of upper arm circumference (LiLA) in the mother (9). Nutritional status can be affected starting from the womb. Adequate maternal weight gain during pregnancy can be seen based on the nutritional status of the mother before pregnancy or based on the percent of maternal weight at the end of pregnancy compared to standard body weight (10). Pre-pregnancy nutritional status is one of the factors that can influence pregnancy and the well-being of the baby so that prevention is carried out well before pregnancy (11).

Stunting is a condition where growth failure occurs in toddlers as a result of chronic malnutrition so that the child's height is too short

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than normal based on WHO standards, namely a z score < -2 SD or -3 SD. Many factors cause the high incidence of stunting in toddlers. The direct cause is a result of lack of food intake and the presence of infectious diseases. Other factors include the mother's lack of knowledge, wrong parenting patterns, poor sanitation and hygiene and poor health services. Apart from that, there are still many people who do not realize that short children are a problem, because children who are stunted still look like children with the same normal activities, not the same as thin children who must be treated as soon as possible (12).

The relationship between the nutritional status of pregnant women based on upper arm circumference (LiLA) and the incidence of stunting

Based on table 3 above, it can be seen that most of the nutritional status of mothers who do not experience CED (Chronic Energy Deficiency) have children who do not experience stunting, 55% (33 children) and mothers who do not experience CED have stunted children, 45% (27 children). out of a total of 88 children. A statistic test was carried out using chi-square between the nutritional status of pregnant women based on Upper Arm Circumference (LiLA) and the incidence of stunting at the Pantoloan Community Health Center, Palu City, obtaining a P value of 0.170 so that H_0 was accepted and H_1 was rejected, which means that there is no relationship between maternal upper arm circumference in pregnancy. third trimester with the incidence of stunting in toddlers, and the odds ratio (OR) is 1.89, which means that mothers who experience Chronic Energy Deficiency (CED) in the third trimester pregnancy LILA measurement are at risk of giving birth to a stunted child 1.89 times.

Nutritional status during pregnancy will be manifested as a condition of the body resulting from the use, absorption and use of food which will affect the growth and development of the fetus. So the mother's nutrition during pregnancy will be very important for the fetus she is carrying. If you experience CED, it will cause the baby to be born with a stunted body shape (12).

The results obtained were the same as previous research in that there was no influence on the nutritional status of pregnant women based on the third trimester LILA, this is because theoretically

there are many factors that cause stunting in toddlers. Direct causes include lack of food intake and infection. Other factors also include the mother's lack of knowledge, lack of sanitation and hygiene, wrong parenting patterns and poor health services. This is of course closely related to socio-economic conditions, various studies show that the increase in cases of malnutrition in toddlers has an impact on the growth of children under five which is caused by low socio-economic conditions.

The relationship between maternal nutritional status based on Body Mass Index (BMI) before pregnancy and the incidence of stunting

Based on table 3, it can be seen that the majority of mothers who had nutritional status before pregnancy based on body mass index (BMI) had children who were not stunted by 50.8% (31 children) and children who were stunted by 49.2% (30 children) of a total of 88 children. A statistical test was carried out using the chi-square test, obtaining a P value of 0.400, which means that there is no relationship between the nutritional status of pregnant women, namely Body Mass Index (BMI) before pregnancy, and the incidence of stunting in toddlers. The odds ratio (OR) was obtained at 1.7, which means that a mother's nutritional status that was less than normal before pregnancy had a 1.7 times risk of giving birth to a stunted child.

This is not in line with research conducted by Suci (2023) which stated that there was a significant relationship between maternal nutritional status based on pre-pregnancy BMI and the incidence of stunting in the Tanjung Rejo Community Health Center working area ($p = 0.040 < 0.05$). Theoretically, there is a relationship between maternal nutritional status before pregnancy based on BMI and the incidence of stunting. Good health or nutritional status before pregnancy will be able to improve women's health status and identify risks that will occur during pregnancy give birth to. Poor nutritional status will make it easier for the body to be attacked by disease and will accelerate the incidence of malnutrition which risks stunting in children who will be born (13).

The results of the research show that there is no influence of Body Mass Index (BMI) before pregnancy on the incidence of stunting, this is because the data on the Body Mass Index (BMI)

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of mothers before pregnancy are converted from data from height measurements (TB) at the first examination which are listed in the KIA book and weight (BW) before pregnancy and recorded by the mother at the first examination and some are only based on the mother's interpretation or memory due to the mother's lack of awareness of carrying out examinations at local health services before pregnancy, so this is also one of the weaknesses of this study .

According to researchers, one of the direct causes is based on the UNICEF (United Nations Children's Fund) framework, namely good care is driven by adequate service practices for children and mothers. Researchers see that there are still many people, especially mothers of underprivileged children, who visit Posyandu or other health services both before pregnancy, during pregnancy and after giving birth for care for their children, this is because they assume that they will carry out an examination if there is a problem with their child. their health, or because they are busy making it difficult to visit health services. Another thing that is also one of the complaints for posyandu cadres is that many mothers do not visit posyandu because there is a lack of interesting things and things that they will get when visiting posyandu, so they rarely visit posyandu for health checks, this is of course very influence the incidence of stunting in their children.

The relationship between maternal nutritional status based on weight gain during pregnancy and the incidence of stunting

Based on table 3, it can be seen that the majority of mothers have abnormal weight gain and have children who are stunted, 52.2% (36 children) and 47.8% who do not experience stunting (33 children). A statistical test was carried out using chi square with a P value of 0.437, which means that there is no relationship between the nutritional status of pregnant women, namely weight gain during pregnancy and the incidence of stunting in toddlers. The odds ratio (OR) is 1.5, which means that an abnormal increase in maternal weight during pregnancy carries a 1.5 times risk of giving birth to a stunted child.

This is in line with research conducted by Kaimuddin (2019) that there is no relationship between weight gain during pregnancy and

stunting at the age of 24-59 months in Pleret and Panjangan sub-districts. This research is also supported by Zaif (2017), that there is no significant relationship between the history of maternal nutritional status during pregnancy based on weight gain in the third trimester and the growth of toddlers.

Theoretically, there is a relationship between maternal nutritional status during pregnancy based on weight gain during pregnancy, excessive and insufficient maternal nutritional status in pregnant women poses a risk to pregnancy and child health. This is in line with research conducted by Suci (2023) that there is a significant relationship between Maternal nutritional status is based on the mother's weight gain during pregnancy and the incidence of stunting in the Tanjung Rejo Community Health Center working area.

Many factors cause stunting and are interconnected with each other. According to the UNICEF (United Nations Children's Fund) Framework (2020), there are 3 main causes of malnutrition, namely enabling causes (Enabling determinants), underlying causes (Underlying determinants) and direct causes (Immediate determinants). The possible causes (Enabling determinants) are resources (sufficient resources including environmental, financial, social and human make it possible for children and women to obtain good nutrition), and norms (positive socio-cultural norms and actions make it possible for children and women to obtain good nutrition). The underlying causes (Underlying determinants) are inadequate access to food and food consumption patterns (including breast milk at their age and safe and tasty drinking water as well as household food security), inadequate child rearing patterns (feeding and dietary practices age-appropriate services from an early age, with protective services and hygiene practices), and access to health services (adequate nutrition, health, education, sanitation, social protection and a healthy food environment to support a good diet). Immediate determinants are the accumulation of possible causes and underlying causes that play a direct role in the incidence of stunting. The causes are inadequate diet, and the infection and health status of the mother and child, as well as good care encouraged by adequate service practices for both the child and the mother (14).

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The weakness of the research is the incomplete data on weight gain in each trimester as a result of mothers not routinely checking their pregnancies every month with midwives or at posyandu, most new mothers will have examinations in the final trimester. Apart from that, several subjects for KIA data or books have been damaged or even lost, thus creating obstacles to this research.

Based on the results of this study, it was found that there was no relationship between maternal nutritional status based on third trimester LiLA, pre-pregnancy BMI and weight gain during pregnancy and the incidence of stunting, with the weaknesses of existing research, so further research is needed with more attention to the factors that influence more directly on the incidence of stunting. And mothers need to provide education regarding the factors that influence toddler growth and the impacts that will occur if growth is not normal.

Conclusion

Based on the results of research entitled The Influence of the Nutritional Status of Pregnant Women on Stunting Incidents at the Pantoloan Community Health Center, Palu City, it can be concluded that there is no influence of the mother's upper arm circumference in the third trimester of pregnancy on the incidence of stunting in toddlers (P value = 0.170, OR = 1, 89). There is no influence between the nutritional status of pregnant women, namely Body Mass Index (BMI) before pregnancy, and the incidence of stunting in toddlers (P value = 0.400, OR = 1.7). There is no influence between the nutritional status of pregnant women, namely weight gain during pregnancy, and the incidence of stunting in toddlers (P value = 0.437, OR = 1.5).

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