

Original Research Article

THE RELATIONSHIP BETWEEN FAMILY CHARACTERISTICS WITH STUNTING INCIDENCE IN WORKING AREA OF PADANG SERAI PUBLIC HEALTH CENTER

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Abstract

Background: Under-fives who have stunting have a risk of decreased intellectual ability, productivity, and increased risk of degenerative diseases in the future (Anugraheni & Kartasurya, 2012).

Objective: The purpose of this study was to determine the relationship between family characteristics with stunting incidence of under five children who visited the Integrated Healthcare Center (Posyandu) in working area of Padang Serai Public Health Center (Puskesmas) of Bengkulu City.

Methods: this study was conducted in June, 2016. The type of the study was Analytical Survey and the design was Cross Sectional. Sample was under five children aged 0-59 months (stunted and non-stunted) who visited the Integrated Healthcare Center in working area of Padang Serai Public Health Center of Bengkulu City with their mothers. The sampling technique was Accidental Sampling and the sample total was 92 under five children. The data were primary and secondary data. The primary data were length or height, age of children, and family characteristics (education and knowledge of mothers, number of family, income rate of household heads). The secondary data was collected from Health Department and Integrated Healthcare Center. The data was analyzed with univariate and bivariate analysis. Bivariate analysis used Chi-Square (χ^2) test.

Results: The prevalence of stunting incidence was 27.17%, no relationship between family characteristics [height of mother (p=0.054), education of mother (p=0.857), knowledge of mother (p=1.000), total of family members (p=0.934), and income rate of household head (p=1.000)] with stunting incidence of under five children who visited the Integrated Healthcare Center in working area of Padang Serai Public Health Center of Bengkulu City.

Conclusion: Padang Serai Public Health Center should be able to overcome the stunting problem by doing more intensive nutrition program for the fertile women, pregnant, and lactating women, under five children, and also socialization of the nutritional status of stunting to the community.

Keywords: Family Characteristics, Stunting, Under Five Children.

INTRODUCTION

The undernutrition is a process of inadequate food intake when the normal need for one or more nutrients is not met or the nutrients are lost in greater quantities than those obtained. Stunting is a chronic condition that describes stunted growth because of long-term malnutrition (Manary & Solomons, 2009). Stunting in infants needs special attention because it can inhibit the physical growth, mental, and motor abilities of children, as well as an increased risk of morbidity and mortality (Purwandini & Kartasurya, 2013). Under-fives who have stunting have a risk of decreased intellectual ability, productivity, and increased risk of degenerative diseases in the future (Anugraheni & Kartasurya, 2012).

The number of children in the world who have very short stature measurements based on the standard age of growth according to World Health Organization (WHO) amounted to 178 million children (WHO, 2011). The prevalence of stunting incidence in some countries in Africa, Asia, South America, Central America and the Caribbean ranges from 30.0%-50.0%, for example Bolivia, Guatemala, Haiti, Honduras and Peru. The prevalence of stunting incidence in 2007 in Asia was 30.6% (United Nations System Standing Committee on Nutrition [UNSCN], 2008). Indonesia is one of the countries with very high prevalence of stunting incidence, with more than 40.0% (WHO, 1997).

The prevalence of stunting incidence nationally in 2013 was 37.2%, which consisted of very short stature 18.0% and 19.2% short stature. Bengkulu Province was one of the provinces that had prevalence of stunting incidence above the prevalence national stunting incidence for 2013 (Kemenkes RI, 2013). Public health problems are considered severe if the short stature prevalence is 30.0%-39.0% and serious if the short stature prevalence is $\geq 40.0\%$ (WHO, 2010).

Research in Botswana, Africa showed that the education level of the mother and income were significant factors affected the incidence of malnutrition (stunting, underweight dan

wasting) (Mahgoup, Nnyepi, & Mahgoup, 2006). Research conducted in North Maluku showed that income and father's job was a risk factor for stunting incidence (Ramli et al., 2009). A high level of knowledge of the mother about nutrition can affect a child's diet which will ultimately affect the nutritional status of children (Andarwati, 2007). Education level is an important factor of protective, which can reduce the adverse effects of low birth weight or under-nutrition in early childhood (Henningham & Mc Gregor, 2009). The results of the research conducted by Semba et al showed that the prevalence of stunting incidence in under five children whose family was more than 4 people was 51.6%, although not statistically related (Semba et al., 2008).

Height of parent, family economic status and parental education were risk factors for stunting in infants. The economic status of the family was influenced by several factors, including work and the level of parent education, as well as the number of family members (Fernald & Neufeld, 2007).

The prevalence of stunting incidence of under five children in Bengkulu City in 2013 was 21.07%. This prevalence had increased from the year 2012 amounted to 7.67%. The working area of Padang Serai Public Health Center had the prevalence of stunting incidence of under five children at 31.51% in 2013, while its prevalence in 2012 was 24.20%. This showed that there was an increase in the prevalence amounted to 7.31% (Dinkes Kota Bengkulu, 2014). Based on the prevalence of stunting incidents of under five children in working area of Padang Serai Public Health Center in 2013, stunting among under five children becomes a major health problem according to WHO. Research on stunting had never been done before in working area of Padang Serai Public Health Center of Bengkulu City.

Based on the above, the researchers intended to conduct research on stunting in working area of Padang Serai Public Health Center of Bengkulu City. The purpose of this study was to study the relationship between

family characteristics and stunting incidence in under five children who visited Integrated Healthcare Center (Posyandu) in working area of Padang Serai Public Health Center of Bengkulu City.

METHODS

Study Design

The research type was Analytical Survey with Cross Sectional design.

Setting

The study was conducted at nine Integrated Healthcare Center (Posyandu) in working area of Padang Serai Public Health Center of Bengkulu City in June 2016.

Research Subject

Sample was under five children aged 0-59 months (stunted and non-stunted) who visited the Integrated Healthcare Center in working area of Padang Serai Public Health Center of Bengkulu City with their mothers. The sampling technique was Accidental Sampling and the sample total was 92 children under five years of age.

Instruments

The data were primary and secondary data. Primary data consisted of stunting nutritional status and family characteristics. Stunting nutritional status was obtained by measuring the length of the under five children using body length board or height of the under five children by using microtoise (0.1 cm accuracy). Measurements were made twice by enumerators and the average score was calculated for further analysis. Stunting nutritional status was obtained by inserting high data or length of body and birth date into WHO AnthroPlus software 2007 (WHO, 2016) so that standard deviation was obtained.

Family characteristics data consisted of height of mother, total of family members, income rate of household head, education of mother, and knowledge of mother. Family characteristics data were obtained by interviewing mothers, except height of mother

by direct measurement because mother attended the Integrated Healthcare Center. Height of mother measured by using microtoise (0.1 cm accuracy). Measurements were made twice and the average score was calculated for further analysis.

The stunting nutritional status was seen from the z-score. Z-Scores categorized as stunted if $< -2SD$ and non-stunted if $\geq -2SD$. The height of mother was categorized as short stature if ≤ 150 cms, and non-short stature if > 150 cms). The education of mother was categorized into three categories, namely primary education (elementary and junior high), secondary education (high school/vocational/Madrasah Aliyah), and higher education (Diploma 1/Diploma 2/Diploma 3/S1 (Bachelor)/S2 (Magister)/S3 (doctorate).

Instrument used to measure the knowledge of mother was questionnaire consisted of 25 statements about under five children growth, care and feeding, selection and processing of food. The questionnaire adopted from questionnaire of Munthofiah (2008). The reliability of the questionnaire had tested by using Alpha Cronbach indicator. Alpha Cronbach score was 0.777 (Munthofiah, 2008). The Alpha Cronbach score showed that reliable the questionnaire was reliable. The knowledge of mother was categorized to be less if the correct answer was $< 56.0\%$, enough if the correct answer was $56.0-75.0\%$, and good, if the correct answer was $76.0-100.0\%$.

The number of family members was categorized into > 4 persons and ≤ 4 persons. The income rate of household head was categorized to be $< 1.600.000,00$ Rupiahs and $\geq 1.600.000,00$ Rupiahs. Secondary data was generated from the Health Service of Bengkulu City, Public Health Center, and Integrated Healthcare Center (Posyandu).

Data Analysis

The data analyzed by using univariate and bivariate analysis. Bivariate was analyzed using Chi-Square (χ^2) statistical test. Data were

analyzed using SPSS 18.00 program. Data is presented in table form and narrated.

Ethical Consideration

This research had permission from Health Department of Bengkulu City with the license number 070/282/SEKR-UM/DKK/IV/2016, Integrated Licensing Services Office of Bengkulu Province with the license number 503/7.a/868/KP2T/2016, and Integrated

Licensing and Investment Services Agency of Bengkulu City with license number 070/411/04/BPPTPM/2016. Subjects in this research were asked for informed consent and had received explanations of the research to be conducted and subject could stop participating in the research that had been carried out.

RESULTS

Characteristics of Family and Stunting Incidence of the Children Under Five Years of Age

Table 1 Distribution of Frequency of Respondents by Family Characteristics and Stunting Incidence on Under Five Children in Working Area of Padang Serai Public Health Center of Bengkulu City in June 2016 (n = 92).

Variables	Category	Frequency (n)	Percentage (%)
Incidence of Stunting	Stunted	25	27.2
	Non-Stunted	67	72.8
Height of Mother	Short stature	35	38.0
	Non short stature	57	62.0
Education of Mother	Primary education	55	59.8
	Secondary education	32	34.8
	Higher education	5	5.4
Knowledge of Mother	Less knowledge	0	0.0
	Enough knowledge	2	2.2
	Good knowledge	90	97.8
Number of Family Members	> 4 persons	54	58.7
	≤ 4 persons	38	41.3
Income Rate of Household Head	< 1,600,000.00 Rupiahs	53	57.6
	≥ 1,600,000.00 Rupiahs	39	42.4

Source: Primary Data of Questionnaire, 2016.

Table 1 showed the stunting incidence and family characteristics of under five children. The result of univariate analysis showed that the stunting incidence in this study was 27.2%. There were 55 under five children (62.0%) who had mothers with non-short stature, there were 55 under five children (59.8%) who had

mothers with basic education, and there were 90 under five children (97.8%) who had mothers with good knowledge. There were 54 under five children (58.7%) who had family members > 4 persons, and 53 under five children (57.6%) who had income of household head < 1,600,000.00 Rupiahs.

Analysis of the Correlation between Family Characteristics and Stunting Incidence on Under Five Children in Working Area of Padang Serai Public Health Center of Bengkulu City using Chi-Square (χ^2) Statistical Test.

Table 2 The Relationship between Family Characteristics and Stunting Incidence on Under Five Children in Working Area of Padang Serai Public Health Center of Bengkulu City using Chi-Square (χ^2) Statistical Test (n = 92).

Variables	Stunting Incidence				Total		p-value
	Stunted		Non-Stunted		n	(%)	
	n	(%)	n	(%)			
Height of Mother							
Short stature	14	40.0	21	60.0	35	38.0	0.054
Non short stature	11	19.3	46	80.7	57	62.0	
Education of Mother							
Primary education	16	29.1	39	70.9	55	59.8	0.857
Secondary education	8	25.0	24	75.0	32	34.8	
Higher education	1	20.0	4	80.0	5	5.4	
Knowledge of Mother							
Enough knowledge	1	50.0	1	50.0	2	2.2	1.000
Good knowledge	24	26.7	66	73.3	90	97.8	
Number of Family Members							
> 4 persons	14	25.9	40	74.1	54	58.7	0.934
≤ 4 persons	11	28.9	27	71.1	38	41.3	
Income Rate of Household Head							
< 1,600,000.00 Rupiahs	14	26.4	39	73.6	53	57.6	1.000
≥ 1,600,000.00 Rupiahs	11	28.2	28	71.8	39	42.4	

Source: Primary Data of Questionnaire, 2016.

Table 2 showed that the relationship between family characteristics and stunting incidence. There was no significant relationship between height of mother ($p=0.054$), education of mother ($p=0.857$), knowledge of mother ($p=1.000$), number of family members ($p=0.934$), and income rate of household head ($p=1.000$) with the stunting incidence in under five children who visited the Integrated Healthcare Center in working area of Padang Serai Public Health Center of Bengkulu City.

DISCUSSION

This study showed that the incidence of stunting was 27.2%. It consisted of severe stunted (12.0%) and stunted (15,2%). This prevalence showed that the stunting problem in

working area of Padang Serai Public Health Center include in lightweight category according to WHO in World Bank (2006). Although in lightweight category, this problem needs to overcome because it will give negative impact to the children, namely decreased intellectual ability, productivity, and increased risk of degenerative diseases in the future (Anugraheni & Kartasurya, 2012).

Based on this study, family characteristics (height of mother, education of mother, knowledge of mother, number of family members, and income rate of household head) have no significant relationship with the stunting incidence. The results of this study that height of mother has no significant relationship with the stunting incidence were not in line with previous reports and studies. It

could be caused by some factors. Fernald and Neufeld (2007) stated that the height of mother was a risk factor of stunting incidence in children.

The results of this study were also not in line with research conducted by Nasikhah and Margawati (2012) which stated that the short parent body height was a risk factor that affected the incident of stunting. In this research, researchers measured the height of mother and the height of father and then they analyzed them as two variables. The multivariate analysis showed that risk factors of stunting in children aged 24-36 months among others were the height of mother ($p=0,006$; $OR=10,3$) and the height of father ($p=0,013$; $OR=74$).

The study of Lestari, Margawati, & Rahfiludin (2014) on 110 children in Penanggalan Sub-district of Sub-Province of Aceh Province showed that the dominant factor of stunting risk in children aged 6-24 months was short stature parent. Children who had both or one short stature parent had a risk of 13.16 times to be stunting when compared with a child with a normal-weight parent after being controlled by an exclusive breastfeeding variable, suffering from diarrhea, having acute respiratory infection, low protein and low family income. The results of the study of 1440 children aged 0-23 months in Bali, West Java and East Nusa Tenggara (NTT) Provinces showed a positive and significant relationship between the height of mother and the incident of stunting in children. Mother who had a height less than 150 cms would be at risk 1.77 times experienced stunting incidence in under five children when compared with mother who had a height ≥ 150 cms (Nadiyah, Briawan, & Martianto, 2014).

Research of Schmidt et al., (2002) in West Java concluded that every 1 cms of the mother's height, the baby's body length increased 0.196 cms ($p < 0.000$). This was an important reason girl become important targets in the improvement of stunting until the next generation.

There was no relationship between the height of mother in this study because more than half mother had non short stature (62,0%). In addition, there were other factors besides the height of the parents that might be related to the stunting incidence. Genetics does not fully affect the occurrence of stunting. Other factors include nutrition. If nutritional intake is good, although the mother or father has short stature, then the child may possibly have normal height. Addo et al. (2013) stated that maternal height influences offspring linear growth over the growing period. These influences likely include genetic and non-genetic factors, including nutrition related intergenerational influences on growth that prevent the attainment of genetic height potential in low- and middle-income countries.

Growth prior to age 2 years is influenced by environmental factors such as maternal nutrition, feeding practices, dietary quality and quantity, and infections, which may obscure genetic influences (Martorell & Zongrone, 2012).

The education of mother was not significantly associated with stunting incidents in under five children who visited the Integrated Healthcare Center in working area of Padang Serai Public Health Center of Bengkulu City. The result of this study was not in line with the theory put forward by Henning and Gregor (2009) which stated that the level of mother education was a factor that was protective, which could reduce the adverse effects of low birth weight or under-nutrition in early childhood. A higher level of education would allow a person to implement his/her knowledge in behavior especially in terms of health and nutrition. A relatively low education of mother will be associated with the attitude and actions of the mother in malnutrition in her under-five children (Atmarita & Falah, 2004). The result of this study was not in line with the results of research conducted by Ulfani, Martianto, & Baliwati (2011) on under five children in districts /cities in Indonesia which showed that the level of education of mothers affected the incidence of stunting. There was not a

significant relationship between education of mother with stunting incidence because education of mother was not a factor which directly affected the nutritional status of children. There were likely other factors that directly could influence nutritional status of children namely food consumption and health (UNICEF, 1990; Ruel, 2008).

Knowledge of mother was not significantly related to stunting incident in under five children who visited the Integrated Healthcare Center in the working area of the Padang Serang Public Health Center of Bengkulu City. This was because the distribution of mother knowledge was not evenly distributed. The mothers who had good knowledge were almost entirely, at 97.8%. Based on the findings in the field, nutrition counseling was often done by students who practiced field study in the Integrated Healthcare Center, so that many mothers had well-knowledge.

The result of this study was in line with the result of research conducted by Nasikhah & Margawati (2012), which stated that mother nutritional knowledge was not a risk factor for stunting incidence. Mother's knowledge was not the only factor and was not a factor which directly affected the nutritional status of children. There were other factors that could influence nutritional status of children including pattern of food consumption, infectious diseases, and income per capita. In addition, basic knowledge regarding adequate nutrition without attitude followed, skills and willingness to act, could bring about changes in nutritional improvement under five children.

The number of family members was not significantly related to stunting incidents on under five children who visited the Integrated Healthcare Center in working area of the Padang Serai Public Health Center of Bengkulu City. The result of this study was in line with the research undertaken by Semba et al (2008) which showed that there was no significant relationship between the number of family members and the incidence of stunting in children. The prevalence of stunting incidence

in families whose number of members was greater than 4 persons was 51.6%. In this current study, more than half of mothers had family members who > 4 persons (58.7%). Household members who lived in a house could consist of father, mother, children, grandmother, grandfather, and relatives of father or mother. Most mothers with family members > 4 persons were knowledgeable of good nutrition and thus more likely to had normal child nutritional status (non-stunting) if nutritional knowledge was applied in daily life.

The income level of household head was not significantly related to stunting incident in under-five children who visited the Integrated Healthcare Center in working area of Padang Serai Public Health Center of Bengkulu City. The results of this study were not in line with research conducted by Nasikhah & Margawati (2012), which stated that a low parental income level was a risk factor that affected the incidence of stunting. This result was also inconsistent with the result study of Lestari, Margawati, & Rahfiludin (2014). Of 110 children in Penanggalan Sub District in Sub Aceh in Aceh Province indicating that low household income was a risk factor for stunting in children aged 6-24 months. Children with low household income had a risk of stunting at 8.5 times when compared to children with high family incomes.

Research conducted by Ramli et al., (2009) in North Maluku indicates that the income of the father was a risk factor for stunting. Based on the results of the study of children aged 0-23 months as many as 1440 children under five years old in Bali, West Java and Nusa Tenggara Timur (NTT) province showed a positive and significant relationship between income with the incidence of stunting in under-fives (Nadiyah, Briawan, & Martianto, 2014). The result of the research showed that there was no correlation between income level of household head and stunting incident. This could happen because even though the mother had a low-level income of household head, many mothers had a good knowledge of nutrition and were applied in daily life so that

the nutritional status of children was good (no stunting). Rahayu & Khairiyati (2014) who stated that the role of establishing children's eating habits, preparing food, organizing food, shopping, cooking, preparing food, and distributing food is mostly done by mothers. If the mother is well informed, then the mother will be more likely to perform the role better.

CONCLUSION

This research concluded that the prevalence of stunting incidence was 27.17%. Family characteristics (height of mother, education of mother, knowledge of mother, number of family members, and income level of household head) were not significantly related to stunting incident of under five children who visited the Integrated Healthcare Center in working area of Padang Serai Public Health Center of Bengkulu City. Suggestion to the Padang Serai Public Health Center to be able to overcome the stunting problem by doing more intensive nutrition programs for fertile women, pregnant and lactating women, under five children, and also socialization of the nutritional status of stunting to the community.

SUGGESTIONS

Based on the results of the research, the authors suggest that further research can be done by examining risk factors for other stunting incidence, such as infectious diseases, hygiene, sanitation in households, and the presence of smokers in the home. Another factors that nurses need to pay attention are feeding baby with solid food before 6 month and deficiency of micronutrient intake such as zinc, omega fatty acid, beta carotene, iron so the counseling that nurses provide will be appropriate because based on the problem. When the nurse gives counseling should base on the problem so that the health education provided is beneficial. Therefore, nurses should continue to conduct research on other factors to find the root of the problem.

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DECLARATION OF CONFLICTING INTEREST

The authors declare that they have no conflict of interest.

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AUTHOR CONTRIBUTION

Nurul Khairani: Designed the study, collected and analyzed data, developed the instruments, contributed to the interpretation to the result, and wrote the manuscript.

Pawiliyah: Collected and analyzed data, contributed to the interpretation to the result, and wrote the manuscript.

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