

**DETERMINANT ANALYSIS OF STUNTING EVENTS IN TODDLERS AGED 6-24 MONTHS  
JUDGING FROM THE NUTRITIONAL STATUS OF PREGNANT WOMEN, BIRTH WEIGHT AND  
EKSKLUSIVE BREAST FEEDING  
AT GARUM HEALTH CENTER**

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**ABSTRACT**

Stunting is a state of the body that is short and so short that it exceeds the SD-2 deficit below the median length or height. Stunting is a public health problem because it is associated with an increased risk of morbidity and death, delayed motor development and stunted mental growth. The general objective of the study was to find out the most dominant determinant factors related to stunting in infants aged 6-24 months at UPT Puskesmas Garum, Blitar Regency. This research is quantitative using a cross sectional research design with a total sample of 151 toddlers. This research was conducted by processing secondary data from the Weigh Month Results of the Garum Health Center UPT and Blitar District Health Office in February 2019. The interview respondents were conducted in November 2019. Variables used include stunting toddlers, nutritional status of pregnant women and exclusive breastfeeding. Data processing and analysis using chi square test (bivariate) and multiple logistic regression (multivariate). The results of the analysis showed that based on the TB / U index, stunting toddlers were 73.9%. Chi square test results show that there is a relationship between stunting toddlers aged 6-24 months based on the history of the nutritional status of pregnant women, the history of the baby's birth weight and the history of exclusive breastfeeding. The results of multivariate analysis showed that the most dominant independent variables related to stunting under five were birth weight after being controlled by the nutritional status variable of pregnant women and exclusive breastfeeding.

**Keywords :** Nutritional status of Pregnant women, Birth weight, exclusive breastfeeding stunting

**PRELIMINARY**

Stunting that occurs during childhood is a risk factor for increased mortality, low cognitive abilities and motor development as well as unbalanced body function, low motor development and imbalanced body functions (Allen & Gillespie, 2001).

Based on the 2013 Basic Health Research (Riskesmas) data, it shows that 37.2 percent or around 9 million children under five in Indonesia in 2013 were stunted. The results of the 2018 Riskesmas show an improvement in the nutritional status of children under five in Indonesia. The proportion of very short and stunted nutritional status decreased from 37.2% (Riskesmas 2013) to 30.8%. So it is need necessary to have a policy in health care service (Usman, I. 2020)

WHO (in Arifin, 2012) Indonesia still has to work hard to overcome this stunting, because the non public health limit set by WHO in 2005 is the prevalence of low stunting if <20%, moderate if 20-29% and high if 30-39 ≥ 40% . Meanwhile, the prevalence of stunting under five in all provinces is still > 20%, to be precise 37.2%. The prevalence of stunting in East Java is 35.8%. Thus, it can be said that the prevalence of stunting in Indonesia, including East Java, is still high.

East Java Weigh Month data for February 2018, the prevalence of stunting in Blitar Regency is 14.8%. And the highest prevalence in the Blitar Regency is in the Garum district of 29.62%. Based on a preliminary study at the UPT Garum Health Center in Garum Village on August 10, 2019, it was obtained from five respondents whose toddlers were stunted, it turned out that three respondents had the nutritional status of pregnant women who had an upper arm circumference of <23.5 cm and blood hemoglobin levels <12 mmHg and not getting exclusive breastfeeding and low birth weight.

The causes of child stunting problems include chronic nutritional problems as a result of insufficient food intake, coupled with comorbidities / infections and environmental problems (Semba et al., 2008). History of maternal nutritional status, such as iron deficiency anemia (AGB) and Chronic energy deficiency (KEK) greatly affects the incidence of stunting in children under five. The nutritional status of the mother during and during pregnancy can affect the growth of the fetus in the womb. If the mother's nutritional status is normal during and during pregnancy, it is likely that she will give birth to a healthy baby, at full term and with a normal weight. In other words, the mother's nutritional history before and during pregnancy greatly affects the quality of the baby born. KEK pregnant women cause abnormal fetal growth so as to give birth to babies with low birth weight (LBW) (Almatsier, 2001).

Factors that influence stunting include: birth length, family economic status, education level and parents' height. Mothers with more or less height are likely to give birth to short children too.

Apart from the length of birth and height of the parents, the economic status of the family and the education of the parents are also risk factors for the incidence of stunting in children under five. The economic status of the family is influenced by several factors, including the work of the parents, the education level of the parents and the number of family members. The growth process at the age of 2-3 years tends to experience a slowdown so that the chances of catching growth are lower than those of 0-2 years old. Age 2-3 years is the age when children experience rapid development in cognitive and motor skills. Maximum physical conditions are needed to support this development, where in children who are stunting the development of motor and cognitive abilities can be impaired. Children at this age also need higher attention and more varied dietary needs than those aged 0-2 years (Yupi, 2004; Abdulateef et al., 2020; Acrylic, 2020; Akbar et al., 2020; Al-Blooshi et al., 2020).

Inadequate intake of mothers during pregnancy can cause babies to be born weighing less than 2.5 kg (LBW) which subsequently inhibits growth in children so that they often develop infectious diseases. This will be exacerbated by the inaccurate condition of mother's parenting in providing intake for toddlers, especially exclusive breastfeeding during infancy and inappropriate complementary feeding, both in timing and in nutritional content. The process of stunting occurs at this time and increases the chance of stunting in the first two years of life. This makes it more difficult to overcome the growth constraints that are an opportunity for stunting. The longer the incidence of stunting since a toddler will also cause it Disorders of Intelligence Quotient (IQ), psychomotor development, motor skills and neurosensory integration, have a mean IQ of 11 points lower than non-stunting children (UNICEF, 2009).

Based on the above background, the authors are interested in conducting research on the determinants of the incidence of stunting at Garum Health Center because it has a high prevalence of children aged 0-24 months of stunting at the Blitar Regency level.

## RESEARCH METHODS

The design used in this study is observational, which is a study that is conducted without intervention to the research subject, or is often called non-experimental research (Notoatmodjo, 2012), with a cross sectional design. This study uses secondary data obtained from data for the month weighing month of February 2019 at the Garum Health Center.

Simple random sampling was used to obtain a sample of 151 children. The approach used in this study is quantitative, which aims to analyze the determinants of the incidence of stunting in children aged 6-24 months. and LILA).

The stages in the study were sampling, interview, scoring, data analysis. Bivariate analysis using the chi square test to determine the relationship between the nutritional status of pregnant women, birth weight and exclusive breastfeeding with the incidence of stunting.

## RESULTS

Tabel 1. Tabulation of the results of testing the effect of gender under five, the age of pregnant women, mother's education, family income, child sequence, mother's occupation on the incidence of stunting

	Hubungan	B	Odd Ratio
Toodler's gender	→ stunting	-0.28	0.972
Pregnant women's age	→ stunting	0.904	2.470
Mother's education	→ stunting	0.142	1.152
Family income	→ stunting	0.125	1.134
Child sequence	→ stunting	0.266	1.305
Mother's job	→ stunting	20.195	589,891,847.5
Constant Constant	→ stunting	-44.132	0.000

The logistic regression empirical model formed is as follows:

$$Y = -44.132 - 0.28X_1 + 0.904X_2 + 0.142X_3 + 0.125X_4 + 0.266X_5 + 20.195X_6$$

The table and the logistic regression empirical model above show the following:

1. The coefficient of the constant variable is -44,132 with an odd ratio of 0,000 indicating that the probability of stunting occurring is 0,000 times if the other variables are constant.

- The coefficient of the under-fives gender variable is -0.28 with an odds ratio of 0.972, indicating that the gender of under-five has a negative and insignificant effect on the incidence of stunting. This means that an increase in the number of children under five with female gender means that the chance of the occurrence of stunting decreases by 0.972 times.
- The coefficient of the variable age of pregnant women is 0.904 with an odds ratio of 2.470 indicating that the variable of maternal age has a positive and insignificant effect on the incidence of stunting. This means that an increase in the age of the mother when pregnant, the chance of the occurrence of stunting increases by 2,470 times.
- The coefficient of the maternal education variable is 0.142 with an odds ratio of 1.152 indicating that the variable maternal education has a positive and insignificant effect on the incidence of stunting. This means that an increase in maternal education means that the chances of the occurrence of stunting increased by 1,152 times.
- The coefficient of family income variable is 0.125 with an odds ratio of 1.134 indicating that family income has a positive and insignificant effect on the incidence of stunting. This means that an increase in family income means that the chances of the occurrence of stunting increased by 1,134 times.
- The coefficient of the Child Sequence variable is 0.266 with an odds ratio of 1.305 indicating that Sequence of Children has a positive and insignificant effect on the incidence of stunting. This means that there is an increase in the Order of Children, so the chance of the occurrence of stunting increases by 1,305 times.
- The coefficient of maternal occupation is 20,195 with an odd ratio of 589,891,847.5 indicating that mother work has a positive and insignificant effect on the incidence of stunting. This means that an increase in maternal occupation, the chance of the occurrence of stunting increases by 589,891,847.5 times.

The results of testing the effect of nutritional status of pregnant women, birth weight, and exclusive breastfeeding on the incidence of stunting can be seen in the following table:

Table 2. Table of Results Test the effect of pregnant women nutritional status, birth weight, and exclusive breastfeeding on the incidence of stunting

Relationship	B	Odd Ratio
Nutritional status of pregnant women → Incidence of stunting	-0.592	0.553
Birth weight → Incidence of stunting	-2.010	0.134
exclusive breastfeeding → Incidence of stunting	-0.141	0.868
Constant → Incidence of stunting	6.885	977.138

The logistic regression empirical model formed is as follows:

$$Y = 6,885 - 0.592 X_1 - 2,010 X_2 - 0.141 X_3$$

The table and the logistic regression empirical model above show the following:

- The coefficient of the constant variable is 6,885 with an odd ratio of 977,138 indicating that the probability of stunting occurring is 977,138 times if the other variables are constant.
- The coefficient of the variable nutritional status of pregnant women is -0.592 with an odds ratio of 0.553 indicating that the nutritional status of pregnant women has a negative and significant effect on the incidence of stunting. This means that an increase in the nutritional status of pregnant women means that the chance of the occurrence of stunting decreases by 0.553 times.
- The coefficient of birth weight variable is -2.010 with an odds ratio of 0.134 indicating that the variable birth weight has a negative and significant effect on the incidence of stunting. This means that an increase in birth weight means that the chance of the occurrence of stunting decreases by 0.134 times.
- The variable coefficient of exclusive breastfeeding is -0.141 with an odds ratio of 0.868 indicating that the variable of exclusive breastfeeding has a negative and insignificant effect on the incidence of stunting. This means that an increase in exclusive breastfeeding means that the chances of the occurrence of stunting decreased by 0.868 times, although the decrease was not significant.

## DISCUSSION

### Identification of Toddler Stunting at UPT Puskesmas Garum

Based on the Results of the Variable Research on the Incidence of Stunting, it can be seen that of the 151 respondents who had toddlers aged 6-24 months at the Garum Health Center, almost all respondents experienced stunting with a frequency of 113 people (74.8%). The incidence of stunting at the Garum Health Center UPT based on the results of the Weighing Month for Toddlers at the Blitar District Health Office in February 2018 is in the highest ranking.

The cause of the incidence of stunting can be due to the history of the mother during pregnancy, pregnancy and postpartum conditions which include infectious factors, diet and care given to children under five. History of pregnant women who experience chronic energy deficiency (KEK) which is characterized by a size of the upper arm circumference of less than 23.5 cm and anemia characterized by low levels of hemoglobin in the blood (less than 11 mmHg).

#### **Identification of Nutritional Status of Pregnant Women at UPT Puskesmas Garum**

Based on the data from the results of research on the nutritional status of pregnant women at the UPT Puskesmas Gaum, it can be seen that of the 105 children under five aged 6-24 months at the Garum Health Center who were stunted, almost all respondents had a malnutrition status as many as 88 people (83.8%). Inadequate nutritional status of pregnant women can be caused by lack of chronic energy consumption or (KEK) and exacerbated by low levels of hemoglobin in the blood, which is known as anemia. The condition of pregnant women who are still a lot of KEK and anemia at the UPT Garum Health Center can be caused by the lack of optimal ANC and counseling activities at the posyandu level which are still very weak

#### **Identification of Baby Birth Weight at UPT Puskesmas Garum**

Based on the research data, it can be seen that of the 113 respondents who have children under five, aged 6-24 months at the Garum Health Center who are stunted, the minimum birth weight is 1.40 kg and the maximum birth weight is 3.60 kg. The average birth weight of children who are stunted is 2.50 kg. Of the 38 children under the age of 6-24 months at the Garum Health Center who were not stunted, the minimum birth weight was 1.90 kg and the maximum birth weight was 3.70 kg. The average birth weight of children who are stunted is 2.92 kg.

The incidence of low infant weight (LBW) is indicated by the birth weight of the baby which is less than 2.5 kg which can be caused by the low nutritional status of pregnant women. The nutritional status of pregnant women can be seen from the condition of pregnant women who are KEK and anemia. Some pregnant women still do not have sufficient knowledge of the importance of maintaining a balanced nutritional diet during pregnancy so that they feel nauseous and want to vomit and have cramps which justify them from having an unbalanced diet.

For example, many pregnant women who do not like chicken liver which is rich in iron nutrition because it smells fishy and want to vomit, so they avoid eating chicken liver without trying to find substitutes rich in other iron. There are also some pregnant women who avoid eating nuts and fried foods because they want to maintain a low cholesterol and uric acid diet. Even though without certain indications, pregnant women should not be advised to diet without guidance from medical personnel or nutritionists. This is why there are still many babies with low birth weight.

The existence of counseling and mentoring activities for pregnant women is at risk for the ANC activity at the UPT Puskesmas Garum is also less than optimal

#### **Identification of the History of Exclusive Breastfeeding at the UPT Puskesmas Garum**

Based on the results of the study, it is known that out of 113 children under the age of 6-24 months at the Garum Health Center who were stunted, the most received exclusive breastfeeding with a frequency of 70 people (61.9%), while the remaining 43 people (38.1%) did not get breast milk. exclusive. Of the 38 children under the age of 6-24 months at the Garum Health Center who were not stunted, the most received exclusive breastfeeding with a frequency of 25 people (65.8%), while the remaining 13 people (34.2%) did not receive exclusive breastfeeding.

The awareness of mothers in exclusive breastfeeding at the UPT Puskesmas Garum is good enough so that almost all toddlers get exclusive breastfeeding. Only a few toddlers do not get exclusive breastfeeding. This happens because of the incessant health promotion activities at the UPT Garum Health Center regarding the importance of exclusive breastfeeding. It is proven that Garum District and Garum Health Center UPT have also won the District Level Lactation Space Competition in 2017 and 2019 organized by the Blitar District Health Office.

Analysis of the nutritional status of pregnant women with the incidence of STUNTING toddlers aged 6-24 months at the Garum Health Center, Blitar Regency

Based on the results of the logistic regression test, it was found that the nutritional status variable coefficient of pregnant women was -0.592 with an odds ratio of 0.553 indicating that the nutritional status of pregnant women had a negative and significant effect on the incidence of stunting. This means that an increase in the nutritional status of pregnant women means that the chance of the occurrence of stunting decreases by 0.553 times.

This means that an increase in the nutritional status of pregnant women means that the chance of the occurrence of stunting decreases by 0.553 times. This is in accordance with the condition of the history of pregnant women at the UPT Puskesmas Garum where when the mother can improve her nutritional status during pregnancy, the incidence of stunting can be reduced. During pregnancy, pregnant women can still improve their nutritional status with the help of pregnancy monitoring through the ANC (Ante Natal Care) program which is carried out

routinely at the UPT Puskesmas Garum. Prenatal examinations were carried out at the initial screening at the posyandu. Then if there are signs of KEK and anemia, the pregnant woman is immediately referred to the Garum Health Center for further integrated health services including supplementary feeding for women with KEK and anemia so that before delivery, the nutritional status of the pregnant woman improves and can reduce risky labor. which can cause toddlers not to become stunting.

#### **Analysis of Birth Weight of Babies with the incidence of STUNTING Toddlers aged 6-24 months at the UPT Garum Health Center, Blitar Regency**

Based on the results of the multivariate logistic regression test, it was found that the coefficient of the dominant variable was birth weight of -2.010 with an odds ratio of 0.134 indicating that the variable birth weight had a negative and significant effect on the incidence of stunting. This means that an increase in birth weight means that the chance of the occurrence of stunting decreases by 0.134 times.

This condition is in accordance with the results of research at the UPT Puskesmas Garum where the increasing number of stunting incidents is indicated by a low average number of birth weight (less than 2.5 kg). The percentage data on the number of children under five with stunting from the Blitar District Health Office, which was taken from the data of the Blitar District toddler weighing month in February 2018, shows that the highest percentage of children under five with stunting at the UPT Puskesmas Garum is the highest.

#### **Analysis of exclusive breastfeeding with the incidence of STUNTING toddlers aged 6-24 months at the UPT Garum Health Center, Blitar Regency**

Based on the results of the logistic regression test, the variable coefficient of exclusive breastfeeding was -0.141 with an odds ratio of 0.868 indicating that the variable exclusive breastfeeding had a negative and insignificant effect on the incidence of stunting. This means that an increase in exclusive breastfeeding means that the chance of stunting decreased by 0.868 times, although the decrease is not significant.

This condition is in accordance with the results of research at the UPT Puskesmas Garum where the awareness of mothers and the Garum community towards exclusive breastfeeding is high. Cross-sectoral and cross-program support and the community is proven by winning the Blitar district-level lactation space competition held by the Blitar District Health Office in 2017 and 2019 where Garum Health Center and Garum District won the Lactation Space Competition.

#### **CONCLUSION**

1. As many as 105 children under five, aged 6-24 months at the Garum Health Center UPT who were stunted, almost all respondents had a history of pregnancy with poor nutritional status as many as 88 people (83.8%).
2. A total of 113 children under the age of 6-24 months at the Garum Health Center were stunted, with a minimum birth weight of 1.40 kg and a maximum birth weight of 3.60 kg. The average birth weight of children who are stunted is 2.50 kg.
3. As many as 113 children under the age of 6-24 months at the Garum Health Center who experienced stunting, who had the most history of getting exclusive breastfeeding with a frequency of 70 people (61.9%).
4. Partial significance testing of the variable nutritional status of pregnant women produces a statistical value of 1.383 Wald test with a probability of 0.240. The test results show the probability > level of significance ( $\alpha = 5\%$ ). This means that there is no significant effect between the history of the nutritional status of pregnant women on the incidence of stunting in children under five at the UPT Puskesmas Garum.
5. Partial significance testing of birth weight variables produces a wald test statistical value of 12,311 with a probability of 0.000. The test results show the probability < level of significance ( $\alpha = 5\%$ ). This means that there is a significant influence between the history of birth weight and the incidence of stunting in children under five at UPT Puskesmas Garum.
6. The partial significance test of exclusive breastfeeding variable produces a Wald test statistic value of 0.105 with a probability of 0.746. The test results show the probability > level of significance ( $\alpha = 5\%$ ). This means that there is no significant effect between the history of exclusive breastfeeding on the incidence of stunting under five at the UPT Puskesmas Garum
7. The most dominant / most influencing factor in the incidence of stunting under five at the Garum Health Center is the history of the baby's birth weight.

#### **SUGGESTION**

1. Specific and sensitive nutrition interventions need to be continuously improved from the central level to the Puskesmas as the spearhead of public health services, especially in the UPT Puskesmas Garum area.

2. Mothers of children under five, especially those in the UPT Puskesmas Garum, need to maintain and improve their parenting style and diet by consuming a balanced nutritional diet in the family so that the incidence of stunting can be prevented and controlled optimally.
3. Educational institutions need to add health lecture materials about the importance of the first 1000 days of children's life and prevention and control of early stunting.
4. Further research is needed on the effect of parenting and diet on the incidence of stunting at the UPT Puskesmas Garum.

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