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Relationship Between Protein Consumption Level and Anemia Status on Mothers During Pregnancy with Stunting in Children Under Five Years at Sukawati II Public Health Center

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ABSTRACT

Background: The problem of stunting describes the existence of chronic nutritional problems that are influenced by the condition of the mother, expectant mother, fetal period, infancy and toddlerhood. Lack of protein consumption in toddlers causes growth retardation and bone maturity because protein is an essential nutrient for growth. Maternal nutritional status during pregnancy is one of the indirect causes of stunting. The purpose of this study was to determine the relationship between the level of protein consumption for child under five years and the anemia status of mothers during pregnancy with stunting in child under five years aged 24-59 months at the Sukawati II Public Health Center. **Methods:** This research used observational with a cross sectional design, with the number of samples is 94 child under five years using systematic random sampling technique. **Results**: The results of the Chi-Square analysis test showed that there was a relationship between the level of protein consumption and stunting in toddlers (p value 0.000) and there was a relationship between anemia status of the mother during pregnancy and stunting in toddlers (p value 0.000).

Keywords: Stunting; Anemia; Pregnant Mother; Proteins; Child Under Five Years

INTRODUCTION

The World Health Organization (WHO) states that stunting is an irreversible growth disorder that is mostly caused by malnutrition and infections that often occur in the first 1,000 days of life. One of the important points in the WHA (World Health Assembly) 2025 global target is to reduce by 40% the number of stunted and very stunted children (Fadhilah, 2021). Responding to the 2025 WHA global target, the government is currently continuing to strive to reduce stunting rates. This is supported by the issuance of Presidential Regulation Number 72 of 2021 concerning the Acceleration of Stunting Reduction. The problem of stunting must be addressed immediately because it is related to the level of health and even child mortality and has the potential to disrupt human resource potential. This regulation is a form of the government's commitment to accelerating the achievement of the target of reducing stunting to 14 percent by 2024.

The government uses two holistic interventions, namely specific and sensitive interventions to achieve the stunting reduction target. According to the results of Basic Health Research in 2018, around 23% of children were born with stunting due to malnutrition during pregnancy, requiring intervention before birth. The problem of stunting describes a chronic nutritional problem that is influenced by the condition of the mother, prospective mother, fetus, infancy and toddlerhood. Influencing factors are the level of nutritional consumption and illnesses suffered during the toddler years as well as other problems that indirectly affect health (Kemenkes, 2018).

Based on research (Nurmalasari, Sjariani & Sanjaya, 2019) of 215 samples of toddlers 6-59 months in Mataram Ilir Village, Central Lampung. The statistical test result is p-value = 0.000, namely that there is a significant relationship between protein adequacy and the incidence of stunting in child under five years aged 6-59 months. The OR value obtained from the analysis: 15.145, which means that children with low protein adequacy are 15 times more likely to experience stunting than children with high protein adequacy. This is supported by research conducted (Maulidah, Rohmawati & Sulistiyani, 2019) which examined 76 samples of toddlers in Panduman Village, Jember, showing that there was a significant relationship between the level of protein consumption and the incidence of stunting in child under five years. Child under five years who have poor levels of protein consumption have a 4 times higher risk of causing stunting in toddlers compared to child under five years with good protein intake.

The mother's nutritional status during pregnancy is one of the indirect causes of stunting. One of the measurement indicators is Hemoglobin (Hb) levels to determine anemia or not. The results of research (Handayani, Gunarmi & Agusman, 2022) don 76 samples of child under five years in Kacang Village, Boyolali showed that there was a relationship between hemoglobin levels in pregnant women and stunting. When compared to pregnant women who are not anemic, pregnant women who are anemic have a 3.478 times greater risk of their children experiencing stunting. Anemia in pregnant women reduces the oxygen supply to body and brain cells, especially the placenta, so that the fetus will suffer from malnutrition which will ultimately result in stunting. This is in line with research (Hastuty, 2020) on 106 toddlers at the

Kampar Community Health Center which said that there was a relationship between stunting in toddlers and anemia in pregnant women. This analysis produces a significant OR value, which shows that pregnant women who are anemic are three times more likely to experience stunting than pregnant women who are not anemic.

Nationally, the target for reducing the prevalence of stunting by 2024 is 14%, in Bali Province it is 6.15% and in Gianyar Regency it is 2.96%. The prevalence of stunting in 2022 nationally is 21.6% and Bali is 8.0% (SSGI, 2022). SSGI data for 2022, Bali Province again experienced a decline in stunting rates reaching 8.0%. Based on 2021 and 2022 SSGI data, stunting rates at the national and Bali provincial levels have decreased. At the national level, the stunting rate has decreased by 2.8%. At the provincial level, Bali experienced a decline of 2.9%. This condition is inversely proportional to Gianyar Regency, even though Gianyar Regency is the district with the second lowest stunting rate in Bali Province based on 2022 SSGI data, Gianyar Regency is one of the two districts where the stunting rate has increased. Stunting data in Gianyar Regency has increased by 1.2%, from 5.1% in 2021 to 6.3% in 2022.

From the results of a preliminary study at Sukawati II Public Health Center, the stunting rate in the Sukawati II Public Health Center working area has also increased. Based on EPPGBM (Electronic Community-Based Nutrition Reporting Recording) data, stunting data at the Sukawati II Public Health Center in 2021 was 2.23%. In 2022, the stunting rate will increase to 2.54%, this shows an increase in stunting of 0.31%.

Based on this explanation, the author is interested in examining the relationship between the level of protein consumption of child under five years and the anemia status of mothers during pregnancy with stunting in toddlers aged 24-59 months at the Sukawati II Public Health Center.

This study aims to determine the relationship between the level of protein consumption and anemia status of mothers during pregnancy with stunting in child under five years aged 24-59 months at Sukawati II Public Health Center by determining the number of stunted child under five years aged 24-59 months at Sukawati II, determining the level of protein consumption in child under five years aged 24-59 months at Puskesmas Sukawati II Public Health Center, identifying the anemia status of mothers during pregnancy at Sukawati II Public Health Center. As well as determining the relationship between the level of protein consumption and stunting in toddlers aged 24-59 months at Sukawati II Public Health Center and determining the relationship between maternal anemia status during pregnancy and stunting in toddlers aged 24-59 months at Sukawati II Public Health Center.

METHOD

The type of research used is observational where the researcher observes the research subjects without intervening using anthropometric measurement methods and interviews. The design used was cross sectional. The sampling technique in this research was using a systematic random sampling method. The types of data collected are primary and secondary data. In this study, primary data includes: sample identity data, respondent identity data, data on child under five years protein consumption levels, and stunting toddler data. Meanwhile, secondary

data includes data on the mother's anemia status during pregnancy. The data that has been collected will be processed using computer tools into descriptive type data which is then presented in the form of a frequency distribution table or a narrated cross table. Univariate analysis in this study will be carried out on each research variable, including level of protein consumption, history of maternal anemia during pregnancy and stunting. Bivariate analysis was carried out on two related variables. In this study, the Chi-Square statistical test and cross tables are used, namely statistical techniques used to test hypotheses if the population consists of two or more classes, the data is nominal and the sample is large.

RESULTS

Sample Characteristics

Most of the samples were in the 36-47 month age group, namely 42 toddlers (44.7%) and the fewest were samples in the 48-59 month age group, namely 25 toddlers (26.6%). Most of the samples were in the 36-47 month age group, that isi 42 (44.7%) and the fewest were samples in the 48-59 month age group, that is 25 (26.6%). Most of the samples/respondents' education was higher education (Senior High School-College) that is 89 (94.7%) while the samples had low education (Elementary School-Junior High School) as many as 5 (5.3%). Most of the samples worked outside the home, that is 43 (45.7%), 31 (33.0%) did not work and 20 (21.3%) worked at home. Most of the samples with family income ≥ District Minimum Wage IDR 2,837,680 were 67 (71.3%) and those with family income < District Minimum Wage IDR 2,837,680 were 27 (28.7%).

Table 1. Distribution Based on Sample Characteristics

Characteristics	f	%
Age		
24 - 35 month	27	28,7
36 - 47 month	42	44,7
48 - 59 month	25	26,6
Total	94	100,0
Gender		
Male	50	53,2
Female	44	46,8
Total	94	100,0
Education		
Low Education (Elementary School-Junior High School)	5	5,3
Higher Education (Senior High School- College)	89	94,7
Total	94	100,0
Job Status		
Doesn't Work	31	33,0
Work at Home	20	21,3

Work outside the Home	43	45,7
Total	94	100,0
Income per Month		
< District Minimum Wage IDR 2,837,680	27	28,7
≥ District Minimum Wage IDR 2,837,680	67	71,3
Total	94	100,0

Sample Distribution Based on Stunting Status, Protein Consumption Level,

The table 2 shows that the sample in the stunting category is 17.0% and the non-stunting category is 83.0%. Protein consumption level with category enough that is 78.7% and not enough that isi 21.3%.

Table 2. Sample Distribution Based on Stunting Status

No	Stunting Status	F	%
1	Not Stunted	78	83,0
2	Stunting	16	17,0
	Total	94	100,0
	Level of Protein Consumption		
1	Enough	74	78,7
2	Not Enough	20	21,3
	Total	94	100,0

Sample Distribution Based on Maternal Anemia Status During Pregnancy

The table 3 shows that 8.5% of samples had mothers with anemia status during pregnancy and 91.5% of samples with non-anemia status during pregnancy.

Table 3. Sample Distribution Based on Maternal Anemia Status During Pregnancy

No	History of Anemia During Pregnancy	f	%
1	Not Anemic	86	91,5
2	Anemia	8	8,5
	Total	94	100,0

The Relationship Between Protein Consumption Levels and Stunting

Most of the toddlers who were not stunted had adequate levels of protein consumption (91.0%). Meanwhile, only a small proportion of stunted toddlers have sufficient levels of protein consumption (18.8%) and the majority have levels of protein consumption in the insufficient category (81.2%). So, toddlers with adequate levels of protein consumption are more likely to be non-stunted toddlers (91.0%) than stuntedchild under five years

(18.8%). Based on the Chi-Square analysis test, it was found that the level of protein consumption and stunting obtained a p value (0.000) less than α (0.05) so that a decision could be made that there was a relationship between the level of protein consumption and stunting in toddlers aged 24-59 months in Sukawati II Public Health Center.

Table 4. Distribution of Stunting Status Based on Level of Protein Consumption

Level of Protein Consumption	**Stunting Status**				**p-value**
	Not Stunted		Stunting		
	n	%	n	%	
Enough	71	91,0	3	18,8	0,000
Not Enough	7	9,0	13	81,2	
Jumlah	78	100	16	100	

The Relationship Between Maternal Anemia Status During Pregnancy and Stunting

Child under five years that is 97.4% who are not stunted with their mother's status during pregnancy are not anemic, while 62.5% of stunted toddlers with their mother's status during pregnancy are not anemic. So, the mother's status when pregnant was not anemic was higher in non-stunted toddlers (97.4%) than in stunted toddlers (62.5%). Based on the Chi-Square analysis test, the results showed that the mother's anemia status during pregnancy and stunting obtained a p value of (0.000) or less than α (0.05) so that a decision could be made that there was a relationship between the mother's anemia status during pregnancy and stunting in toddlers 24-59 months.

Table 5. Distribution of Stunting Status Based on Maternal Anemia Status During Pregnancy

History of Anemia During Pregnancy	**Stunting Status**				**p-value**
	Not Stunted		Stunting		
	n	%	n	%	
Not Anemic	76	97,4	10	62,5	0,000
Anemia	2	2,6	6	37,5	
Total	78	100	16	100	

DISCUSSION

Child under five years with adequate levels of protein consumption tend not to be stunted (91%), however there are 18.8% of stunted child under five years who have sufficient levels of protein consumption. This is because many factors can cause stunting in children, for example the presence of infectious diseases, while indirect causes are parenting patterns, health services, food availability, cultural, economic factors and many other factors (Bappenas, 2018). Based on the Chi-Square analysis test between the level of protein consumption in toddlers and stunting, the results obtained were that there was a relationship between the level of protein consumption and stunting in toddlers aged 24-

59 months in the working area of the UPTD Puskesmas Sukawati II. This is in line with the results of research (Nurmalasari, Sjariani & Sanjaya, 2019) on 215 samples of child under five years 6-59 months in Mataram Ilir Village, Kec. Seputih Surabaya, Central Lampung Regency in 2019 shows that there is a significant relationship between protein adequacy and the incidence of stunting in child under five years aged 6-59 months. Research results (Maulidah, Rohmawati & Sulistiyani, 2019) too shows something similar, namely that there is a significant relationship between the level of protein consumption and stunting in toddlers. The close relationship between protein and growth means that a child who lacks protein intake will experience slower growth than a child with sufficient protein intake (Sholikhah & Romadhoni, 2018).

In this study, it was found that mothers who were not anemic during pregnancy tended to have toddlers who were not stunted (97.4%) but there were 62.5% of toddlers whose maternal status during pregnancy was not anemic but who experienced stunting. This is because anemia is an indirect factor in stunting. The main factors causing stunting are food intake, infectious diseases, health services and environmental health (Akbar, 2018). Based on the Chi-Square analysis test, maternal anemia status during pregnancy and stunting resulted in a p value (0.000), which is less than α (0.05), meaning there is a relationship between maternal anemia status during pregnancy and stunting in child under five years aged 24-59 months in the work area. Sukawati II Public Health Center. This is in line with research results (Handayani, Gunarmi & Agusman, 2022) showing that there is a relationship between hemoglobin levels in pregnant women and stunting. Pregnant women who experience anemia result in reduced oxygen supply to body cells and the brain, especially supply to the placenta. This will cause malnutrition in the fetus which will ultimately lead to stunting. This is in accordance with the results of research (Hastuty, 2020) which states that there is a relationship between anemia in pregnant women and stunting in toddlers. This is also in line with research (Widyaningrum & Romadhoni, 2018) which found a relationship between a history of pregnancy anemia and the incidence of stunting in toddlers in Ketandan Dagangan Madiun Village.

CONCLUSION

Child under five years aged 24-59 months at Sukawati II Public Health Center are stunted 17.0% and 83.0% are not stunted, the level of protein consumption for child under five years aged 24-59 months at Sukawati II Public Health Center is in the sufficient category 78.7% and the less than 21.3% category, the status of mothers during pregnancy at the Sukawati II Public Health Center who were not anemic was 91.5% and 8.5% were anemic. And there is a relationship between the level of protein consumption and stunting in child under five years aged 24-59 months at Sukawati II Public Health Center, and there is a relationship between the anemia status of mothers during pregnancy and stunting in child under five years aged 24-59 months at Sukawati II Public Health Center.

Public Health Center officers should plan activities to increase protein consumption in child under five years and prevent anemia in pregnant women in the context of preventing stunting in the Sukawati II Public Health Center area, village governments in the Sukawati II Public Health Center working area should plan

a budget to increase protein consumption for child under five years in the form of additional food counseling and additional food recovery. And further research is needed on other factors related to stunting in toddlers at the Sukawati II Public Health Center

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Conflict of Interest

There is no interest in writing this article from any party.

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