

Relationship Between Characteristics of Children, Status of Infectious Disease, and Employment Status of Mothers with Stunting Children at Karanglewas Health Center

1st Noor Yunida Triana

Health Faculty
University of Harapan Bangsa
Central Java, Indonesia nooryunida@uhb.ac.id

2nd Siti Haniyah

Health Faculty
University of Harapan Bangsa
Central Java, Indonesia
haniwiyana56@gmail.com

Abstract—Stunting is a nutritional problem that is influenced by various factors. Basic Health Research states that the prevalence of stunting in Indonesia has reached 30.8%. This study aimed to analyze the relationship between the characteristics of children under five years old, infectious disease status and employment status of mothers with the incidence of stunting under-five children at Karanglewas Health Center. The design of this study was a correlational study with a cross-sectional approach. The population in this study were all toddlers (658 children) at Karanglewas Health Center. A sample of 87 respondents was recruited by a cluster sampling technique. The instrument used was in the form of a questionnaire regarding the data of respondents and parents. It was found that most respondents experienced stunting (44 toddlers) (50.6%); respondents were mostly aged 0-36 months (56 under-fives) (64.4%); most respondents were females (53 respondents) (60.9%); and most respondents had normal birth weight (62 under-fives) (71.3%). The results showed that there was a significant relationship between age and stunting (pvalue 0.003); there was a relationship between low birth weight and the incidence of stunting (p-value 0.039); there was a relationship between infectious disease status and the incidence of stunting (p-value 0.001). Factors that influence the incidence of stunting are age, gender, low birth weight, and infectious disease status.

Keywords: *stunting, characteristics of under-five children, infectious diseases, employment status of mothers*

INTRODUCTION

Stunting is a condition of growth failure that occurs in toddlers due to chronic malnutrition, especially in the first 1000 days of life [1]. Stunting, one of the nutritional problems, still gets attention both nationally and internationally. Based on data from the World Health

Organization (WHO), 178 million under-five children have suffered from stunting [2].

Based on *Riset Kesehatan Dasar* (Riskesdas) in 2018 stated that the prevalence of stunting in Indonesia reached 30.8% [3]. The incident of stunting increased in 2010 (35.6%) and in 2007 (36.8%) [4]. The prevalence of stunting in Central Java has reached 28%, while the prevalence of stunting in Banyumas has reached 20% and Banyumas Regency is included in 100 national priority at the district level. [3]. Based on the pre-survey in April 2019 in Karanglewas District, there was a health problem, namely stunting. Stunting cases found in the sub-district were 127 of 658 toddlers.

Stunting has an impact on metabolic changes, depression on immune function, cognitive and academic achievement, and motor skill development. Stunting children can grow into adults who have a risk of glucose tolerance, obesity, coronary heart disease, osteoporosis, decreased performance, and productivity [5]. This can reduce the quality of children as the next generation.

Stunting problems are influenced by several factors. One of the factors directly affecting stunting is health status. Based on the previous research [6] it was found that there was a significant relationship between the mean duration of illness, birth weight, maternal education level and family income level with the incidence of stunting. Referring to the previous research, this study aimed to compare the characteristics of the children, status of infectious disease and employment status of mothers with stunting.

METHODOLOGY

This study was conducted using a quantitative descriptive method with a correlation study design, and a cross-sectional approach. Data collection was carried out at the same time [7].

This study had a total population of 658 respondents. The sampling technique used was a cluster sampling by selecting 10 of 30 *posyandu* (Integrated Healthcare Service Centers). This study had samples of 87 respondents determined by the Slovin's formula. The inclusion criteria were children with stunting and non-stunting and children living with their mother.

The data was taken by using a questionnaire regarding the data of respondents and parents. The status of stunting and non-stunting children was assessed by the secondary data. Univariate analysis was applied to find out stunting incidence rates, respondents' characteristics, infectious disease status from pediatric medical records and employment status of mothers. Bivariate analysis using ChiSquare was also applied in this study.

FINDINGS AND DISCUSSION

1. The Prevalence of Stunting under-five Children at Karanglewas Health Center

Table 1. The Prevalence of Stunting under-five Children (n: 87)

Prevalence of Stunting	Frequency	Percentage
a. Stunting	44	50.6
b. Normal	43	49.4

Table 1 shows the prevalence of stunting. Respondents experiencing stunting were 44 children (50.6%), and respondents with normal height were 43 children (49.4%).

The results showed that the percentage of stunting in infants at Karanglewas Health Center was 50.6%. This shows that the incidence of stunting under-five children at Karanglewas Health Center has become a public health problem because it has exceeded 20% of the limits set by the WHO showing that the percentage of stunting was higher. Based on *Riset Kesehatan Dasar* (Riskesdas) in 2018 the prevalence of stunting in Indonesia reached 30.8% [3]. This prevalence was also higher compared to

research conducted in Palestinian countries describing that the total prevalence of stunting in the country was 19.6% [8].

Stunting is a chronic nutritional problem in toddlers who have a lower height compared to other children's ages [9]. Of course, the incidence of stunting is influenced by many factors from both the mother and the toddler.

2. Characteristics of Respondents

Table 2. Characteristics of Respondents (n: 87)

	Characteristics	Frequency	Percentage
Age	0-36 month	56	64.4
	37-60 month	31	35.6
Sex	Female	53	60.9
	Male	34	39.1
Birth	LBW	25	28.7
Weight	Normal	62	71.3

Based on table 2, respondents aged 0-36 months were 56 toddlers (64.4%). Most of them were females (53 children) (60.9%), and respondents with normal birth weight were 62 children (71.3%).

This study showed that stunting under-five children at Karanglewas Health Center was mostly aged 0-36 months (64.4%). This is consistent with the research on the prevalence of stunting in Bangladesh showing that the prevalence of stunting was 41% in infants under 60 months [10].

Based on nutritional assessment (2015), the prevalence of short-term infants aged 0-60 months in Indonesia was 29%. This decreased in 2016 (27.5%). However, this prevalence increased by 29.6% in 2017. The prevalence of severely stunted (very short) and stunted (short) toddlers in Indonesia in 2017 ranged from 9.8% to 19.8% [9].

Furthermore, the gender of under-five children experiencing stunting was mostly females (60.9%). This shows that toddlers at Karanglewas Health Center were dominated by female toddlers.

The results of the study also stated that the majority of under-five children at Karanglewas Health Center had a history of normal birth weight (71.3%), and the rest had a history of LBW of 28.7%. This prevalence was greater compared to the prevalence of LBW in West Java (10.9%), as well as the prevalence of LBW in Indonesia (11.1%) [9].

3. Infectious Disease Status

Table 3. Infectious Disease Status (n: 87)

Infectious Diseases	Frequency	Percentage
a. Yes	38	43.7
b. No	49	56.3

Table 3 shows infectious disease status at Karanglewas Health Center. Most of the respondents did not have infectious diseases (49 respondents) (56.3%).

Based on the results of the study, there were 56.3% of under-five children who had no cough and cold infections, while 43.7% had cough and cold in the last few months. This is consistent with the previous research [11] explaining that there were 83.3% of stunting toddlers experiencing ARI (Acute Respiratory Infection) and 16.7% of under-five children not experiencing ARI.

Infection is one of the problems in the health sector that develops over time. Infection is an infectious disease that can be transmitted from one person to another or from animals to humans [12]. Infection can inhibit growth because the body needs more energy to fight bacteria in the body.

4. Employment Status of Mothers

Table 4. Employment Status of Mothers (n: 87)

Employment Status	Frequency	Percentage
a. Unemployed	77	88.5
b. Employed	10	11.5

Based on table 4, it can be seen that most mothers of under-five children were unemployed (77 respondents) (88.5%).

Based on the results of the study, it can be seen that the majority of the employment status of mothers with under-five children at Karanglewas Health Center was in the category of unemployed (88.5%). This is consistent with the research conducted at the North Pontianak Siantan Hulu Health Center explaining that the frequency distribution of unemployed mothers was 52.8% [13].

Most mothers act as housewives who always care for children directly. It was found that mothers of toddlers at Karanglewas Health Center decided to become a housewife because they have plenty of time to take care

of children at home, especially mothers who have more than one child.

5. The Relationship between Characteristics of Children and Stunting at Karanglewas Health Center

Table 5. The Relationship between Characteristics of Children and Stunting at Karanglewas Health Center (n: 87)

Characteristics	Stunting		Normal		P-value
	f	%	f	%	
0-36 month	35	40.2	21	24.1	0.003
37-60 month	9	10.3	22	25.3	
Female	23	50.6	30	34.5	0.095
Male	21	26.4	13	14.9	
LBW	17	19.5	8	9.2	0.039
Normal	27	31.0	35	40.2	

Based on table 5, it is known that there was a significant relationship between age and stunting (p-value 0.003); there was no relationship between sex and stunting (pvalue 0.095); and there was a significant relationship between low birth weight (LBW) and stunting (p-value 0.039).

Based on bivariate analysis, the proportion of under-five children who were stunting was mostly aged 0-36 months (40.2%), while the rest were aged 37-60 months (10.3%). This research is in line with the previous research [14] explaining that most toddlers who had stunting aged 24-35 months were 41.6%. Statistical tests showed a significant relationship between age and stunting incidence (p-value 0.003). The prevalence of stunting starts to increase at aged 3 months and the stunting process will slow down at aged 3 years [15]. Therefore, stunting is more common in children aged 0-36 months.

Based on gender, the majority respondents were females (26.4%). This study is in accordance with the previous research [14] showing that most toddlers experiencing stunting were females (23.3%). The gender statistical test showed no relationship between sex and the incidence of stunting (p-value 0.095). The results of this study were similar to the previous research [16] which revealed that there was no relationship between sex and the incidence of stunting. Furthermore,

toddlers who had a history of Low Body Weight (LBW) and experienced stunting were 19.5%. Statistical tests showed that there was a relationship between LBW and the incidence of stunting (p-value 0.039). This study is in line with the previous research [17] explaining that there was a significant relationship between the history of LBW toddlers and the incidence of stunting (p-value 0.047) and the risk of stunting 3.82 times compared to babies born with normal weight.

Babies born with low body weight will experience growth and development that tends to be slow compared to children born with normal birth weight [18]. Therefore, LBW babies have a higher risk of stunting. Long-term problems that may arise from LBW babies are growth disorders, developmental disorders, hearing loss, chronic lung disease, increased pain, and congenital anomalies [19].

6. The Relationship between Infectious Disease Status and Stunting at Karanglewas Health Center

Table 6. The Relationship between Infectious Disease Status and Stunting at Karanglewas Health Center (n: 87)

Infectious Disease	Stunting	Normal	P-value
a. Yes	27 31.0	11 24.6	0.001
b. No	17 19.5	32 36.8	

Based on table 6, it is known that the prevalence of under-five children who had infectious disease in the last few months had greater problem of stunting (27 under-fives) (31.0%) compared to under-fives who did not have infections (17 under-fives) (19.4%). The results of the statistical test showed that there was a significant relationship between infectious disease status and stunting (p-value 0.001).

The results of the bivariate analysis showed that under-five children with stunting had more cough and cold infections last month (31.0%) compared to those who did not have an infectious disease (19.5%). Infectious disease is one of the factors causing stunting in addition to food consumption factors. Infectious diseases can cause children to lose their appetite and lose excessive energy. This study is in line with the previous study [20] showing that children who have a history of infectious diseases such as diarrhea and acute respiratory

infection (ARI) experience a greater problem of stunting than children who have no history of infection.

Based on the statistical tests, it can be concluded that there was a significant relationship between infectious disease status and the incidence of stunting under-five children at Karanglewas Health Center (pvalue 0.001). This is in line with the previous research [11] showing that there was a relationship between the incidence of infectious diseases and the incidence of stunting (p-value 0.001). This study is similar to the other research result [21] describing that there was a significant relationship between the history of diarrhea and ARI with the incidence of stunting.

Infectious diseases can interfere with the absorption of nutrients, and thus nutrients reduce directly, increase metabolic needs, and reduce food intake. There are interrelated interactions between nutritional status and infectious diseases. Infectious diseases can cause malnutrition, while malnutrition can increase the risk of infection. If toddlers experience these conditions repeatedly for a relatively long time and are not immediately treated, then the toddler's food intake can decrease and interfere with the process of absorption of nutrients. This can increase the risk of stunting in infants [22].

7. The Relationship between Employment Status of Mothers and Stunting at Karanglewas Health Center

Table 7. The Relationship between Employment Status of Mothers and Stunting at Karanglewas Health Center (n: 87)

Working Status	Stunting f %	Normal f %	P-value
Unemployed	39 44.8	38 43.7	0.969
Employed	5 5.7	5 5.7	

Based on table 7, it shows that unemployed mothers had stunting children (44.8%) (39), while employed mothers also had stunting toddlers (5.7%) (5). The results of statistical test showed that there was no significant relationship between the employment status of mothers and the incidence of stunting at Karanglewas Health Center (p-value 0.969).

Based on bivariate analysis, most stunting toddlers were infants with unemployed mothers (44.8%), compared with stunting toddlers with employed mothers (5.7%).

According to the questionnaire, it appeared that unemployed mothers did not provide good nutrition and even some did not give exclusive breastfeeding. This certainly affects the nutritional status of children. Therefore, the incidence of stunting is still greater for unemployed mothers. This is similar to the previous research [13] showing that the incidence of stunting was higher in infants with unemployed mothers. The results of the bivariate analysis showed that there was no relationship between the employment status of mothers and the incidence of stunting in under-five children at Karanglewas Health Center (p-value 0.969). This is consistent with the previous research [23] stating that there was no relationship between employed mothers and the incidence of stunting. If a mother's parenting is not good, for example, a poor nutrition, nutritional problems will still occur.

IMPLICATION FOR PRACTICE

The results of this study showed a very significant impact especially on nursing services and nursing education. The implication for nursing services is that nursing officers working in Health Center can give training for *posyandu* cadres to prevent stunting. The nurse can also hold nutritional counseling to the community. The implication for nursing education is on handling stunting to explore scientific research.

STRENGTH AND LIMITATION

This study certainly has strengths and limitations. The strength includes the sample which was taken already representing the population because cluster technique sampling was performed. The limitation is on the number of factors influencing stunting indirectly. Therefore, further research should focus more on the factors affecting stunting directly.

CONCLUSION

In conclusion, a study conducted at Karanglewas Health Center revealed that there was a significant relationship between ages and stunting incidence (p-value 0.003) and there was a significant relationship between low body weight and stunting in under-five children (p-value 0.039). Moreover, there was a significant relationship between infectious disease status and stunting in under-five children (p-value 0.001). On the other hand, there was no relationship between the employment status of mothers and stunting in children under

five years (p-value 0.969), and there was no relationship between sex and stunting in children under five years (p-value 0.095).

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