



Correlation between Nutritional Status of Mothers During Pregnancy and Stunting Incidence at the Age of 24-59 Months at Godean Health Center 1

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Abstract

The prevalence of stunting under-fives in Indonesia is still high, namely 29.6%. The 2014 Global Nutrition Report showed that Indonesia was included in 17 countries, among 117 countries, which had three nutritional problems, namely stunting, wasting and overweight in under-fives. Mothers who experience malnutrition are at risk of giving birth to malnourished babies. Fetuses that are malnourished from the womb are at greater risk of being born stunted. The impact of stunting is having a level of intelligence that is not optimal, making children more susceptible to disease and in the future there may be a risk of declining levels of productivity. This study aims to determine the correlation between mother's nutritional status during pregnancy and the incidence of stunting at the age of 24-59 months at Godean I Primary Health Center. The design of this study was case control using a retrospective approach. The number of samples was 92 respondents with a comparison of case groups and control groups 1: 1 taken at Godean 1 Primary Health Center with random sampling technique. The data analysis used Fisher Exact Test. The results of this study showed that there was a significant correlation between mother's nutritional status during pregnancy and the incidence of stunting at the age of 24-59 months with a value of 0.005 (<0.05), the Contingency Coefficient value of 0.302 indicating a low level of correlation closeness. Mothers are expected to pay attention to nutritional status during pregnancy in order to prevent the incidence of stunting in children.

Keywords: nutritional; pregnant women; stunting

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Introduction

incidence of *stunting* decreased between 2000 and 2017, the global prevalence of *stunting* decreased from 32.6 percent to 22.2 percent, the number of children affected by *stunting* fell from 198 million to 151 million (UNICEF, 2018). Even though this number has decreased, this incident is still high because it is above the limit set by the *World Health Organization*, which is 20% (Depkes RI, 2018). According to the Indonesian Ministry of Health (2016) the prevalence of *stunting under five* in Indonesia is still high, namely 29.6%. The 2014 *Global Nutrition Report* shows that Indonesia is included in 17 countries, among 117 countries, which have three nutritional problems, namely *stunting*, *wasting* and *overweight* in toddlers (Kementrian Kesehatan RI, 2016).

The prevalence of *stunting under five* in DIY in 2017 was 13.86%, this figure was lower than Central Java province which was 28.5%. Even though this figure is lower, the prevalence of *stunting* in DIY is higher when compared to the 2013 Riskesdas, namely (8.2%) (Dinkes DIY, 2018). The highest prevalence of *stunting under five* in DIY is Sleman Regency, 20.60% and the lowest is Bantul Regency, 10.41% (Dinkes Sleman, 2017). The Puskesmas that has the highest prevalence of *stunting under five* in Sleman Regency is the Godean 1 Health Center with 21.76% (Dinkes Sleman, 2017).

Babies under the age of five (toddlers) or babies under the age of two (*baduta*) who are *stunted* will have a level of intelligence that is not optimal, making children more susceptible to disease and in the future can be at risk of declining productivity levels. In the end, *stunting* will generally hamper economic growth, increase poverty and widen inequality (TNP2K, 2021).

Based on research results of Rolfe (2018) that early *stunting* has implications on attained height, body composition and blood pressure. The apparent tendency of stunted individuals to accumulate less fat free mass and subcutaneous fat might predispose them

towards increased metabolic risks in later life (Rolfe et al., 2018).

The other studies stated that impaired growth at 9 and 12 months was consistently associated with low cognitive and gross motor scores (GM). Children who were stunted at 9 months had lower GM scores at 12 months than their peers who were not stunted (Mireku et al., 2020).

Malnutrition for a long time occurs from the time the fetus is in the womb until the beginning of a child's life (the first 1000 days of birth). This is due to low access to nutritious food, low intake of vitamins and minerals, and poor diversity of food and sources of animal protein (RI, 2018).

The nutritional status of pregnant women is an indicator in measuring the nutritional status of the community. If the nutritional intake for pregnant women from food is not balanced with the body's needs, there will be a deficiency of nutrients. Pregnancy causes an increase in energy metabolism. Therefore, the need for energy and other nutrients increases during pregnancy. This increase in energy and nutrients is needed for the growth and development of the fetus, the increase in the size of the uterine organs, and changes in the composition and metabolism of the mother's body. So that a lack of certain nutrients needed during pregnancy can cause the fetus to grow imperfectly (Rahmaniar et al., 2013).

The nutritional status of pregnant women can be determined by measuring the size of the upper arm circumference, if it is less than 23.5 cm then the pregnant woman experiences Chronic Energy Deficiency (KEK) (Ariany et al., 2012).

Based on research results of Kpewou (2020) that infants born from mothers with a low mid-upper arm circumference (MUAC) during pregnancy had a 1.6 times higher risk of being stunted during the first 3.5 months of life compared with infants born from

mothers with a MUAC >23 cm. That research underlines the importance of optimum maternal MUAC during pregnancy for optimal infant growth. Interventions that aim to tackle stunting in infants should integrate improving maternal MUAC during pregnancy (Kpewou et al., 2020).

Mothers who are malnourished are at risk of giving birth to babies who are malnourished. A fetus who has been malnourished since birth is also at greater risk for *stunting* (Kurnia, 2014). Based on the results of Sukmawati's research (2018) states that there is a relationship between the nutritional status of mothers during pregnancy with the LiLA indicator and the incidence of *stunting* in toddlers aged 06-36 months.

Research by Dessie (2019) with the title Maternal characteristics and nutritional status among 6-59

months of children in Ethiopia: Further analysis of demographic and health survey shows the results that maternal education, nutritional status, and anemia were associated with child stunting. Also maternal nutritional status, place of delivery, and preceding birth interval were associated with wasting (Dessie et al., 2019).

Method

The research design is case control using a retrospective approach (Notoatmodjo, 2010). The number of samples in this study were 92 respondents with a comparison of the case group and the control group of 1:1 at the Godean 1 Public Health Center using a random sampling technique. Data analysis using Fisher's Exact Test.

Result and Discussion

1. Characteristics of Respondents

Table 1. Distribution of the frequency of mother characteristics at the Godean 1 Health Center

No.	Characteristics of Mother	Frequency	
		N	%
1.	Age		
	At risk (<20 years and >35 years)	25	27.20
	Not at risk (20-35 years)	67	72.80
	Total	92	100
2.	Mother's Education		
	SD	28	30.40
	JUNIOR HIGH SCHOOL	18	19.60
	SENIOR HIGH SCHOOL	25	27.20
	PT	21	22.80
	Total	92	100
3.	Profession		
	Working	48	52.20
	Doesn't work	44	47.80
	Total	92	100

Based on table 1, it is known that the highest age of mothers is age not at risk of 20-35 years, namely as many as 67 mothers (72.80%), the highest education

is elementary school, namely 28 mothers (30.40%) and the most work is working mothers, namely 48 mothers (52.20%). Total respondents are 92.

2. Nutritional Status of Mothers During Pregnancy at Godean 1 Health Center

Table 2. Frequency distribution of maternal nutritional status during pregnancy at Godean 1 Health Center

Maternal nutritional status during pregnancy	Frequency	Percentage %
KEK	20	21.7
No SEZ	72	78.3
Total	92	100

Based on table 2, it is known that most of the nutritional status of mothers during pregnancy at the Godean 1 Health Center were mothers who did not experience CED as many as 72 mothers (78.3%).

3. Incidence of Stunting at the Age of 24-59 Months at the Godean 1 Health Center

Table 3. Distribution of the frequency of *stunting events* at the age of 24-59 months at the Godean 1 Health Center

<i>Stunting events</i>	Frequency	Percentage %
stunt	46	50
Not Stunting	46	50
Total	92	100

Based on table 3, it is known that the incidence of stunting at the age of 24-59 months at the Godean 1 Health Center is the same between children who are stunted and children who are not stunted, namely 46 children (50%) out of a total of 92 respondents.

4. Test result

Testing the relationship between the nutritional status of mothers during pregnancy and the incidence of stunting at the Godean 1 Health Center in this study used the Fisher's Exact Test with the following results:

Table 4. The nutritional status of mothers during pregnancy with *stunting* at the age of 24-59 months at the Godean Health Center

Maternal nutritional status during pregnancy	<i>Stunting events</i>				Amount		<i>P-value</i>
	<i>stunt</i>		No <i>Stunt</i>		F	%	
	F	%	F	%			
KEK	16	34.8	4	8.7	20	21.7	0.005
No SEZ	30	65.2	42	91.3	72	78.3	
Total	46	100	46	100	92	100	

The results of the analysis in table 4 show that of the 20 mothers who experienced CED, 16 children (34.8%) experienced stunting and 4 children (8.7%) did not experience stunting. Of the 72 mothers without CED, 30 children (65.2%) experienced stunting and 42 children (91.3%) did not experience stunting.

Based on the results of statistical tests using the Fisher's Exact Test, the results obtained were p value = 0.005 so that the p value was obtained (<0.05), which means that there is a significant relationship between the nutritional status of mothers during pregnancy and the incidence of stunting at the age of 24-59 months at Godean Health Center 1. The Contingency Coefficient value is 0.302 which means it has a low level of closeness.

5. Discussion

Based on table 2, it is known that the nutritional status of mothers during pregnancy at the Godean 1 Health Center experienced CED as many as 20 mothers (21.7%). This is caused by the age at risk of pregnancy, namely age <20 years and >35 years, namely 25 mothers (27.20%).

According to Proverawati (2011), Pregnancy less than 20 years is biologically not optimal, the emotions tend to be unstable, the mentality is immature so it is easy to experiencing shock resulting in a lack of attention to meeting the needs of nutrients during pregnancy. Pregnancy at the age of more than 35 years is associated with a decline in organ function which causes it to work optimally. So that it requires additional

sufficient energy and is related to decreased endurance and various diseases.

Yustiana Kurnia's research results (2014) stated that mothers who are malnourished are at risk of giving birth to babies who are malnourished. Fetuses who have been malnourished since birth are also at greater risk of stunting. According to Arisman (2010) upper arm circumference <23.5 cm is caused by a lack of food intake obtained by mothers during pregnancy. Mothers with LILA <23.5 cm will have an impact on pregnancy, especially on the growth of the fetus in the womb.

Based on table 2, it is known that the nutritional status of mothers during pregnancy at the Godean 1 Health Center did not experience CED as many as 72 mothers (78.3%). This is because the awareness of pregnant women in Godean District to have their pregnancy checked at least 4 times is already high (75.82%). Thus pregnant women who are known from the start to experience chronic energy deficiency can be immediately treated by health workers, so that intervention can be carried out as early as possible.

Intervention of the supplementary feeding program (PMT) given to pregnant women can improve their nutritional status including increasing the baby's weight and length interventions given so that the baby in the womb can continue to grow and develop properly.

According to Waryana (2010) Measuring the nutritional status of pregnant women is done by measuring the Upper Arm Circumference (LiLA). According to Ariany (2012) LILA measurement is

to find out whether a person suffers from Chronic Energy Deficiency (KEK). The use of BMI can only apply to adults, namely > 18 years and not pregnant). The Ministry of Health of the Republic of Indonesia (2016) states that a minimum of 4 visits during pregnancy are carried out, the LiLA measurement is carried out during K1 pregnancy examinations. K1 is the mother's first contact with a health worker to get a pregnancy check-up in the first trimester, where the gestational age is 1-12 weeks (Kementrian Kesehatan RI, 2016).

The most characteristics of respondents based on education were last elementary education, namely 28 mothers (30.40%). Research conducted by Rahayu & Khairiyati (2014) stated that low maternal education had a significant relationship with the incidence of stunting with a p value <0.05 and the risk of having stunted children 5 .1 times greater than mothers with higher education, mothers who have education \geq junior high school tend to be better at parenting and better at selecting children's food types, so they have greater opportunities to access information, then this information affects nutritional status and better child health.

Characteristics of respondents based on the most jobs are working mothers, namely as many as 48 mothers (52.20%). Nutritional problems are caused by many interrelated factors. Mother's work is one of the risks for stunting.

Based on research by Al-Anshori & Nuryanto (2013) conducted in the city of Semarang, it showed that there was a significant relationship between mother's occupation and nutritional

status, where working mothers had more short children than mothers who did not work. This happens because mothers who do not work will have more time with their children and will affect the improvement of the nutritional quality of their children.

Based on the results of statistical tests using the Fisher's Exact Test, the p value = 0.005 indicates a p value (<0.05), which means that there is a significant relationship between the nutritional status of mothers during pregnancy and the incidence of stunting at the age of 24-59 months at Godean Health Center 1. The Contingency Coefficient is 0.302 which means it has a low level of closeness.

This is supported by the results of Kpewou (2020) that infants born from mothers with a low mid-upper arm circumference (MUAC) during pregnancy had a 1.6 times higher risk of being stunted during the first 3.5 months of life compared with infants born from mothers with a MUAC >23 cm. That research underlines the importance of optimum maternal MUAC during pregnancy for optimal infant growth. Interventions that aim to tackle stunting in infants should integrate improving maternal MUAC during pregnancy (Kpewou et al., 2020).

The results of this study are in line with Sukmawati's research (2018) in the working area of the Bontoa Health Center, Maros Regency, which stated that there was a significant relationship between the nutritional status of pregnant women based on LiLA and the incidence of stunting in toddlers aged 06-36 months with a value of $p = (0.01)$. Unlike the

research conducted by Warsini (2016) in Sedayu District, Bantul, Yogyakarta which stated that a history of CED during pregnancy was not statistically related to the incidence of stunting in toddlers (OR=0.61, 95% CI=0.32-1, 14).

In accordance with the opinion of Setyawati (2016) which states that the nutritional status of the mother before and during pregnancy affects the growth of the fetus she contains. If the mother's nutritional status was normal before and during pregnancy, it is likely that she will give birth to a healthy, full-term baby with normal weight and length. In other words, the quality of the baby being born is highly dependent on the nutritional state of the mother before and during pregnancy.

This research is supported by Erna's research (2015) which states that there is a significant relationship between a history of nutritional status of pregnant women (upper arm circumference/LILA) and the incidence of stunted in children aged 12-24 months in the working area of the Mersam Health Center, Batang district. P Value = 0.011 ($p = 0.05$) and OR = 7.500, meaning that mothers with MUI <23.5 cm have a 7.500 risk of giving birth to stunted children.

This is supported by the results research by Dessie (2019) with the title Maternal characteristics and nutritional status among 6-59 months of children in Ethiopia: Further analysis of demographic and health survey shows the results that identified that mother's nutritional status had significant association with stunting. Children whose mothers had underweight nutritional status were 1.20 times (AOR = 1.20;

95%CI: 1.06,1.35) more likely to be stunted as compared to children of mothers with normal nutritional status. Finally, the likelihood of being stunted was 1.18 times.

Based on QS An-Nissa verse 9, stunting is a child with a weak condition which can make children more susceptible to disease. Allah SWT commands parents to be serious about their child's health. Parents should not leave weak (sick) children and heirs, lest they make a will that will bring harm and interfere with the welfare of those left behind (Departemen Agama RI, 2008).

Conclusion

Based on the results of research that has been conducted to determine the nutritional status of mothers during pregnancy and the incidence of *stunting* at the age of 24-59 months at the Godean 1 Public Health Center,

1. The nutritional status of mothers during pregnancy at the Godean 1 Health Center who experienced Chronic Energy Deficiency (KEK) were 20 mothers (21.7%) and those who did not experience Chronic Energy Deficiency (KEK) were 72 mothers (78.3%) out of a total of 92 respondents.
2. The incidence of stunting at the age of 24-59 months at the Godean 1 Health Center was the same between children who were stunted and children who were not stunted, namely 46.46 children out of a total of 92 respondents.
3. It can be concluded that there is a significant relationship between the nutritional status of mothers during pregnancy and the incidence

of *stunting* at the age of 24-59 months. *p-value* 0.005 (<0.05).

4. The results of the closeness of the relationship between the two research variables *Contingency Coefficient* is 0.302 which means it has a low level of closeness.

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