

# Analysis of Factors That Influence Stunting On Toddlers

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**Abstract**—Stunting is one of the health problems that is closely related to the delayed growth and development of children. Children can be classified as stunting if their height is less than -2SD. Along in the 2018 stunting had been decreased from 37,2% to 30,8%. Those data were still higher than WHO restricted prevalence in one district which is only 20%. Stunting does not only affect children's physical but also mental development, means that the children can't achieve their full height and cognitive potentials as an adult as well. The purpose of this study was to determine the factors associated with stunting on the children under five s in the working area of Puskesmas Ceper Klaten. This study used non experimental analytic with cross sectional approach. Sampling technique in this study was done by stratified random sampling. There are 449 children under five in Ngawonggo village and 82 of them are as respondents in this study. The data were collected by questionnaire and stature meter. The data were analyzed by employing the chi square and double logistic (pvalue<0,05). The bivariate analysis shows that there are correlation between low birth weight (13,4%) pvalue=0,004, Family income (18,3%)pvalue=0,003, and nutrition intake (20,7%) pvalue=0,027 and stunting that happened on the children under five. Meanwhile, the multivariate analysis shows that stunting is mostly influenced by family income during gestation, (pvalue=0,004) (OR=0,188). Parents or Family income significantly Influences stunting on the children under five.

**Keyword**— toddler, stunting

## I. INTRODUCTION

Stunting is a condition of failure to thrive in children under five due to chronic malnutrition so that the children are too short for their age [1]. Soedjiningsih said that, in general, the factors causing stunting were grouped into 3 levels, namely the community, household (family), and individual level [2]. At the community level, the economic system, education, health, sanitation, and clean water are the causes of stunting. At the household (family) level, low income, the number and structure of family members, and

the quality and quantity of food, child care, health services, and inadequate clean water sanitation are the causes of stunting. Factors that occur at the household level will affect the individual's situation, namely toddlers aged 0-5 years in unbalanced food intake, low birth weight (LBW), and poor health status. Picauly and Toy said stunting had a very significant impact on children's learning achievement[3]. Widanti's research shows that Stunting results in lower growth abilities in the future, both physical and cognitive, and will affect productivity in adulthood [4]. Ministry of Health, Republic of Indonesia explained that the results of the Monitoring of Nutrition Status showed that there were 27.6% of children under five who were stunted [5]. According to the Basic Health Research in 2013 and 2018 based on the Monitoring of Nutrition Status (PSG) in 2017, the prevalence of stunting under five in Indonesia from 34 provinces, there are only 2 provinces that are below the WHO limit, those are Yogyakarta (19.8%) and Bali (19, 1%). Other provinces have high dominant cases and very high around 30% to 40%. Nationally, the prevalence of stunting decreased from 37.2% to 30.8% [1]. The data is still far from WHO limits, Setyawati (2018) explained that WHO limits the prevalence of stunting by 20%, while Indonesia has only reached 29.6% [6]. The results of the 2018 Basic Health Research showed that, the prevalence of stunting in Central Java also decreased, seen in 2013 by 35% and in 2018 by 31%. The Ministry of Health (2018) also said that Klaten Regency ranks 6th in Central Java [5]. From the results of a preliminary study on March 9, 2019 data obtained in Klaten District were 34 Subdistricts with 68,508 toddlers, from 34 Subdistricts the Ceper Health Center was ranked second with the highest stunting toddlers in Klaten District. The number of children under five in the working area of Ceper Puskesmas is 1,564 and there are 264 stunting toddlers. In the work area of Ceper Puskesmas consists of 9 villages and the highest stunting rate is located in the village of Ngawonggo. There are 449 toddlers in the village of Ngawonggo with 70 stunted toddlers.

**II. METHOD**

This research is a qualitative research with non-experimental analytic methods, using a cross sectional approach. This research was conducted only once and there was no follow up. The population used in this study were all parents / mothers with toddlers in the village of Ngawonggo, District of Ceper, amounting to 449. The sample used was 82 mothers of toddlers. The variables studied in this study were exclusive breastfeeding, low birth weight, immunization history, parental education, parental income, mother's occupation, and nutritional intake of toddlers. The instrument used in this study was a questionnaire as well as height & weight measurements. This study used Stratified Random Sampling to determine the sample with the aim that stratification or strata contained in the population so that each stratum was represented in the study. The chi square test was used as data analysis, multivariate analysis with logistic regression. Data analysis was used to determine the relationship of each variable studied. The degree of trust used was  $\alpha = 0.05$

**III. RESULT AND DISCUSSION**

Based on the results of the study, age characteristics of the sample can be seen in table.

TABLE 1 THE AVERAGE AGE OF RESPONDENTS IN THE VILLAGE OF NGAWONGGO CEPER, KLATEN REGENCY.

Variable	Mean	Min	Max	SD
Mothers age	29,02	19	37	4,228
Toddlers age	32,78	12	60	14,514

In this study, the average age of mothers who were sampled in the study was 29 years and the average age of toddlers who were sampled in this study was 33 months. The risk is higher because pregnancies under the age of 20 have a tendency to not meet adequate nutritional needs for fetal growth that will have an impact on low birth weight (LBW). Women under 20 years are still in the stage of growth, so the condition of pregnancy makes them share with the fetus to meet the nutritional needs. While mothers who are more than 35 years begin to show the process of aging, such as hypertension and diabetes mellitus that can often inhibit the entry of fetal food through the placenta [7].

TABLE 2. CHARACTERISTICS OF FACTORS INFLUENCING THE INCIDENCE TODDLERS STUNTING IN THE WORKING AREA OF THE CEPER HEALTH CENTER, KLATEN IN 2019 (N = 82).

Variable	Frequency	%
<b>Toddlers gender</b>		
Boy	44	53,7
Girl	38	46,3
<b>Exclusive breastfeeding</b>		
No	22	26,8
Yes	60	73,2
<b>Low birth weight</b>		
Yes	14	17,1
No	68	82,9
<b>Immunization</b>		
Incomplete	9	11,0
Complete	73	89,0
<b>Parents education</b>		
Low	8	9,8
High	74	90,2

<b>Parent income</b>		
Low	21	25,6
High	61	74,4
<b>Mothers occupation</b>		
Employed	43	52,4
Unemployed	39	47,6
<b>Toddler nutrition</b>		
Less	28	34,1
Good	54	56,9
<b>Stunting</b>		
Stunting	36	43,9
Normal	46	56,1
<b>Total</b>	82	100

Based on the history of exclusive breastfeeding, LBW status of toddlers, immunization history, toddlers' nutritional status, as well as family socioeconomic characteristics including parental education, parental income and maternal employment. The number of toddlers who were exclusively breastfed was 60 respondents (73.2%). Toddlers with low birth weight were 14 respondents (17.1%). Toddlers who received complete immunization were 73 respondents (89%). Toddlers with highly educated parents were 74 respondents (90.2%). Toddlers with high-income parents were 61 respondents (74.4). Toddlers with working mothers were 43 respondents (52.4%) Toddlers with good nutrition were 54 respondents (56.9%). Stunting toddlers found in this study were 36 respondents (43.9%) while toddlers with normal height or not stunting were 46 respondents (56.1%).

Table 3 shows that parents who had stunting toddlers without exclusive breastfeeding were 13 respondents (15.9%) while parents who had normal toddlers without exclusive breastfeeding were 9 respondents (11.0%). The results of the bivariate analysis p-value of 0.093 means  $p > 0.05$  which means that there is no effect of exclusive breastfeeding on the incidence of stunting. This result is supported by the research of Sedu, Malonda & Kapantaw (2014) which shows that there is no significant relationship between energy consumption and nutrients from breast milk and the incidence of stunting [8].

TABLE 3 BIVARIATE ANALYSIS OF FACTORS AFFECTING STUNTING IN TODDLERS IN NGAWONGGO VILLAGE, CEPER, KLATEN REGENCY IN 2019

Variable	Stunting F %	Normal F %	Total F %	p value
<b>Exclusive breastfeeding</b>				0,093
No	13 15,9	9 11,0	22 26,8	
Yes	23 11,0	37 45,1	60 73,2	
<b>LBW</b>				0,004
Yes	11 13,4	3 3,7	14 17,1	
No	25 30,5	43 52,4	68 82,9	
<b>Immunization</b>				0,145
Incomplete	6 7,3	3 3,7	9 11,0	
Complete	30 36,6	43 52,4	73 89,0	
<b>Parents education</b>				0,265
Low	5 6,1	3 3,7	8 9,8	
High	31 37,8	43 52,4	74 90,2	

<b>Parent income</b>				0,003
Low	15 18,3	6 7,3	21 25,6	
High	21 25,6	40 48,8	61 74,4	
<b>Mothers occupation</b>				0,344
Employed	21 25,6	22 26,8	43 52,4	
Unemployed	15 18,3	24 29,3	39 47,6	
<b>Toddler nutrition</b>				0,027
Less	17 20,7	11 13,4	28 34,1	
Good	19 23,2	35 42,7	58 65,9	
<b>Total</b>	36 46,9	46 56,1	82 100	

In contrast to research by Fitri (2018) which stated that the majority of children under five did not receive exclusive breastfeeding during the first 6 months, as many as 55 people (73.3%) so that there is a relationship between exclusive breastfeeding and the incidence of stunting obtained p value of 0.021, which means  $p < 0.05$  [9]. Breastfeeding is a nutritional intake that is in accordance with the needs that will help the growth of toddlers [10]. Toddlers who do not get enough breastfeeding will have poor nutrition. Breastfeeding has benefits to reduce the risk of infection, especially infections of the gastrointestinal tract and respiratory infections and improve cognitive development [11].

The results of previous study in Kerinci showed that history of exclusive breastfeeding, economic status, restrictions and emphasis on good eating habits in children are factors associated with the incidence of stunting in infants [12]. Stunting toddlers with low birth weight were 11 respondents (13.4%) while normal toddlers with low birth weight were 3 respondents (3.7%). The results of bivariate analysis p value of 0.004 means  $p < 0.05$ . These results mean that there is an influence of low birth weight history on the incidence of stunting in infants.

The results of this study are comparable with research by Fitri (2018) which showed that 22 of 75 toddlers (29.35%) were born with LBW, so there is a significant relationship between low birth weight (LBW) with stunting where p value 0,000 [9]. Toddlers with a history of low birth weight will have difficulty in pursuing growth and development that is characterized by weight gain and height that is less than optimal at a certain age.

Supriyanto et al (2018) stated that birth weight can be an indicator to look at the possibility of survival, growth, long-term health, and psychological development of children. Toddlers born under normal weight will have a greater risk of experiencing malnutrition and produce a generation that is susceptible to infectious diseases. Soedjningsih (2015) said that the effort to reduce the incidence of LBW infants is to encourage mothers to take regular prenatal care and fulfill nutrition during pregnancy [2].

Stunting toddlers with incomplete immunization history were 6 respondents (7.3%) while normal toddlers with incomplete immunization history were 3 respondents (3.7%). The results of the bivariate analysis p value of 0.145 means  $p > 0.05$ . These results mean that there is no effect of the incidence of stunting on the history of immunization in

infants. The results of this study were supported by Aridiyah, Rohmawati, & Ririanty (2015) which stated that the incidence of stunting in toddlers in rural and urban areas had no relationship [13]. This was obtained from the p-value in the both test as  $> 0.05$ , where 0.279 for rural areas and 0.086 in urban areas.

Stunting toddlers who had parents with low education were 5 respondents (6.1%) while normal toddlers who had parents with low education were 3 respondents (3.7%). The results of bivariate analysis p value of 0.265 means  $p > 0.05$ . These results mean that there is no influence between the level of parental education on the incidence of stunting in infants. These results were in accordance with research by Anindita (2012) which stated that there is no relationship between maternal education level and stunting in infants [14].

In contrast to research Rahayu and Khairiyati (2014) which stated that mothers with low levels of education have 5.1 times the risk of stunting [15]. Children of mothers who were not formally educated or mothers who did not have the right knowledge, for example, mother's knowledge about food that is right for a child in childhood and the right treatment for a child when sick. So that the nutritional needs of children are not fulfilled and cause disruption of children development. Research by Rahayu, Fahrini, Octaviana, & Fauzie (2015) stated that working mothers have fewer opportunities to care for children so that it will affect the nutritional status of children [16].

Stunting toddlers who had low income parents were 15 respondents (18.3%) while normal toddler who had low income parents were 6 respondents (7.3%). The results of the bivariate analysis p value of 0.003 means  $p < 0.05$ . These results mean that there is an influence between the level of parents income on the incidence of stunting in infants.

These results are comparable with research conducted by Sulastri (2012) who stated that children with stunting were more likely to be found in families with a low economy (46.2%) [17]. Families with high incomes can afford to eat foods that are preferred even if they are not as nutritious as preserved instant foods. So that nutrition in children is not sufficient to meet the development and growth of children. Inadequate nutritional needs in children in the long run will cause stunted child growth. In this study, some children who experienced growth problems came from low-income families.

Stunting toddlers with working mothers were 21 respondents (25.6%) while normal toddlers with working mothers were 22 respondents (26.8%). The results of bivariate analysis p value of 0.344 means  $p > 0.05$ . These results mean that there is no influence between working mothers on the incidence of stunting in infants. These results are in accordance with research by Ibrahim & Faramita (2014) which stated that there is no significant relationship between maternal employment status and the incidence of stunting in children [18]. The factor of working mothers does not yet seem to play a role as a major cause of nutritional problems in children, but occupation in this case is referred to as a factor affecting the provision of food, nutrients, and child care [19].

In contrast to research by Aridiyah et al. (2015) which stated that the most mothers occupation of stunting toddlers who were in the village area was not working, which was 71%, while in the city it was working with a percentage of

53.3% [13]. In Picauly & Toy's research (2013) also said that working mothers have a greater chance of their children experiencing stunting than mothers who do not work [3].

Stunting toddlers with malnutrition were 17 respondents (20.7%) while normal toddlers with malnutrition were 11 respondents (13.4%). The results of bivariate analysis p-value of 0.027 mean  $p > 0.05$ . These results mean that there is an influence between nutritional status on the incidence of stunting in infants. The results of this study were supported by Yati (2018) who explained that most respondents did not yet know about food processing for toddlers. This result shows the relationship between feeding patterns and stunting in children aged 36-59 months [20].

In order to achieve balanced nutrition, it is necessary to add complementary foods such as breastfeeding or MP-ASI, while breastfeeding is still given until the baby reach 2 years old. When children aged 2-5 years, nutritional needs will increase because they are still in a period of rapid growth and high activity [21]. A study in Kenya showed that children who get traditional dietary patterns are at higher risk of stunting than those with high protein diets and age groups that are as sensitive as stunting are between the ages of 12 and 35 months [22]. Research from Tanaka suggested interventions that can be carried out to prevent stunting by focusing on providing high-protein foods that are available according to their region to children aged 12-35 months [22].

The results of this study found that low birth weight has a risk of stunting with an odds ratio of 0.139 while income obtains a p value of 0.004 with an odds ratio (OR) of 0.188. Which mean that toddlers with low parental income are 0.188 times stunted compared to high parental income.

In general, the factors causing stunting are grouped into 3 levels, namely the level of society, households (families), and individuals. At the community level, the economic system, education, health, sanitation and clean water are the causes of stunting [2].

#### IV. CONCLUSION

From the results of the bivariate analysis of the variables Low Birth Weight, Parents' Income, and Toddler's Nutrition have an influence on the incidence of stunting in toddlers in Ngawonggo village, Klaten Regency. Low birth weight is a risk factor for children experiencing stunting with an odds ratio. Family income is known to be most influential on the incidence of stunting in toddlers with an OR of 0.8.

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