

Analysis of the Effect of 4T in Pregnant Women on the Risk of Stunting

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ABSTRACT

One of the causes of the low quality of Indonesian human resources is malnutrition. Chronic malnutrition is characterized by stunting and low cognitive function. The problem of malnutrition in pregnant women can cause stunting in toddlers. Pregnancy with 4 too will be at risk of stunting for the mother and fetus. The purpose of this study was to determine the effect of the 4Ts (too close, too far, too young and too old) on the risk of stunting. This research is literature research from PK21 BKKBN with a quantitative approach. The population in this study were 15 districts using the total sampling method. Based on the Classical Assumption Test and the regression analysis test that has been carried out that 4T (too close, too far, too young and too old) has an effect on the occurrence of stunting.

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INTRODUCTION

Stunting is a problem that is increasingly found in developing countries, including Indonesia. According to the World Health Organization (WHO), in 2016, as many as 22.9% or 154.8 million children under five were stunted (Hidajat, 2019). Therefore, the state exists for the community in reducing stunting through supplementation of macro and micro nutrients Stunting is a condition in which a person's height is less than normal based on age and gender. Height is a type of anthropometric examination and shows a person's nutritional status. Stunting is the result of chronic malnutrition that has been going on for years. Therefore someone who experiences stunting from an early age can also experience disturbances due to prolonged malnutrition such as mental, psychomotor, and intelligence disorders. Malnutrition management programs have indeed been carried out several years ago, but it seems that they are not specific for chronic malnutrition which causes stunting. Therefore the incidence of stunting has never decreased even though the incidence of other malnutrition such as wasting (thinness) has decreased significantly (Candra, 2020). In Indonesia, people often perceive short stature as a hereditary factor. Wrong perceptions in society make this problem difficult to reduce. Study results prove that heredity contributes only 15%, while the biggest elements are related to problems with nutrient intake,

growth hormone and the occurrence of recurrent infectious diseases in toddlers (Rahayu et al., 2018).

Adequacy of nutrition and food is one of the most important factors in developing the quality of human resources, as an indicator of the success of a nation's development. In this case nutrition has an influence on intelligence and work productivity of human resources. Currently, Indonesia is still facing nutritional problems that have a serious impact on the quality of human resources (HR). One of the problems of malnutrition that is still quite high in Indonesia is stunting and wasting in toddlers as well as anemia and chronic energy deficiency (KEK) in pregnant women. The problem of malnutrition in pregnant women can eventually lead to low birth weight babies (LBW) and malnutrition in toddlers. Nutritional problems are caused by direct causes such as inadequate food intake and infectious diseases. While the indirect causes of nutritional problems are still high poverty, low environmental sanitation, inadequate food availability, poor parenting styles, and sub-optimal health services. The cause of stunted growth is that stunted growth makes brain development in children imperfect, resulting in delays in cognitive development and IQ (Usman et al., 2021)

Indonesia's current population is more than 250 million people. Even though the number is very large, unfortunately the quality of Indonesia's human resources (HR) is still considered lacking by other countries. One of the causes of the low quality of Indonesian human resources is malnutrition. Chronic malnutrition is characterized by stunting and low cognitive function. Therefore the problem of stunting is an important problem that needs to be addressed immediately. The prevalence of stunting in toddlers in Indonesia based on the 2018 Riskesdas is 30.8 % . According to WHO in 2018 the prevalence of stunting in toddlers in the world is 22%. Thus it can be said that the prevalence of stunting in Indonesia is higher than the prevalence of stunting in the world (Candra, 2020).

Birth spacing affects the parenting style of parents towards their children. Close birth spacing makes parents tend to be more troubled so that they are less than optimal in caring for children. This is because older children are not yet independent and still require great attention. Especially in families with less economic status who do not have a maid or babysitter. Child care is fully carried out only by the mother alone, even though the mother still has to do other household chores. As a result, children's food intake is less attention (Candra, 2020).

The birth spacing of less than two years also causes one of the children, usually the older one, to not get enough breast milk because breast milk is prioritized for their younger sibling. As a result of not getting breast milk and a lack of food intake, children will suffer from malnutrition which can lead to stunting. To overcome this, the family planning program must be encouraged again. After giving birth, mothers or fathers should be encouraged to use contraception as soon as possible to prevent pregnancy. Many parents are reluctant to use contraception immediately after the birth of their child, resulting in a pregnancy that is often not realized until the pregnancy is several months old (Candra, 2020).

Spacing of pregnancies that are too close, apart from not being good for the newly born child, is also not good for the mother. The mother's health can be disrupted due to her immature physical condition after giving birth and at the same time having to care for the baby which requires a lot of time and attention. Unhealthy pregnant women will cause disturbances to the fetus they contain. Disturbances in the fetus in the womb will also interfere with growth so that stunting arises (Candra, 2020).

The problem of stunting growth is often not realized by the community because there are no 'instant' indications such as disease. The effect of stunting on children can predispose to other health problems until the child becomes an adult. Therefore, tackling the problem of stunting must start long before a child is born (100 HPK period) and even since the mother is a teenager to be able to break the chain of stunting in the life cycle (Rahayu et al., 2018).

The period of the first 1000 days of life (1000 HPK) is a critical node as the beginning of stunting which will then have a long-term impact that will be repeated in the life cycle. Stunting in children is a problem because it is associated with an increased risk of morbidity and mortality, disturbances in brain development, disturbances in motor development and retardation of children's mental growth. Suboptimal growth in the fetus and/or during the 1000 HPK period has long-term effects. If external factors (after birth) are not supportive, growth stunting can become permanent as a short teenager. Research results show that those who are smaller or stunted at birth are biologically different in height from those born larger. (Rahayu et al., 2018).

Pregnancy with 4 too will be at risk including; if it is too young then it is at risk for the mother and the fetus. Risks for the mother include abortion, anemia, eclampsia / preeclampsia. Furthermore, those older than 35 years are more likely to have a child with defects, bleeding, a higher risk of high blood pressure, diabetes or fibroids in the uterus. Then the distance between pregnancies that are too short will be very dangerous because the reproductive organs have not returned to their original state. The possibility of premature birth can also occur in close-range pregnancies. If the mother has given birth to 4 or more children, it is necessary to watch out for disturbances during pregnancy, childbirth and childbirth. Factors of multiparas to grandmultiparas can be the cause of varicose veins which are found during pregnancy around the vulva, vagina, thighs and lower legs (Aini, 2018).

Based on the results of Riskesdas 2010 and previous studies, it is known that high maternal mortality is caused by direct and indirect factors. What will be examined in this further analysis is to examine indirect factors, namely factors of maternal characteristics, socio-cultural factors, and the environment that can influence maternal behavior that causes the risk of the 4-T pregnancy (Sari et al., 2015).

In South Tapanuli Regency, health services for pregnant women reached 95.07 % . From 2007 to 2020 the coverage of K4 pregnant women's health services tends to increase. Meanwhile, the coverage of health services for malnourished infants/toddlers who have received PMT in North Sumatra Province in 2020 is 95.64 % . This coverage has not yet reached the 2020 target of the Strategic Plan for the North Sumatra Provincial Health Office which was set at 96%. Meanwhile, the number of Undernourished (BB/Age) and Underweight (BBTB) Toddlers in 2019 was 133 people, in 2020 there were 126 people and in 2021 there were 120 people. For those who experience malnutrition in 2021 as many as 3 people (BPS, 2022)

RESEARCH METHOD

This research is included in the type of library research (Library Research), namely research carried out using literature (library). Literature research collects data or information from books, notes, newspapers, documents, and other references related to research topics originating from PK21 BKKB South Tapanuli Regency to obtain research data. In this study, researchers used a quantitative research approach. Quantitative research is research that uses data in the form of numbers or statements that are assessed and analyzed by statistical analysis. This research is an associative research, which is a study that aims to determine the relationship between two or more variables with one other variable. With this research, a theory can be built that can function to explain, predict and control a phenomenon. In this study, the secondary data used was fully downloaded from the official website of PK21 BKKBN of South Tapanuli Regency in the form of annual publications and annual reports. This study uses secondary data in the form of panel data, namely a combination of time series, namely data from 2021 with 15 cross sections of data representing 15 sub-districts in South Tapanuli. In this study, the total population is in the form of sub-districts in South Tapanuli Regency, totaling 15 sub-districts with a sampling technique, namely total sampling, namely 15 sub-districts. Data processing techniques using analysis tests, namely the classic assumption test and hypothesis testing.

RESULTS AND DISCUSSIONS

Classic assumption test

Normality test

	Unstandardized Residuals
N	15
Kolmogorov-Smirnov Z	0.253
asymp. Sig. (2-tailed)	0.011

Based on the Kolmogorov Smirnov test results as shown in table 4.1. it can be seen that the probability value is 0.011 which is higher than $\alpha = 5\%$. Thus the research data in this research model can be declared normal.

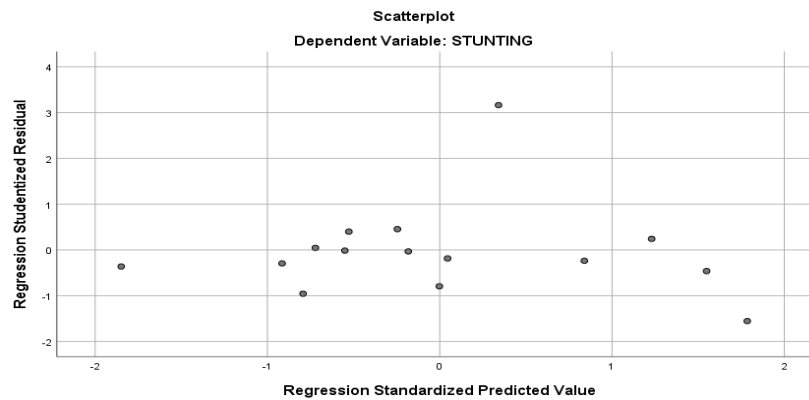
Multicollinearity Test

Table 2. Multicollinearity Test

Independent Variable	Collinearity Statistics		Conclusion
	tolerance	VIF	
Too old	0.510	1,959	No Multicollinearity
Too young	0.295	3,399	No Multicollinearity
Too close	0.195	5,126	No Multicollinearity
Too many	0.191	5,227	No Multicollinearity

It can be seen that all independent variables have a VIF value of less than 10, so it can be concluded that there are no symptoms of multicollinearity in this research model

Heteroscedasticity Test



It can be seen that the distribution of residual data spreads randomly above and below the 0 Y axis and there is a certain pattern, it can be stated that the regression model has symptoms of heteroscedasticity.

Autocorrelation Test

Summary Model ^b					
Model	R	R Square	Adjusted R Square	std. Error of the Estimate	Durbin-Watson
1	1,000 ^{a,m}	1,000	1,000	.545	1,269

a. Predictors: (Constant), TOO MUCH, TOO YOUNG, TOO OLD, TOO CLOSE

b. Dependent Variable: STUNTING

It can be seen that the Durbin-Watson value of 1.269 This value will be compared with the value of d_l and d_u at a significance level of 5%, with n of 120 and $k = 3$. Using these standards the resulting value of d_l is 1.63731 and d_u is 1.74715 . The Durbin-Watson value of 1.269 is between d_l and d_u

(1.74715) and 4-du (4-1.74715 = 2.25285) so it can be concluded that there is no autocorrelation problem in the regression model.

Regression Analysis Statistical Test

Independent Variable	Regression Coefficient	T Count	Significance	Conclusion
Constant	0.167	0.563	0.586	
Too young	0.045	21.175	0.000	H1 Supported
Too old	0.011	87,085	0.000	H2 Supported
Too close	0.014	75,156	0.000	H3 Supported
Too Meeting	0.013	77,500	0.000	H4 Supported
Fcount		58656,194	0.000b	
Adjusted R Square			1,000	

Based on the results of multiple linear regression analysis, the regression equation model in this study can be obtained as follows:

$$\text{LNBM} = 0.167 + 0.045 \text{ Too Young} + 0.011 \text{ Too Old} + 0.014 \text{ Too Close} + 0.013 \text{ Too Dense}$$

From the results of the regression equation model above, the conclusions that can be drawn are as follows: (a) The constant intercept value is 0.167. This result can be interpreted, if the magnitude of the value of all independent variables is equal to zero, then the magnitude of the stunting case is 0.167. (b) Regression coefficient Too Young = 0.045. This result can be interpreted, if Too young experiences an increase of 1 percent, then Stunting Cases will increase by 0.045 assuming all other independent variables are constant. (c) Regression coefficient Too old = 0.011. This result can be interpreted, if Too Old experiences an increase of 1 percent, then Stunting Cases will increase by 0.011 assuming all other independent variables are constant. (d) Too Close regression coefficient = 0.014. This result can be interpreted, if Too Close experiences an increase of 1 percent, then Stunting Cases will increase by 0.014 assuming all other independent variables are constant. (e) Regression coefficient too tight = 0.013. This result can be interpreted, if Too young experiences an increase of 1 percent, then Stunting Cases will increase by 0.013 assuming all other independent variables are constant.

a. Determination Coefficient Test (R²)

The results of the analysis of the coefficient of determination, the value of the coefficient of determination (Adjusted R Square) is 1.000. These results can be concluded that the magnitude of the variation in the independent variable influencing the regression equation model is 100 % and the rest is not influenced by other factors not included in the regression model.

b. Hypothesis testing

Testing the hypothesis in this study using statistical tests t. The t statistical test aims to show how far the influence of one explanatory/independent variable individually explains the variation of the dependent variable. The test was carried out using a significance level of 0.05 ($\alpha=5\%$).

c. First Hypothesis Testing

The first hypothesis testing can be seen in table 4.5. Testing this hypothesis is carried out by testing the significance of the regression coefficient of the Too Young variable. Hypothesis H1 of this study states that being too young has a positive effect on stunting cases. The magnitude of the Too Young regression coefficient is 0.045 and a significance value of 0.000 < 0.05. Thus, it can be concluded that Too Young has a significant positive effect on capital expenditure so that H1 of this study is accepted.

- d. Testing the second hypothesis can be seen in table 4.5. Testing this hypothesis is done by testing the significance of the regression coefficient of the Too Old variable. Hypothesis H2 of this study states that being too old has a positive effect on stunting cases. The magnitude of the Too Young regression coefficient is 0.011 and a significance value of $0.000 < 0.05$. Thus, it can be concluded that too old has a significant positive effect on capital expenditure so that H2 of this study is accepted.
- e. The third hypothesis testing can be seen in table 4.5. Testing this hypothesis is done by testing the significance of the regression coefficient of the Too Close variable. Hypothesis H3 of this study states that being too old has a positive effect on stunting cases. The magnitude of the Too Young regression coefficient is 0.014 and a significance value of $0.000 < 0.05$. Thus, it can be concluded that Too Close has a significant positive effect on capital expenditure so that H2 of this study is accepted.
- f. The fourth hypothesis testing can be seen in table 4.5. Testing this hypothesis is done by testing the significance of the regression coefficient of the Too tight variable. Hypothesis H4 of this study states that being too old has a positive effect on stunting cases. The magnitude of the Too Young regression coefficient is 0.013 and a significance value of $0.000 < 0.05$. Thus, it can be concluded that Too Close has a significant positive effect on capital expenditure so that H2 of this study is accepted

CONCLUSION

The conclusions in this study are: Based on the results of the Kolmogorov Smirnov normality test, it can be seen that the probability value is 0.011 which is higher than $\alpha = 5\%$. Thus the research data in this research model can be declared normal. Based on the Multicollinearity Test, it is known that all independent variables have a VIF value of less than 10, so it can be concluded that there are no symptoms of multicollinearity in this research model. Based on the heteroscedasticity test, it can be seen that the distribution of residual data spreads randomly above and below the 0 Y axis and there is a certain pattern, it can be stated that the regression model has symptoms of heteroscedasticity. Based on the Autocorrelation Test, it can be seen that the Durbin-Watson value is 1,269. This value will be compared with the dl and du values at a 5% significance level, with n equal to 120 and k = 3. Using these standards, the resulting dl value is 1.63731 and du of 1.74715. The Durbin-Watson value of 1.269 is between du (1.74715) and 4-du ($4 - 1.74715 = 2.25285$) so it can be concluded that there is no autocorrelation problem in the regression model Based on the regression analysis test, it is known that the regression equation above, the conclusions that can be drawn are as follows: The constant intercept value is 0.167. This result can be interpreted, if the magnitude of the value of all independent variables is equal to zero, then the magnitude of the stunting case is 0.167. Regression coefficient Too Young = 0.045. This result can be interpreted, if Too young experiences an increase of 1 percent, then Stunting Cases will increase by 0.045 assuming all other independent variables are constant. Regression coefficient Too old = 0.011. This result can be interpreted, if Too Old experiences an increase of 1 percent, then Stunting Cases will increase by 0.011 assuming all other independent variables are constant. Too Close regression coefficient = 0.014. This result can be interpreted, if Too Close experiences an increase of 1 percent, then Stunting Cases will increase by 0.014 assuming all other independent variables are constant. Regression coefficient too tight = 0.013. This result can be interpreted, if Too young experiences an increase of 1 percent, then Stunting Cases will increase by 0.013 assuming all other independent variables are constant.

The results of the analysis of the coefficient of determination can be seen in table 4.5. The results of the analysis of the coefficient of determination, the value of the coefficient of determination (Adjusted R Square) is 1.000. These results can be concluded that the magnitude of the variation in the independent variable influencing the regression equation model is 100% and

the rest is not influenced by other factors not included in the regression model In the Hypothesis Test it can be concluded that the Independent Variable has an effect on the incidence of stunting in Tapanuli Seklatan Regency in 2021

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