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Stunting: Poverty and Nutrition Status (Case Study at Tetaf Health Center, Timor Tengah Selatan Regency (TTS) East Nusa Tenggara Province (NTT)

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Abstract

Stunting is a health problem that is closely related to the nutritional status of children under five that occurs in developing countries, especially in poor countries and it is generally characterized by a short body condition and susceptible to disease and below normal intelligence. Timor Tengah Selatan Regency occupies the highest position in the prevalence of stunting in East Nusa Tenggara Province with a figure of 44.1% in 2020. Tetaf Health Center is one of the Puskesmas in Kuatnana District with the largest prevalence of stunting in 2020. The purpose of this study is to find out and analyze the level of poverty and nutritional status of children under five in the working area of the Tetaf Health Center. The data used in this study is primary data through surveys, interviews and questionnaires with the respondents being households with children aged 0-59 months. The sampling technique used was random sampling with 100 respondents. The data analysis used was univariate using distribution and multivariate analysis using logistic regression. From the results of the study, it was found that there was a significant influence between mother's education, mother's age, mother's knowledge of nutrition and low birth weight had an effect on the nutritional status of children, while there was no influence between family income, number of members in the family and gender on children nutritional status (stunting or normal). The recommendations is for families or mothers of toddlers to visit the nearest Integrated Health Post or health center more often so that they always control the physical condition of toddlers such as weight and height so that they can be monitored properly since pregnancy and after childbirth so as to reduce the risk occurrence of stunting.

Keywords: Stunting, Children, Tetaf Health Center

Introduction

Stunting is health problem which is related to toddler's nutrition status that occur in developing country especially in poor countries and commonly is marked by short body and susceptible to disease and abnormal intelligence. Toddler which has nutrition problem especially stunting have risk such as decreased intellectual ability, productivity and possibility to have degenerative disease in the future. In 2017, stunting children in the world is 150,8 million children and from the whole number, half of them are from Asia with 83,5 million toddler and the other 39% are from Africa (Health Ministry of Indonesia Republic, 2018).

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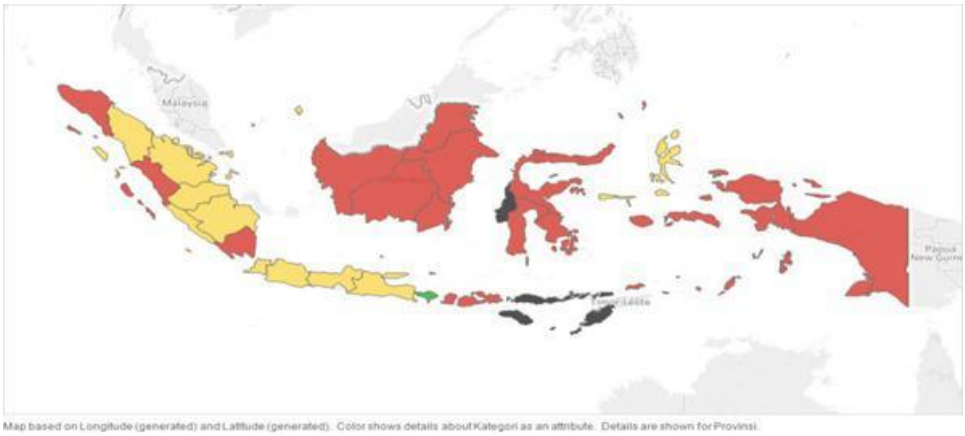
The issue about nutrition especially stunting in Indonesia has already become government priority in the last 10 years such as Presidential Decree number 42 year 2013 about National Movement to Accelerate Nutrition Improvement, and also there is Presidential Decree number 83 year 2017 about Strategic Food and Nutrition Policy and the last is Presidential Decree number 72 year 2021 about acceleration of stunting. The issue about stunting in Indonesia is a serious thread and needs fast and right handling because according to Survey of toddler's Nutrition Status in 2019 one of four children in Indonesia have nutrition problem namely stunting.

Very short and short toddler Prevalence at 0-59 month In Indonesia year 2018 are 9,8% and 19,8% and this condition increasing from last year were 8,5% for Very Short toddler Prevalence and Short toddler were 19%. Province with the highest prevalence of very short and short toddler at 0-59 months in 2018 is East Nusa Tenggara, meanwhile province with the lowest prevalence was Bali and it can be seen from Picture 1 that aside from East Nusa Tenggara there was West Sulawesi that became black zone i.e with the highest prevalence in Indonesia for stunting.

Picture 1. Prevalence Map of Short toddler at Indonesia in 2018



Category:
Green : Short toddler < 20%
Yellow : Short toddler 20-30%
Red : Short toddler 30-40%
Black : Short toddler ≥ 40%
Source : Nutritional Status Monitoring, 2018

Stunting problem is not only ordinary problem but also multi- sector problem which needs handling comprehensively from all elements starts from government until society especially East Nusa tenggara Timur's society which is one of the poorest third province after Papua Province and West Papua based on Central Bureau Of Statistic/ *Badan Pusat Statistik (BPS*) in 2020. Its data also listed that South Central Timor Regency become one of the poorest regency that contribute much poor population was 130.626 people in 2018. This number is very high compared with the total poor population in other regency.

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Based on data and phenomena that are exposed below so the researcher feels interest to do the research about stunting determinant in Tetaf Public Health Center South Central Timor Regency with the title STUNTING: Poverty and Nutritional Status.

Literature Review

According to *World Health Organization* (WHO) stunting is one condition when toddler fail to grow and develop because of lack nutrition chronically so that the children become short in their age. This lack of nutrition since the baby is in the womb and in the beginning when the baby is born and already become an issue all over the world, especially in poor and developing country. Bad impact in nutrition problem for short term is disturbance of brain development which make an impact in intelligence and child's physical growth and can disturb body's metabolism. Meanwhile, for the long term is decreasing cognitive ability so that it can make decreasing of learning achievement then decreasing immune so that it become susceptible to illness and very risk through various diseases such as diabetes, heart attack, and also stroke which cause working quality become uncompetitive. (Health of Minister, 2016).

Previous Research

The research about determinant or factors which influence child's nutrition have been done by other researchers such as Mentari (2020) analyzed about stunting case in Bandar 1 Public Health Center in Batang Regency and found out that family income make positive influence through child's nutrition status at the age of 24-59 months. Then, there was Islamiati's research (2017) investigated about relationship between income per capita and the total of family member through stunting case in toddler 0-59 months in Patebon District Kendal Regency found the result that the total of family member influences through stunting case. In West Africa a research by Dalinpuo and Nassè (2020) have shown that poverty, orphanhood and severe economic situations make children to be vulnerable. Thus, Dalinpuo and Nassè (2020) suggest an implementation of a sustainable social protection of children.

Research Methodology

Data sources and locations

The data used in this study is primary data obtained directly in the field through surveys, observations and questionnaires using random sampling technique. The research location is the Tetaf Health Center, Kuatnana District, South Timir Tengah Selatan Regency. According to BPS data in 2019, the population in Tetaf Village is 4068, with a male ratio is 1981 while the number of women is 2068. Geographically, Tetaf Village has the following regional boundaries:

a) East: Nobi-nobi Village, Central Amanuban District
b) West : Nulle Village, West Amanuban District
c) North: O'of Village, Oenino District
d) South : Laka'at Village, Kuatnana District

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Tetaf Village also has five posyandu whose duties are to support maternal and child health checks, namely:

a) Nepo Integrated Health Post
b) Fauana Integrated Health Post
c) Oe'te Integrated Health Post
d) Heften Integrated Health Post
e) Oetunu Integrated Health Post

Method

This research uses quantitative analysis method with variable dependent is child's nutrition status in this case children stunting, meanwhile independent variable is family income, number of family, children's gender, mother's education, mother's age, mother's knowledge about nutrition and low birth weight. Technique of data analysis that is used in this research is uni-variate analysis and multi-variate with logistic regression which all independent variable that will be analyzed toward dependent variable is children's nutrition status (stunting). The analysis equipment which is used in STATA 16 software and form of logistic regression equation as follows :

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 \ldots\ldots \mu i$$

Explanation:

Y = Children's Nutrition Status (Stunting)

β_0 = Constant / intercept

β_1 β_2 β_3 β_4 β_5 β_6 β_7 = Parameter

X1,X2,X3,X4,X5,X6,X7 = Independent Variable

μi = Error term

The following are exposed the characteristic from dependent variable and independent variable also the hypothesis as follows:

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Table 1 Operational Definition and Hypothesis

Variable Definition	Type of Data	Notation	Measurement Unit	Hypothesis
Dependent Variable				
Children's Nutrition Status (Stunting)	Ordinal	(Y=0) (Y=1)	0 = Normal Children 1 = Stunting Children	
Independent Variable				
Family Income	Dichotomy	X_1	0 ≤ 1.000.000 1 ≥ 1.000.000	-
Family Member	Dichotomy	X_4	0 ≤ 5 people 1 > 5 people	+
Children's Gender	Dichotomy	X_2	0 = Female 1 = Male	+
Mother's Education	Dichotomy	X_4	0 = Elementary, Junior High School, Second Extraordinary School 1 ≥ Senior High School, Vocational High School, Diploma	+
Mother's Age	Dichotomy	X_5	0 = 20-35 years old 1 > 35 years old	+
Mother Knowledge about Nutrition	Dichotomy	X_6	0 = High Knowledge 1 = Low Knowledge	+
Low Birth Weight	Dichotomy	X_3	0 : 2,5Kg – 4,5Kg. 1 : < 2,5Kg	+

Source: Processed By Author

Research Result

Univariate Analysis

Univariate Analysis explains about frequency distribution of research variable and descriptive description in general about data used in research variable. Sample in this research is nutrition status uses height indicator based on age (Height /Age) and children's nutrition status based on the measurement of Height/Age is said to be normal if the z- score result of formula calculation is obtained the result of z-score = -2 Deviation Standard/*Standar Deviasi (SD)* until +3 Deviation Standard/*Standar Deviasi (SD)* and it is said to be stunting if the z- score result of formula calculation is obtained the result of z-score = <-2 SD until <-3 SD

Variables in this research involve family income, number of family, children's gender, mother education, mother's age, mother knowledge about nutrition and low birth weight. The distribution of independent variable based on children's nutrition status (stunting) are shown in table 4.1

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Table 4.1 The distribution of independent variable based on children's nutrition status

Variable	Total Respondent	
	Frequency	Percentage
Children's Nutrition Status (Stunting)		
Normal	40	40
Stunting	60	60
Family Income		
More than Rp. 1.000.000	4	4
Less than Rp. 1.000.000	96	96
Number of Family Member		
Less than same equal to 5 people	33	33
More than equal to 5 people	67	67
Children Gender		
Female	48	48
Male	52	52
Mother's Education		
Less than equal to Junior High School	81	81
More than equal to Senior High School	19	19
Mother's Age		
20 – 35 years old	72	72
More than 35 years	28	28
Mother Knowledge about Nutrition		
High Knowledge	91	91
Low Knowledge	9	9
Low Birth Weight		
No	80	80
Yes	20	20

Source: Data is processed by STATA

Table 4.1 showed that the amount of children at age of 0-59 who experienced stunting in Tetaf Village are 60 children (60%) from total respondent are 100 children. The much family income is less than 1.000.000 million per month is 96 people (96%) meanwhile the much of family member in one house is more than 5 people is 67 respondent (67%). The much children's gender

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is male, 52 people (52%) and the much mother's education is less than or equal to Junior High School are 81 respondent (81%) meanwhile the much mother's age is more than 35 years old. The group of mother's knowledge about nutrition is much dominated by mother with high education is 91 respondent (91%) meanwhile the much low birth weight is abnormal birth, 80 people (80%).

Multivariate Analysis

Multivariate is analysis to explain the influence between family income variable, number of family, children's gender, mother's education, mother's age, mother's knowledge about nutrition and low birth weight toward the variable of children's nutrition status in Tetaf Village Kuatnana District South Central East Timor, East Nusa Tenggara

Model Goodness Test

This test is done to know how good the empirical model is able to explain children's nutrition status (stunting) by a list of independent variable. The testing result shows that Pseudo^2 value is 0,1139 (11,39%), means a series of independent variable are able to explain children's nutrition status is 11,39% meanwhile, the rest of them are 89,61% explained by variable outside the model. Its result can be seen in table 4.2

Table 4.2 Simultaneous Test Result

Model's Summary	
Observation	100
Log Likelihood	-59,6386
Likelihood Ratio Chi^2	15,33
Probability > Chi^2	0,0321
Pseudo R^2	0,1139

Source: Data is processed by STATA

Simultaneous Test Result

This test is to examine whether there is influence together/ simultaneous between a bunch of independent variable through dependent variable is children's nutrition status. The testing result simultaneously which is shown in table 4.3 is known as much as 100 household observation whose children are 0-59 months in Tetaf Village, calculated value in LR Chi^2 is 15,33 with opportunity value is 0,0321 less than α 5% (0,05). The conclusion is a bunch of independent variable influence significantly to dependent variable of children's nutrition status so that it is decided that H_0 is rejected. The result of simultaneous test can be seen in table 4.2

Partial Test Result

This test is done so that we are able to estimate the influence from each independent variable to dependent variable are children's nutrition status and statistic's test which is used wald test (z).

The following are the result of partial test result toward children's nutrition status which show that the variable of mother's education, mother's age, mother's knowledge about nutrition and

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birth weight make an influence to children's nutrition status which is shown in wald (z) score test which in a row are -2,08; -1,69; -2,10; 2,17 with opportunity value P> |z| in a row are 0,038; 0,092; 0,036 ; 0, 030 smaller than alfa. Meanwhile, insignificant variable is family income, number of family member and children's gender. The testing result of this partial can be shown completely in table 4.3 as follows:

Table 4.3 Partial Test Result toward Children's Nutrition Status

Name Of Variable	Notation	Regression Coefficient	*Error Standard*	*Wald (z)*	Significance	Tendency Ratio
Family Income	X_1	0,878	0,462	−0,25	0,805	0,3130
Number of Family Member	X_2	5,678	8,339	1,18	0,237	0,3191
Children's Gender	X_3	0,721	0,419	-0,56	0,574	0,2310
Mother's Education	X_4	0,053	0,075	−2,08	0,038	0,0034
Mother's Age	X_5	0,507	0,204	-1,69	0,092	0,2307
Mother Knowledge about Nutrition	X_6	0,324	0,174	−2,10	0,036	1,1522
Low Birth Weight	X_7	4,396	3,003	2,17	0,030	1,1522
Constant		3,117	1,700	2,08	0,027	1,0696

Source: Data is processed by STATA

Discussion

Based on the analysis result in partial test so there is variable which influence to children's nutrition status (stunting) and there is no influence at all. Therefore, it will be discussed completely as follows:

Family income

The research result shows there is no significant influence between variable of family income to variable of children's nutrition status (stunting). This research result is agreed with Ilahi's research (2016) which shows that there is no significant relation between family income and stunting case in Ujung Piring Village Bangkalan Regency.

Number of family member

The research result shows that there is no significant influence between number of family member's variable to variable of children's nutrition status (stunting). This research result is not in line with Kalsum's research (2005) shows that stunting case in children with number of family member ≥ 5 people much different from children with number of family member ≤ 4 people in Bojong Asih District Tasikmalaya Regency.

Children's Gender

The research result shows that there is no significant result between variable of children's gender to variable of children's nutrition status (stunting). The research result is agreed with Damayanti

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(2016) shows that there is no relation between toddler's gender to stunting toddler and non stunting toddler.

Mother's Education

The research result shows that there is significant influence between variable of mother's education and variable of children's nutrition status (stunting). Mother with equal education or less than Junior High School has possibility that the children experience stunting nutrition status 0,003 times higher than mother that has equal education or more than Senior High School. This research result is agreed with Priyanti (2018) which states that mother's education is the most influence factor to stunting case.

Mother's Age

The research result shows that there is significant result between variable of mother's age and variable of children's nutrition status (stunting). Mother whose age is more than 35 years old has possibility the children experience stunting nutrition status as much as 0,230 times from mother whose age are 20 until 35 years old. This research result is agreed with Candra's research (2011) states that mother whose age is too old usually her stamina already decreased and spirit to take care her pregnancy is less.

Mother's knowledge about nutrition

The research result shows that there is significant result between variable of mother's knowledge about nutrition and variable of children's nutrition status (stunting).Mother whose knowledge is high about nutrition will have possibility that the children experienced stunting nutrition status as much as 1,152 times from mother whose nutrition knowledge is low. This result is agreed with Nasikhah and Margawati's research (2012) in East Semarang which states that mother knowledge is factor of risk case in toddler stunting.

Low Birth Weight

The research result shows that there is significant result between variable of low birth weight and variable of children's nutrition status (stunting). Toddler whose weight is low will have possibility as much as 1,152 times experienced stunting nutrition status than normal baby. This research is suitable with the research result of Anugraheini et.al (2012) that birth weight as factor of risk case in short body status.

Conclusion

Based on the results of regression analysis of several independent variables on the dependent variable, namely the nutritional status of children, it can be concluded that the variables that do not affect the nutritional status of children in Tetaf Village are family income, number of family members and gender of children under five, while mother's education, mother's age, Mother's knowledge about nutrition and low birth weight are variables that affect the nutritional status of children in Tetaf Village.

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Suggestions

The following are some suggestions that can be given by researchers, first is for the Health Office, Tetaf Health Center and other relevant agencies to increase activities regarding nutritional assessments on a regular basis, massively and provide nutrition guidance and consultation to mothers of toddlers because children under five in particular really need nutritional intake for better growth and development. Then the second is for families or mothers of toddlers it is recommended that mothers of toddlers visit the nearest Integrated Health Post or health center more often so that they always control the physical condition of toddlers such as weight and height so that they can be monitored properly since pregnancy and after childbirth so as to reduce the risk occurrence of stunting. The third is for further researchers if they can examine more deeply about other variables that can affect the nutritional status of children under five such as stunting.

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