



## The Influencing Factor Analysis of Stunting Incidence in Children Aged 24-59 Months At Kedung Jati Village

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### Abstract

Stunting is a chronic nutritional problem caused by lack of nutritional intake for a long time, because of giving food that is inappropriate with needs. In 2017, around 150,8 million or 22,2% toddlers in the world were stunting. Based on data from WHO, states that Indonesia is included in the top three countries with the highest stunting prevalence in the southeast Asia, with an average from 2005-2017 reaching 36,4%. The purpose of this study is to analyze the effect of nutritional intake, history of infectious diseases, environmental sanitation and immunization status of stunting incidence. This study is quantitative with a cross sectional approach, and it is using simple random sampling. The analysis calculation of this study is using path analysis. The result of this study on stunting variable were nutritional intake (p value = 0,000), history of infectious diseases (p value = 0,062) then hypothesis that immunization status direct effect the incidence of stunting is Ho, means rejected.

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## INTRODUCTION

In the period of toddler age, growing and developing process are very rapidly happen. In this age, toddler need nutrition intake with a good quality. If the nutrition is not fulfilled better, the physical and the intellectual growth on the toddler will commonly interference. The linier growth that is not inappropriate age will reflects the problem of malnutrition. The toddler stunting problem describe that the existence of chronic nutrition problem that influence by mother or prospective mom, fetal age, or infancy age as well as other problem that indirectly affected on the health (kemenkes,2016)

*Stunting* will affected of increasing mortality, morbidity, and in the children development will be affected of development cognitive motor and language, while the long term influencing in healthy sector is the short growth, lack of reproduction and increased risk of obesity and degenerative disease in the future. Stunting in infant must be getting special attention, because it can be caused stunted physical growth, mental growth, health status of children who will be hampered as well. Children stunting is also associated with an increase in children's vulnerability to diseases both infection and obesity (Trihono et al., 2016).

According to WHO database, in 2017, there are 150,8 million toddler in the world got stunting. In 2017, more than half stunting toddler in the world is coming from Asia it is above 55%. While the average of stunting prevalence in southeast Asia from 2005-2017 was the highest that Timor Leste is almost 50,2%, then India with average prevalence of 38,4% and the third was Indonesia with the average prevalence above 36,4 % (WHO,2017)

According to basic health research stunting prevalence in Indonesia on 2017 is 29%. The prevalence of stunting case decline in 2016 that is 27,5% and in the 2017, it was increasing back that is 29,6%. Based on Riskesdas research which is conducted in 2017, 2010, and 2013 showed that presentation of toddler stunting was not showing significant decline and even toddler to be static in 2017 it was 29,9 %. In fact, almost in every province shows as surge stunting. In central java,

stunting were also in the range of 20% to <30%. (KEMENKES, 2018)

There are many factors that influence that occurrence of stunting, which are a direct or indirect factors. Direct factors include nutritional intake, history of infectious disease. Adequate nutritional intake is commonly needed for growth and development of children. This is a critical part where the children growing and developing. Children who got malnutrition will result permanent disability that is should be prevented by adequate nutritional intake. The second factor is history of infectious disease. Infection and fulfillment of nutritional intake are two interrelated things. Someone with infection will be worse off if there is lack of nutritional intake. Toddler with malnutrition will be more susceptible get infection.

Research conducted by Eka (2017) suggest that nutritional intake is one of factor that associated by nutritional status.

In addition to direct factors there are indirect factors that effected of stunting that is environmental sanitation and immunization status. Lack of sanitation and environmental hygiene can trigger digestive disorders that make the energy growth shifted to fight infection. In addition, the risk of stunting will be greater if there is no access to sanitation such as toilet (Dearden et. Al, 2017)

Immunization is the process that makes immune to disease. Immunization is one of the treatments performed to reduce mortality and morbidity in children. Immunization can also maintain children's nutritional status and prevent malnutrition (misra at al, 2015)

In this study, multivariate analysis was carried out to see the direct and indirect effect on independent variables and dependent variables using the past analysis test.

## METHOD

The design of this study is observational analytic research, is a type of non-experimental quantitative, it is using case control design. It is using simple random technique sampling. The population of this study was the toddlers in kedungjati health center. The determination of the

sample size of this study is to use the Lemeshow formula with 120 samples.

The data of this study were obtained by measuring height of children, interviewing and filling out questionnaires. The results of measurements of height were processed to obtain the nutritional status of children, namely TB / U. While another data is about environmental sanitation and infectious disease history were obtained by also interviewing, filling out questionnaires and another data from the Healthy Center.

The results of the study will be analyzed by univariate, bivariate and multivariate by using path analysis.

## RESULT AND DISCUSSION

This research was conducted at the Health Center area of Kedungjati Grobogan Village in September-December 2018 with the aim of analyzing factors that influence the incidence of stunting in children aged 24-59 months.

**Table 1.** Descriptive Analysis

Sex	Male	70	58.3
	Female	50	41.7

Based on table 1, it is known that from 120 respondents, many of the sex respondents were male respondents, above 70 respondents (58.3%), while female respondents were 50 respondents (41.7%).

**Table 2.** Distribution of respondents Based on nutritional intake, history of infectious diseases, environmental sanitation and immunization status on the incidence of stunting.

Category	Frequency (f)	Presentation
<b>Energy Intake</b>		
Medium Deficit	57	47,5
Mild Deficit	25	20,8
Normal	38	31,7
<b>Protein Intake</b>		
Medium Deficit	47	39,2
Mild Deficit	32	26,7
Normal	41	34,2

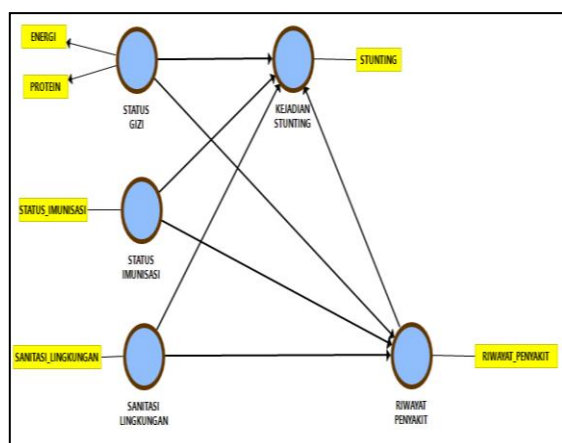
<b>Sanitation</b>		
Good	50	41,7
Medium	24	20
Less	46	38,3
<b>Immunization stat.</b>		
Incomplete		
Complete	46	38,3
	74	61,7
<b>Infection</b>		
Often	45	37,5
Rarely	38	31,7
Never	37	30,8
<b>Stunting</b>		
No	60	50,0
Yes	60	50,0

Based on the table above it is known that out of 120 respondents as many as 57 toddlers have moderate energy deficit intake and 47 toddlers experience moderate deficits in protein intake. Thus the average toddler aged 24-59 months experiences normal substandard nutritional intake.

Based on the table above it is known that 50 children live in a good sanitary environment. Thus the average toddler lives in good sanitation and environment. The results of the univariate analysis in Table 4.2 shows that toddlers who having complete immunization were 74 toddlers. It means that most of toddlers have carried out complete immunization.

Toddlers with a history of infectious diseases more than twice a month that is about 45 toddlers (37.5%) while as many as 38 are having infectious in 2-6 months (30.8%) and the remaining of 37 toddlers have never experienced an infectious disease.

Based on the framework of the research model built in this study, the independent variables included environmental sanitation and infectious disease history, nutritional intake and immunization status. An infectious disease history is an intervening variable. Based on the framework of the research model, the specifications of the pls model estimated in this study are as follows:



**Picture 1.** An infectious disease history is an intervening variable. Based on the framework of the research model, the specifications of the pls model estimated in this study

**Tabel 3.** The significant influence direct test

	T Statistic	P Value
Infectious diseases => Stunting	5.627	0.000
Environmental sanitation => Stunting	5.986	0.000
sanitation => infectious diseases	3.456	0.001
Nutritional intake => Stunting	8.923	0.000
Nutritional Intake => infectious disease => Infection	4.597	0.000
Immunization => Stunting	1.871	0.062
Immunization => Infectious Disease	0.852	0.395

The point of the p value of the effect of nutritional intake on the incidence of stunting is 0,000 with a statistical T of 8,923 and the path coefficient is negative at -0,471. Because of the p value is obtained above <0.05, T statistic> 1.96 and the path coefficient is negative, it is

concluded that nutritional status has a negative and significant effect on the stunting incidence. This shows that giving well the energy and protein intake of toddlers, it will decrease stunting possibilities of them.

The research conducted by Eka (2017) suggests that there is a relationship between nutritional intake and nutritional status in toddlers. This is in line with the research conducted by Andilis in East Kalimantan that there is a significant relationship between nutritional intake and nutritional status in infants (Andilis, 2016).

Research conducted by Setiawan, Machmud & Masrul (2018) suggested that there was a significant relationship between the level of energy intake and the incidence of stunting at Andalas, East Padang Health Center (Setiawan, Machmud & Masrul, 018).

The mark of p value of the effect of immunization status of the stunting incidence is 0.062 with a statistical T of 1.871 and the path coefficient is negative at -0.049. Because the p value obtained is > 0.05 and the statistical T is <1.96, it is concluded that immunization status has no significant effect on the incidence of stunting. This shows that the complete absence of toddler's immunization status in aged 24-59 months does not affect the occurrence of stunting of them.

Research that conducted by Khalid et al (2015) also suggested the same thing, that there was a significant relationship between immunization and the nutritional problems suffered by pre-school age children. In their research, they also emphasized that poverty people should be need education to carry out complete immunizations. The different results are shown in the research from Setiawan, Machmud & Masrul in Padang Timur, that there is no significant relationship between the completeness status of basic immunization and the incidence of stunting (Setiawan, Machmud & Masrul, 2018).

The mark of the p value of the effect of environmental sanitation on the incidence of stunting is 0.001 with a statistical T of 5.986 and the path coefficient is negative at -0.331. Because the value of p value obtained is <0.05, T statistic> 1.96 and the path coefficient is negative, it can be

concluded that environmental sanitation has a negative and significant effect on the incidence of stunting.

The results of the research conducted by Torlesse found that there was a significant relationship between sanitation facilities and household water management with stunting (P value = 0.007) (Torlesse, Cronin, Sebayang, & Nandy, 2016). Conversely, other studies suggest that there is no relationship between access to clean water and the incidence of stunting, but the personal hygiene has a significant relationship with the presence of stunting (Rah et al., 2015).

The incompatibility of household access to get water and toilet influences the risk of stunting, especially in the first year of birth. In a study conducted by Dearden et al. (2017), it was explained that the risk of stunting would be greater if they did not getting well toilet facilities instead of not getting the access of clean water.

While the p value on the effect of environmental sanitation on infectious disease history shows 0.001 means that the value obtained is > 0.005 so it can be concluded that more better the environmental sanitation, means more less possibility the baby has an infectious disease.

Research conducted by Mahmudah (2017) shows a significant relationship between home environmental sanitation and the incidence of worms' infection in elementary school children. The impact of infectious diseases on children is the same with malnutrition symptoms. In general, the presence of infectious diseases can lead to reduced nutritional intake because of decreased appetite.

The p value for the influence of infectious disease history on the incidence of stunting is 0,000 with a statistical T of 5,627 and the path coefficient is positive at -0,227. Because the p value obtained is <0.05, T statistics > 1.96 and the path coefficient is positive, it is concluded that the history of infectious diseases has a positive and significant effect on the stunting incidence. This shows that the higher the history of infectious diseases of the toddler, so the higher the possibilities of the toddler experiencing stunting.

The research conducted by Permatasari (2016) explained that there was a significant

difference in the history of infectious diseases between stunting and non-stunting toddlers with p value 0.01. Malnourished children will have a low immune system against infectious diseases such as diarrhea and acute respiratory infection (ARI) will be greater and can be affected children's cognitive development and inhibit growth (Wellina, Kartasurya & Rafilludin, 2016).

**Tabel 4.** The indirect significant influence test

	T Statistic	P Value
SL=>RP=>Stunting	3.045	0.002
Nutritional intake=> RP=> Stunting	3.359	0.001
Immunization => RP => Stunting	0.832	0.406

Based on table 4, it is found that the p value of the indirect effect of nutritional status variables on the incidence of stunting mediated by the infectious disease history variable is 0.001 with a statistical T of 3.359. This is supported by the research from Chamilia & Nindya (2017) which states that energy intake which is less than 2.9 times greater for experiencing nutritional problems. Whereas protein intake which is less than 3.1 times greater for experiencing malnutrition problems compared to adequate intake.

While the p value indirect effect of immunization status on stunting events mediated by infectious disease history variable is 0.406 with T statistic of 0.832 and the p value indirect effect of environmental sanitation variables on the incidence of stunting mediated by infectious disease history variable is 0.002 with T statistics of 3.045. Because of the p value obtained is <0.05 and T statistic > 1.96, it can be concluded that environmental sanitation is having an indirect effect on the incidence of stunting in children by mediating of variable history of infectious diseases.

## CONCLUSION

The conclusions in this study can be taken as follows: the influence factors of the stunting incidence in children aged 24-59 months are nutritional intake, environmental sanitation and history of infectious diseases.

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