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Correlation of Stunting Incidents with Provision of Iron Supplement Tablets at Kawalu Health Center, Kawalu District, Tasikmalaya City, West Java Province

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Abstract. *Stunting is a public health problem caused by chronic malnutrition and recurrent infections, especially in toddlers. This study aims to analyze the relationship between giving additional blood supplements (TTD) during pregnancy and the incidence of Stunting in toddlers at the District Health Center, Tasikmalaya West Java. The research used a correlational design with a cross-sectional approach on 133 respondents from pregnant women and toddlers aged 24–35 months. The research results showed that 52.6% of toddlers experienced Stunting, while 72.2% of mothers did not comply with taking TTD during pregnancy. Data analysis using the Chi-Square test did not find a significant relationship between adherence to TTD consumption and the incidence of Stunting (p-value = 0.568). This study emphasizes the importance of a holistic approach in dealing with Stunting, including nutritional education, pregnancy monitoring, and increasing awareness of the importance of consuming TTD.*

Keywords*: Blood Supplement Tablets, Maternal Compliance, Stunting, Toddler Nutrition*.

1. INTRODUCTION

Stunting in toddlers in Indonesia is the most common phenomenon and is a public nutritional health problem that must be addressed seriously. Some of the stunting cases are caused by nutritional intake factors from the mother during pregnancy until the baby is born at 24 months old. Stunting, quoted from Presidential Regulation of the Republic of Indonesia Number 72 of 2021 concerning the Acceleration of Stunting Reduction, is a disorder of growth and development in children due to chronic malnutrition and recurrent infections, which is characterized by a length or height below the standard set by the minister who organizes government affairs in the health sector. Meanwhile, according to the Ministry of Health of the Republic of Indonesia, Stunting or chronic malnutrition is another form of growth failure. Stunting is a cumulative process and is caused by insufficient intake of nutrients or recurrent infectious diseases, or both (Ministry of Health of the Republic of Indonesia, 2018).

Based on the results of a survey conducted by the Ministry of Health, namely the Indonesian Nutritional Status Survey (SSGI), it was found that the prevalence of stunting in toddlers in West Java Province reached 20.2% in 2022. Sumedang Regency is the area with the highest stunting prevalence value in West Java Province, which is 27.6%, while the lowest value is occupied by Bekasi City with a figure of 6%.

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Survey data also obtained that the prevalence value of stunting in Tasikmalaya City is still at 22.40%, which means it still exceeds the WHO target value of below 20%. This really needs attention from the government and health workers regarding the problem of stunting that occurs in Tasikmalaya City so that the prevalence value of stunting can decrease.

In terms of quantity, nutrients are divided into macronutrients and micronutrients (Ahmadi, 2019). Macronutrients include carbohydrates, proteins, and fats. While micronutrients consist of vitamins and minerals. Adequate nutrition in pregnant women must be considered because it can have a major impact on the growth and development of children. Lack of intake of macronutrients (carbohydrates, proteins, and fats) and micronutrients (folic acid, iron, zinc, calcium, iodine, and others) can cause nutritional and health problems in mothers and their babies. One of the most common nutritional problems found in pregnant women is Chronic Energy Deficiency (CED). Pregnant women with KEK will have an impact on the fetus, and children that will continue into adulthood, such as fetal growth disorders (Intrauterine Growth Retardation), the risk of babies with low birth weight (LBW), the risk of babies being born with congenital abnormalities (Neural Tube Defects, cleft lip, cleft palate, etc.), the risk of babies being born stunted, thus increasing the risk of non-communicable diseases (NCDs) in adulthood such as diabetes mellitus, hypertension, coronary heart disease, and impaired growth and development of brain cells that will affect children's intelligence (Putu, 2022). Nutritional status is divided into two main categories: malnutrition and overnutrition. Malnutrition occurs when the body does not get enough nutrition, which can cause problems such as marasmus (severe energy and protein deficiency), kwashiorkor (protein deficiency with symptoms of swelling), and Stunting (stunted growth). The causes include lack of food intake, impaired nutrient absorption, or increased nutritional needs such as in children and pregnant women.

On the other hand, overnutrition occurs when the body receives excessive energy intake, which often leads to obesity. The main causes are excessive consumption of high-calorie foods, lack of physical activity, and genetic factors. Overnutrition increases the risk of chronic diseases such as diabetes, heart disease, and stroke. Therefore, maintaining a nutritional balance with a healthy diet and active lifestyle is very important for body health.

Subjects with good nutritional status tend to have good health status, normal body functions so that hemoglobin production will also increase when Fe consumption also increases (Eline, 2019).

Pregnant women who lack iron are the main cause of anemia in pregnant women. One of the government's efforts to prevent anemia in pregnant women is through a program to

provide iron supplements. The Ministry of Health recommends that pregnant women consume at least 90 iron tablets during pregnancy, but the low level of compliance of pregnant women is still low. Therefore, consumption of iron supplements is highly recommended for pregnant women because they contain Fe so that hemoglobin levels in the body increase. According to data obtained by the Tasikmalaya City Health Office through a survey of several Health Centers in Tasikmalaya City in 2019, stunting in toddlers was most common in the Karanganyar Health Center, Kawalu District, namely 632 people. Based on the description above, the author is interested in conducting research to determine the Relationship between the Provision of Iron Tablet Supplements and the Incidence of Stunting at the Kawalu Health Center, Kawalu District, Tasikmalaya City, West Java Province.

2. RESEARCH METHODS

This study used a correlational design with a cross-sectional approach to analyze the relationship between the provision of iron supplements and the incidence of stunting in toddlers at the Kawalu Health Center. The study population included mothers with toddlers aged >24–35 months who were diagnosed with stunting, and a study sample of 133 respondents was selected systematically randomly based on the Slovin formula.

$$n = \frac{N}{1 + N(e^2)}$$

n= number of samples

N= population size

e= margin of error (desired error limit.

Inclusion criteria included stunted toddlers living in the study area and mothers who consumed iron supplements during pregnancy, while exclusion criteria included toddlers with congenital abnormalities and respondents who were unable or unwilling to participate. The independent variable was maternal compliance in consuming iron supplements, while the dependent variable was the incidence of stunting in toddlers.

Data collection in this study includes primary data obtained through questionnaires for independent variables and observation sheets for dependent variables, as well as secondary data taken from journals, theses, articles, and related books. Data analysis was carried out univariately and bivariately. Univariate analysis was used to describe the characteristics of each research variable through frequency distribution and percentage. Meanwhile, bivariate analysis was used to test the relationship between maternal compliance in consuming iron supplement

tablets (TTD) with the incidence of stunting using the Chi Square test through SPSS software version 22.0. The level of significance used was $\alpha = 0.05$, with a p-value ≤ 0.05 indicating a significant relationship between the two variables.

3. RESULTS AND DISCUSSION

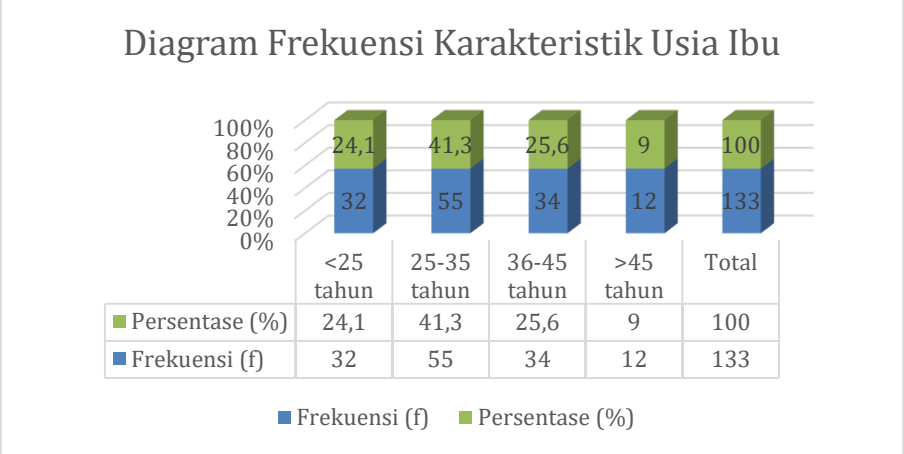

Diagram 1. Frequency Distribution of Maternal Age Characteristics

From table 1 it is known that the average percentage of maternal age is in the age group of 25-35 years as many as 55 people (41.3%), this result shows that almost half of the respondents are mothers aged 25-35 years which is the mature age for pregnancy and to have children. While the age group with the lowest percentage is the age of >45 years as many as 12 people (9%), this shows that at the age of >45 years pregnant mothers are at greater risk.

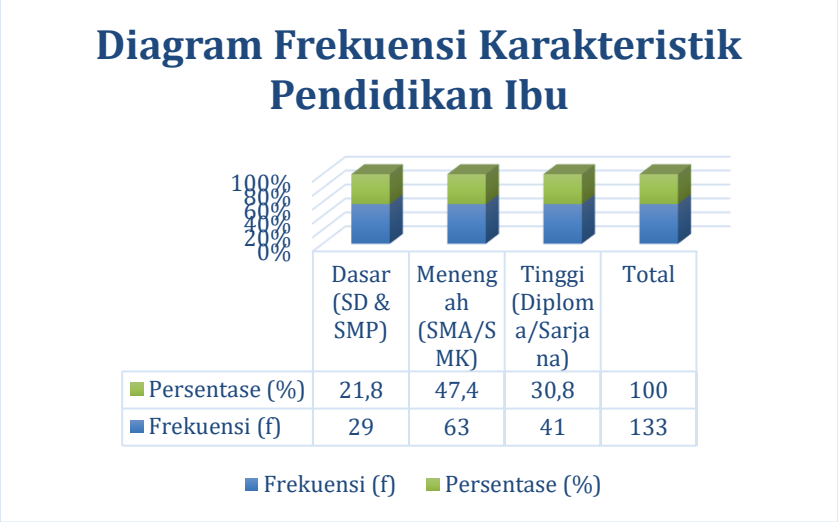

Diagram 2. Frequency Distribution of Mother's Education Characteristics

Based on table 2, it is known that the characteristics of respondents regarding the mother's last education are in the category of elementary to higher education. The highest last education is in the middle category, namely high school / vocational school, as many as 63 people (47.4%). While the last level of education with the smallest percentage is in the basic education category, namely elementary school, as many as 29 people (21.8%).

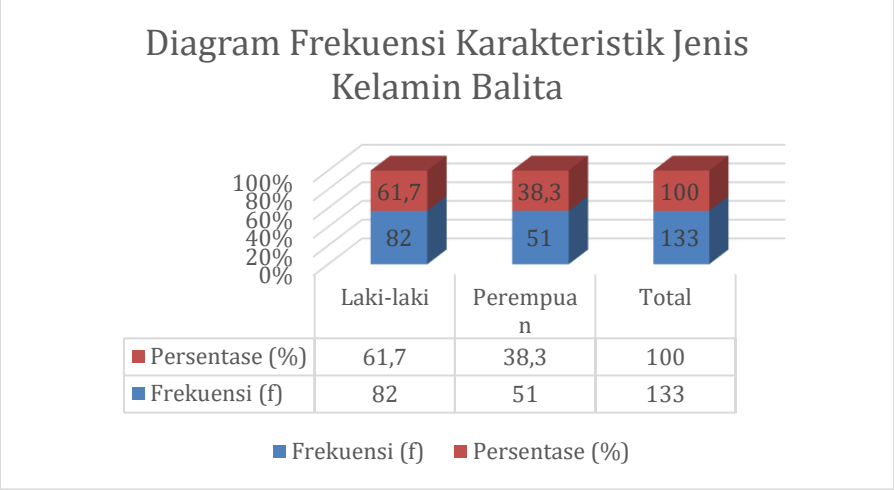

Diagram 3. Frequency Distribution of Gender Characteristics of Toddlers

Based on table 3 above, it can be seen that the number of male toddlers is greater, namely 82 people (61.7%) compared to the number of female toddlers, which is 51 people (38.3%).

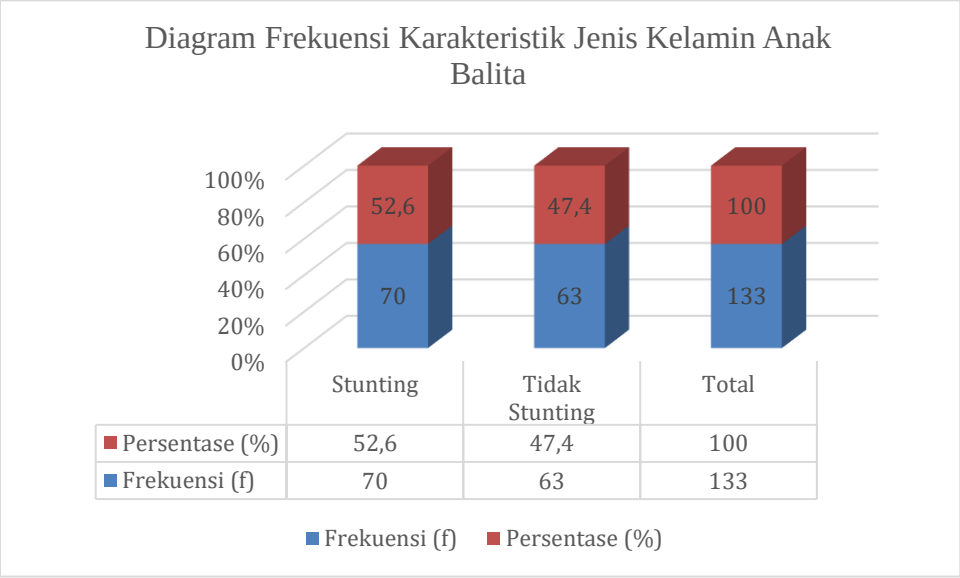

Diagram 4. Frequency Distribution of Toddler Gender Characteristics

Based on the results of the study that has been conducted using data from Posyandu regarding the results of anthropometric measurements measured by the height index (TB/U). From table 4 it can be seen that toddlers aged >24-35 months who suffer from stunting are 70 people (52.6%), while toddlers who are not stunted are 63 people (47.4%). This needs to be considered because there are still many stunted toddlers at the Kawalu Health Center. Further education and treatment are needed to reduce the incidence of stunting.

Table 1. Frequency Distribution of Mothers' Compliance in Consuming Iron Supplement Tablets (TTD) During Pregnancy

TTD Consumption	Frequency (f)	Percentage (%)
Obedient	37	27.8
Not obey	96	72.2
Total	**133**	**100**

Based on Table 1, as many as 96 people (72.2%) of respondents were not compliant in consuming TTD during pregnancy, while 37 people (27.8%) showed compliance by routinely consuming TTD. The high rate of non-compliance causes many pregnant women to experience anemia, even though the Ministry of Health has recommended consuming at least 90 TTD tablets during pregnancy. This compliance is assessed based on the accuracy of the method, amount, and frequency of TTD consumption per day. The anemia control program has so far focused on providing iron supplements to pregnant women as an effort to prevent health risks for the mother and fetus (Jannah & Murni, 2019).

Table 2. Validity Test Results

No.	rhitung	rtable	Information
Compliance of Mothers Consuming TTD.			
1.	0.224	0.1432	Valid
2	0.474	0.1432	Valid
3	0.432	0.1432	Valid
4	0.389	0.1432	Valid
5	0.456	0.1432	Valid
6	0.450	0.1432	Valid
7	0.486	0.1432	Valid
Stunting Incident			
1	0.492	0.1432	Valid
2	0.514	0.1432	Valid
3	0.401	0.1432	Valid
4	0.419	0.1432	Valid
5	0.512	0.1432	Valid
6	0.584	0.1432	Valid
7	0.340	0.1432	Valid

From the results of the validity test on the variables of maternal compliance in consuming TTD and the incidence of stunting in 133 respondents with the rtable used in this study of 0.1432, it can be said that the results obtained are valid because r count > r table.

Table 3. Reliability Test Results

No.	Variables	Crobanch Alpha Value	Standardization Value	Information
1.	Compliance of mothers in consuming TTD	0.629	0.6	Reliable
2.	Stunting Incident	0.667	0.6	Reliable

Based on the results of the reliability test conducted on all variables in this study, it shows that it is reliable because the Cronbach's Alpha reliability coefficient value is > 0.60, namely 0.629 and 0.667, thus it can be said that all statement items are reliable or consistent.

Table 4. Chi Square Test Results

No.	Compliance of Mothers Consuming TTD	Stunting Incident		Total	*p-value*
		No Stunting (%)	*Stunting* (%)		
1.	Not obey	25 (39.6%)	38 (60.3%)	63 (100%)	0.568
2.	Obedient	45 (64.3%)	25 (35.7%)	70 (100%)	
Total		70	63	**133**	

Based on table 4 of the Chi Square test results, the results obtained from 133 total respondents with mothers who were not compliant with TTD consumption were 38 toddlers (40.3%) experiencing stunting and 25 toddlers (39.6%) not experiencing stunting. Meanwhile, the results of mothers who were compliant with TTD consumption during pregnancy were 25 toddlers (35.7%) experiencing stunting and 45 toddlers (64.3%) not experiencing stunting. The number of stunted toddlers in one of the Kawalu Health Centers was more common in mothers who were not compliant with TTD consumption with a p-value of 0.568. From the results of the analysis using Chi Square, it can be seen that the p-value is greater than 0.05, which means that there is no significant relationship between maternal compliance with TTD consumption and the incidence of stunting. This is in line with the research of Munirah L, Sumarmi, S., and Isaura, E. R (2023) which stated that there was no significant relationship between compliance with iron supplement consumption and stunting because there were other triggers that could cause stunting. Such as research from Mukti and Ayu Nabela, (2018) which stated that pregnant women with high anemia status were pregnant women who were compliant in consuming iron

supplement. Another researcher Montol et al., 2022 also showed that there was no significant relationship between iron supplement consumption and stunting.

4. CONCLUSION

*Stunting*is a significant health problem in Kawalu Health Center, Kawalu District, Tasikmalaya City, West Java Province with a prevalence of stunting in toddlers of 52.6%. One of the risk factors studied was the compliance of pregnant women in consuming Iron Supplement Tablets (TTD), where 72.2% of pregnant women were not compliant during pregnancy. However, statistical analysis using the Chi-Square test showed that there was no significant relationship between compliance with TTD consumption and the incidence of stunting in toddlers (p-value> 0.05). This shows that TTD consumption alone is not enough to directly affect the prevalence of stunting.

Although TTD consumption is important to prevent anemia in pregnant women, other factors such as nutritional intake patterns, infections, environmental sanitation, and access to health services also play an important role in stunting. Therefore, an integrated approach is needed that involves nutrition education, increasing awareness of the importance of TTD, and efforts to improve the quality of maternal and child health services. With holistic interventions, it is hoped that the stunting rate in this region can decrease significantly.

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