FACTORS RELATED TO STUNTING INCIDENCE IN TODDLERS

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Abstract. Stunting is a form of malnutrition (under nutrition) with a high Z-score of less than -2SD. Kudus Regency is one of the regencies that are still facing stunting problems. Kudus Regency is one of the regencies that still have stunting problems, this is because the stunting rate in Kudus Regency continues to increase. The purpose of this study was to analyze the factors associated with stunting in children under five. This research is a quantitative research using observational analytic method and cross-sectional research design with a sample of 70 respondents. The sampling technique in this study used a random sampling technique. The instrument used in this study was a questionnaire distributed in the village of Japan, Dawe Kudus. Data analysis used univariate analysis using SPSS on the respondent's characteristic data, and bivariate analysis using Chi-Square. The results of this study indicate that there is a relationship between birth history and the incidence of stunting, p-value 0.0001. There is a relationship between a history of exclusive breastfeeding with the incidence of stunting p-value 0.0001. There is a relationship between the mother's educational history and the incidence of stunting, p-value 0.0001. There is a relationship between the mother's occupation and the incidence of stunting p-value 0.027. There is a relationship between the history of maternal age at marriage with the incidence of stunting p-value 0.0001. There is a relationship between family income and the incidence of stunting p-value 0.0001. There is a relationship between access to health services and the incidence of stunting p-value 0.0001.

Key words: [Stunting factors, Toddlers.]

INTRODUCTION

stunting a form of malnutrition (under nutrition) which is defined as a child with a height for a Z-score less than -2SD. The incidence of stunting is associated with many factors and is most likely caused by health conditions during the first 1000 days of a child's life. In 2017, around 150.8 million (22.2%) of children under five in the world were stunted. In 2017, more than half of the stunted toddlers in the world came from Asia (55%) while more than a third (39%) lived in Africa. Of the 83.6 million stunted children under five in Asia, the highest proportion came from South Asia (58.7%) and the least proportion came from Central Asia (0.9%). Data on the prevalence of stunting under five collected by WHO, Indonesia is included in the third country with the highest prevalence in the Southeast Asia Region (Ministry of Health Data and Information Center, 2018).

Based on Basic Health Research (Rikesdas) 2018 data, the prevalence of stunting or short toddlers reaches 30.8%. Then in 2019 according to the results of the Indonesian Toddler Nutrition Status Survey (SSGBI), the prevalence of stunting has decreased significantly, namely to 27.67%. In 2020 it decreased to 26.92%. (Riskesdas, 2018).

Based on data from Central Java Basic Health Research (Riskesdas) in 2018 the prevalence of stunting was 31.22%. According to data from the Indonesian Toddler Nutrition Status Survey (SSGBI), in 2019 the prevalence of stunting in Central Java has decreased to 27.68%.

Based on data on children's nutritional intake in Kudus Regency in 2020, from toddlers, the percentage of underweight toddlers is 3.5%, stunting is 4.71% and wasting is 3.54 %. From this data, Japan Village, Dawe District, Kudus Regency, is one of the villages in the Rejosari Health Center coverage area, which ranks the highest, around 28.9% of the number of toddlers experiencing stunting (Kemenkes, 2021).

METHODS

This type of research is a quantitative study using observational analytic methods. This research design uses a cross-sectional research design. This method is to obtain an overview of disease patterns and their determinants in the target population and to study the relationship between the disease (or other characteristics related to health status) and other variables to be studied at one time. This study aims to determine the factors associated with the incidence of stunting in toddlers in Japan

Village, Dawe District, Kudus Regency. Of the 263 toddlers in the Japan Village, Kudus Regency, 70 samples were obtained which were calculated from the lemeshow formula. Research data that has been obtained were analyzed using SPSS univariate and bivariate analysis.

RESULTS

Characteristics in toddlers are divided into two, namely based on age and gender. The following is the result of the sex frequency distribution of toddlers in Japan Village, Kudus Regency.

1. **Gender**

Table 1. Gender Frequency Distribution of Toddler Respondents in Japan Kudus Village

Gender	Frequency	%
Man	39	55,7
Woman	31	44,3
Total	70	100

Source: Primary Data, 2022

Based on Table 1, it describes the frequency distribution of the respondent's gender used. Of the 70 toddler respondents in the village of Japan, Dawe District, Kudus Regency, there were 39 respondents who were male or as much as 55.7While the respondents are female amounted to 31 or as much as 44.3%.

2. **Age**

Table 2. Age Frequency Distribution of Toddler Respondents in Japan Kudus Village

Age	Frequency	%
1-2	49	70
3-5	21	30
Total	70	100

Source: Primary Data, 2022

Based on Table 2, it describes the frequency distribution of the age of the respondents used from 70 respondents, namely respondents aged 1-2 years as many as 49 toddlers (70%). And respondents aged 3-5 years were 21 toddlers (30%).

Results of univariate and bivariate analysis of research:

1. univariate Analysis Results

The following is the result of univariate analysis of 7 variables in a sample of toddlers in Japan Village, Kudus Regency, including birth history, history of exclusive breastfeeding, mother's education, mother's occupation, history of mother's age at marriage, family income, access to health services.

Table 3. Univariate Analysis Results

Variable	N	%
Birth History		
LBW	30	42,9
Non LBW	40	57,1
Total	70	100
History of Exclusive Breastfeeding		
Not Exclusive	16	22,9
Exclusive	54	77,1
Total	70	100
Mother's Education		
Low < Middle School	27	38,6
High > Middle School	43	61,4
Total	70	100

Mother's job		
Doesn't work	60	85.7
Work	10	14,3
Total	70	100
History of Mother's Age at Marriage		
<19 years	24	34,3
>19 years	46	65,7
Total	70	100
Family Income		
Low <2,300,000	33	47,1
High >2,300,000	37	52,9
Total	70	100
Access to Health Services		
Easy	28	40
Not easy	42	60
Total	70	100
Stunting events		
stunt	21	30
Non Stunting	49	70
Total	70	100

Based on table 3 explaining the frequency distribution of birth history, it can be seen that the history of LBW births totaled 30 or as much as 42.9%. While the history of non-LBW births amounted to 40 or as much as 57.1%. This explains that most of the mothers of toddlers in Japan Village, Kudus Regency have a history of normal births in their toddlers. Based on table 3 explaining the frequency distribution of history of non-exclusive breastfeeding, it can be seen that history of non-exclusive breastfeeding was 16 or as much as 22.9%. Meanwhile, the history of exclusive breastfeeding was 54 or as much as 77.1%. This explains that most of the toddlers in the Japan Village, Kudus Regency, get exclusive breastfeeding. Based on table 3 explaining the frequency distribution of mother's education, it can be seen that mother's education is low < SMP amounted to 27 or as much as 38.6%. While high > junior high school totaled 43 or as much as 61.4%. This explains that most of the mothers under five in the Japan Village, Kudus Regency, are highly educated (> junior high school). Based on table 3 explaining the distribution of the frequency of mother's work, it can be seen that the number of mothers who do not work is 60 or as much as 85.7%. While working mothers amounted to 10 or as much as 14.3%. This explains that most of the mothers under five in Japan Village, Kudus Regency do not work or are housewives. Based on table 3 explaining the frequency distribution of the history of the mother's age at marriage, it can be seen that the age of the mother at marriage <19 years was 24 or as much as 34.3%. While the age of the mother at marriage> 19 years amounted to 46 or as much as 65.7%. This explains that most of the mothers under five in the Japan Village, Kudus Regency, are married at the age of> 19 years. Based on table 3 explaining the frequency distribution of family income, it can be seen that low family income <2,300,000 is 33 or as much as 47.1%. Meanwhile, high family income > 2,300,000 amounted to 37 or as much as 52.9%. This explains that most of the family income in the Japan Village, Kudus Regency is high > 2,300,000. Based on table 3 explaining the distribution of the frequency of access to health services, it is known that access to health services is not an easy reach, amounting to 28 or as much as 40.0%. Meanwhile, easy access to health services is 42 or as much as 60.0%. This explains that most of the access to health services in the Japan Village of Kudus Regency has access to services that are not easy or far from the reach of health services. Based on table 3 explaining the distribution of the frequency of stunting incidents, it can be seen that the number of stunting incidents is 21 or as much as 30%. While stunting amounted to 49 or as much as 70%. This explains that most in the Japan Village, Kudus Regency, are not stunted.

2. results of Bivariate Analysis

The following are the results of a bivariate analysis of the relationship between birth history, history of exclusive breastfeeding, mother's education, mother's occupation, history of mother's age at marriage, total family income, access to health services.

Table 4. Relationship between Birth History and Stunting Incidents in Toddlers in the Village **japan**

Birth History	Incident*stunt*				Total		PR 95% CI	P-value
	stunt		No stunt					
	N	%	N	%	N	%		
LBW	21	70	9	30	30	100	0.300	0.0001
Non LBW	0	0	40	100	40	100	(0.174-0.518)	

Source: Primary Data, 2022

Based on table 4, it shows that there are more cases of stunting in LBW births (70%) compared to non-stunting events in LBW (30.0%). The results of the Chi Square test showed that Ho was rejected, Ha was accepted, so there was a significant relationship between birth history and the incidence of stunting (P value 0.0001 <0.05). The results of the Prevalence Ratio (PR) calculation show that toddlers with a history of low birth weight births are at risk of 0.333 times to experience stunting compared to non-LBW births with a history of 95% CI (0.300-0.518). The results of this study are in line with research (Ni'mah & Nadhiroh, 2015) which states that half of stunting and normal toddlers have normal birth weight (BB). Even though, Several studies have shown that birth weight is the best indicator to know the nutritional condition and growth and development of children. So that low birth weight of toddlers must remain a concern because it contributes to the incidence of stunting in toddlers.

Table 5. The Relationship between a History of Exclusive Breastfeeding and Incidence of Stunting in Toddlers in the Village japan

Asian History Exclusive	Incident*stunt*				Total		PR 95% CI	*P-value*
	stunt		No					
	N	%	N	%	N	%		
No Exclusive	20	100	0	0	20	100	50,000 (7,183-348, 030)	0.0001
Exclusive	1	2	49	98	50	100		

Source: Primary Data, 2022

Based on table 5, it shows that there are more exclusive breastfeeding for toddlers who are not given exclusive breastfeeding in cases of stunting (100%) compared to non-stunting in a history of non-exclusive exclusive breastfeeding (0%). The results of the Chi Square test showed that Ho was rejected, Ha was accepted, so there was a significant relationship between the history of exclusive breastfeeding and the incidence of stunting (P value 0.0001 <0.05). The results of the Prevalence Ratio (PR) calculation show that a history of exclusive breastfeeding in toddlers who are not given exclusive breastfeeding is at risk of 50,000 times to experience stunting compared to those who are not given exclusive breastfeeding. toddlers given exclusive breastfeeding 95% CI (7.183-348, 030). This result is in line with research (Arifin (2017) in Southern Ethiopia which showed that toddlers who were not exclusively breastfed for the first 6 months had a greater risk of stunting.

Table 6. Relationship between Mother's Education and Incidence of Stunting in Toddlers in Japanese Villages

Mother's Education	Incident*stunt*				Total		PR 95% CI	*P-value*
	stunt		No *stunt*					
	N	%	N	%	N	%		
Low <Junior High	21	77,8	6	22,2	27	100	0.222 (0.110-0.450)	0.0001
Tall >junior high school	0	0	43	100	43	100		

Source: Primary Data, 2022

Based on table 6 shows the mother of a toddler with low education<Junior High School had more cases of stunting (77.8%) compared to mothers of toddlers with low education <Junior High School who were not stunted (22.2%). The results of the Chi Square test showed that Ho was rejected, Ha was accepted, so there was a significant relationship between maternal education and the incidence of stunting (P value 0.0001 <0.05). The results of the Prevalence Ratio (PR) calculation show that mothers with low education are 0.222 times at risk of experiencing stunting compared to the education of mothers with high education 95% CI (0.110-0.450). The level of education has an influence on health, one of which is nutritional status. Individuals who have a higher level of education are more likely to know a healthy lifestyle. Mother's education influences knowledge in helping to choose the right food (Setiawan et al.,)

Table 7. Relationship between Mother's Occupation and Incidence of Stunting inToddler in Japanese Village

Work n Mother	Incident*stunt*				Total		PR 95% CI	*Fisher Exact Test Asyimp. sig (2-sided)*
	stunt		No *stunt*					
	N	%	N	%	N	%		
No Work	21	35	39	65	60	100	0.650 (0.540-0.783)	0.027
Work	0	0	10	100	10	100		

Source: Primary Data, 2022

Based on table 7. The results of the study were conducted on 70 respondents showing that the significance value or sig(2-sided) was 0.027 from the fisher's exact test because the expected count value as a condition for the chi square test was not met, so an alternative test was used, namely the fisher test. Sig value (2-sided) 0.027 <0.05, then based on the decision making above there is a relationship significant relationship between mother's work and the incidence of stunting in toddlers. This research is in line with research conducted by Dewi & Widari (2018) which shows that working mothers have a higher incidence of stunting, but have a statistically significant relationship. Mothers who don't work are likely to have more time to care for their children and pay attention to the quality and quantity of their children's food. However, other factors such as the level of knowledge and mother's upbringing are important to note (Dewi & Widari, 2018).

Table 8. Relationship between mother's age history at marriage and stunting Toddler in Japanese Village

Mother's Age at Marriage	Incident*stunt*				Total		PR 95% CI	*P-value*
	stunt		*stunt*					
	N	%	N	%	N	%		
<19 years	21	87.5	3	12.5	24	100	0.125 (0.043-0.360)	0.0001
> 19 years	0	0	46	100	46	100		

Source: Primary Data, 2022

Based on table 8, it shows that there are more cases of stunting with a history of maternal age at marriage <19 years (87.5%) compared to non-stunting with a history of maternal age at marriage

<19 years (12.5%). The results of the Chi Square test showed that Ho was rejected, Ha was accepted, so there was a significant relationship between the history of the mother's age at marriage and the incidence of stunting (P value 0.0001 <0.05). The results of the Prevalence Ratio (PR) calculation show that a history of maternal age at marriage <19 years has a risk of 0.125 times for experiencing stunting compared to a history of maternal age at marriage which is >19 years 95% CI (0.043-0.360). This research is in line with research conducted (Indrasari, 2018) which states that mothers with a risky age (less than 20 years).

Table 9. Relationship between Family Income and Incidence of Stunting in Toddlers in the Village japan

Family Income	Incident*stunt*				Total		PR 95% CI	*P-value*
	stunt		No *stunt*					
	N	%	N	%	N	%		
Low <2,300,000	21	63,6	12	36,4	33	100	0.364 (0.232-0.571)	0.0001
Tall >2,300,000	0	0	37	100	37	100		

Source: Primary Data, 2022

Based on table 9, it shows the incidence of stunting with low family income <2,300,000 more (63.6%) compared to non-stunting events with low family income <2,300,000 (36.4%). Test results *Chi Square*shows that Ho is rejected Ha is accepted, so there is a significant relationship between the mother's occupation and the incidence of stunting (P value 0.0001 <0.05). The results of the Prevalence Ratio (PR) calculation show that low family income <2,300,000 are at risk of 0.364 times to experience stunting compared to high family income >2,300. 000 95% CI (0.232- 0.571). This research is in line with other research which shows that family income or economic status is related to the incidence of stunting (Nursyamsiyah et al., 2021).

Table 10. Relationship between Access to Health Services and Incidence of Stunting in Toddlers in the Japanese Village

Service Access Health	Incident*stunt*				Total		PR 95% CI	*P-value*
	stunt		No					
	N	%	N	%	N	%		
No Easy	21	75	7	25	28	100	0.250 (0.132-0.475)	0.0001
Easy	0	0	42	100	42	100		

Source: Primary Data, 2022

Based on table 10, it shows that there are more cases of stunting in access to health services with easy reach (75%) compared to non-stunting events in difficult reach (25%). The results of the Chi Square test showed that Ho was rejected, Ha was accepted, so there was a significant relationship between the mother's occupation and the incidence of stunting (P value 0.0001 <0.05). The results of the Prevalence Ratio (PR) calculation show that access to health services at easy reach is at risk of 0.250 times to experience stunting compared to access to health services at easy reach 95% CI (0.132-0.475). This research is in line with the research of Andi Syamsiah, et al 2021. There is a significant relationship between access to health services and the incidence of stunting.

CONCLUSION

Based on the research of Factors Associated with the Event *stunt*in Toddlers it can be concluded:

1. Frequency Distribution Based on Birth History in infants with LBW was 42.9% and Non LBW was 57.1%.
2. Frequency Distribution Based on a History of Exclusive Breastfeeding, 22.9% of children who were not exclusively breastfed and 77.1% of toddlers who were exclusively breastfed.

3. Frequency Distribution Based on Education Mothers with low education were 38.6% and 61.4% highly educated.
4. Frequency Distribution Based on Mother's Occupation for mothers of toddlers who do not work is 85.7% and mothers of toddlers who work are 14.3%.
5. Frequency Distribution Based on History Age of Mothers at Marriage who were < 19 years old were 34.3% and those who were > 19 years were 65.7%.
6. Frequency Distribution Based on Income Families with low income < 2,300. 000 as much as 47.1% and those with high income > 2,300. 000 as much as 52.9%.
7. Frequency Distribution Based on Access to Health Services, which reach easily as much as 40% and those that are not easy as much as 60%.
8. There is a significant relationship between birth history and stunting in under-fives in Japan Dawe Kudus Village (P=0.0001) with PR 95% C1 (0.174-0.518).
9. There is a significant relationship between a history of exclusive breastfeeding and the incidence of stunting in Japan Dawe Kudus Village (P=0.0001) with a PR of 95% C1 (7.183-348.030).
10. There is a significant relationship between Mother's Education and Stunting Incidence in Japan Dawe Kudus Village (P=0.0001) with PR 95% C1 (0.110-0.450).
11. There is a significant relationship between Mother's Occupation and Stunting Incidents in Japan Dawe Kudus Village by using a test*Fisher Exact Test Asymp. sig (2-sided) 0.027*with PR 95% C1 (0.540-0.783).
12. There is a significant relationship between the age history of the mother at marriage and the incidence of stunting in Japan Dawe Kudus Village (P=0.0001) with PR 95% C1 (0.043-0.360).
13. There is a significant relationship between family income and the incidence of stunting in Japan Dawe Kudus Village (P=0.0001) with PR 95% C1 (0.232-0.571).
14. There is a relationship between Access to Health Services and Incidence of Stunting in Japan Dawe Kudus Village (P=0.0001) with PR 95% C1(0.132-0.475).

By paying attention to the results of the study, the researcher can provide the following suggestions:

1. For Health Agencies
   a. Providing PMT to toddlers at posyandu with a complete and nutritious menu, prioritizing stunted toddlers so that PMT is more prioritized.
   b. Increase the number of cadres in carrying out posyandu so that there are no problems when there are activities
2. For Society
   a. Be diligent in coming to the posyandu every month in the village to consult on the condition of the toddler.
   b. Parents should pay attention to the food intake given to their toddlers and pay attention to their toddler's mealtime.
3. For Further Researchers
   a. Because many factors influence the incidence of stunting, future researchers should add other factors related to the incidence of stunting in toddlers.
   b. It is necessary to conduct research with an ethnographic approach to obtain more in-depth research results.

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