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Dr. R.K. Sharma
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Contents

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Child Health Care Practices and Stunting in Children Aged 12-36 Months in Jember Regency of Indonesia

Devi Arine Kusumawardani¹, Roedi Irawan², Windhu Purnomo³

¹Faculty of Public Health, University of Jember ²Department of Pediatric, Faculty of Medicine,

³Department of Biostatistic and Demography, Faculty of Public Health, Airlangga University

Abstract

Stunting is a major nutritional problem in children under five that occurs in developing countries. Child health care practices by good parents can prevent stunting in children from an early age. Child health care practices include immunization, sick child care, hand washing, clean water supply and drinking water, and sanitation. The purpose of this study is to analyze the effects of child health care practices on stunting in children aged 12-36 months in Jember Regency, Indonesia. This research was an observational analytic study using case-control design. The population of the study were the mothers with children aged 12-36 months in the sub-districts of Arjasa and Kencong in Jember Regency. The sample were selected using simple random sampling technique, totaling of 220 mothers. The data were analyzed using chi-square statistic tests and multiple logistic regression tests. The results of tests discovered that most of the subjects were poorly educated and as housewives. The significant determinants associated with stunting were completeness of basic immunization, water supply and drinking water, and sanitation ($p < .05$). Thus, we can conclude that there was a significant effect of child health care practices on stunting in children under five. It should be further investigated about the influence of socio-cultural factors that affect child health care practices.

Keywords: *stunting; child health care practices; drinking water; immunization; sanitation*

Introduction

Stunting is a major nutritional problem in children under five especially in the developing countries. World Health Statistics data in 2014 shows that one of four children aged less than five years worldwide experience stunting. More than 178 million stunting children are in developing countries and 99% in the region of Southeast Asia and Africa^{1,2}.

Stunting can be caused by malnutrition that occurs early from the development of the fetus to two-year-old child. Stunting children tend to have low cognitive development, chronic diseases, infectious diseases, low productivity, and adversely affect social, economic outcomes and increase the risk of future child mortality^{3,4}.

Indonesia is at the fifth position of the countries that have the highest stunting prevalence. Based on the

results of Basic Health Research, stunting prevalence in Indonesia is 36.8%, 35.6% and 37.2% in 2007, 2010 and 2013 respectively⁵. East Java Province is a reflection in the achievement of child health outcomes in Indonesia. The prevalence of stunting in East Java has remained stagnant over the last three years of 27.0%, 26.1%, 26.9% in 2015, 2016, and 2017. This means that East Java has not met the national target of 26.2%⁶.

Child health care is one of the determinants of stunting. Good health care practices by parents with attention to child's condition, completeness of basic immunization, hand washing, environmental hygiene and caring for children during illness may prevent stunting in infants⁷. Children who are not immunized are three times more likely to have stunting⁸. Unsuitable laundry practices by mothers increase the risk of stunting 2.89 times greater. Mothers who are able to care for children better, their children have less risk of illness and malnutrition⁹. Poor water sources, drinking water, and sanitation also increase the risk of children becoming stunting¹⁰.

Correspondence:

Devi Arine Kusumawardani

E-mail: deviairin@gmail.com

Jember Regency is at the second position of the districts with the highest stunting prevalence in East Java (39.3%)⁽¹⁾. Therefore, Jember Regency has become one of the stunting priority districts in East Java. Arjasa and Kencong sub-districts of Jember Regency are the highest prevalence stunting areas (39.30% and 38.78%)¹¹. The objective of this study is to analyze the effects of child health care practices on stunting in children aged 12-36 months in Jember Regency, Indonesia.

Materials and Method

This research was an observational analytic study with case-control design. The study was conducted in Arjasa and Kencong sub-districts of Jember Regency in March till April 2018. A simple random sampling was used to select the sample of 220 mothers with children aged 12-36 months (110 stunting children as a case group and 110 non stunting children as a control group).

The data of immunization completeness was obtained from the attachment of Maternal and Child Health (MCH) book Data on child health care, handwashing practice, clean water sources, drinking water and sanitation were obtained from structured interviews with questionnaires and observations. All of the questionnaires were calculated by the validity and reliability test.

In order to examine the effect of health care practice (completeness of basic immunization, child health care, handwashing practice, source of water, sanitation) to stunting, the data were submitted to the bivariate analysis with chi-square and multivariate analysis with multiple logistic regression with 95% confidence interval and significance level $p < 0.05$.

Findings

Table 1 shows that most of the stunting children were male (60.0%) while most of the non-stunting children were female (50.9%). Maternal age in stunting and non-stunting children was mostly between 26-35 years (48.6%). Most mothers of children (63.2%) had a low education (elementary schools and junior high schools). Most of them (73,2%) were housewives while most of the fathers were unskilled workers (40.9%). Most of the number of family members in a single home was less than 4 persons.

Characteristics	Stunting		Normal		Total (n,%)
	N	%	n	%	
Sex					
Male	66	60,0	54	49,1	120 (54,5)
Female	44	40,0	56	50,9	100 (45,5)
Mother's Age (years)					
17-25	27	24,5	35	31,8	62 (28,2)
26-35	56	60,0	51	46,4	107 (48,6)
36-46	27	24,5	20	18,2	47(21,4)
47-55	0	0	4	3,6	4 (1,8)
Mother's Education					
Primary Education	66	60,0	73	66,4	139 (63,2)
Secondary Education	34	30,9	32	29,1	66 (30,0)
Tertiary Education	10	9,1	5	4,5	15 (6,8)
Mother's Occupation					
Housewife	82	74,5	77	70,0	159 (72,3)
Others	28	25,5	33	30,0	61 (27,7)
Father's Occupation					
Unemployed	0	0	3	2,7	3 (1,4)
Farmer/Fisherman/ Unskilled Worker/ Carpenter	52	47,3	38	34,5	90 (40,9)
Public Servants/ Policeman/Army	8	7,3	5	4,5	13 (5,9)
Private Servants	8	7,3	20	18,2	28 (12,7)
Freelance	42	38,2	44	40,0	86 (39,1)
Number of Family					
≤ 4 persons	88	80,0	82	74,5	170 (77,3)
> 4 persons	22	20,0	28	25,5	50 (22,7)

Table 1. Characteristic of Respondents

Table 2. Summary of bivariabel analyses of the investigated variables for stunting

Characteristics	Stunting		Normal		Total n (%)	p	OR (95% CI)
	N	%	n	%			
Basic immunization							
Incomplete	10	9,1	2	1,8	12(5,5)	0,000	0,226 (0,112 – 0,452)
Complete	100	90,9	108	98,2	208(94,5)		
Child health care							
Poor	61	55,5	37	33,6	98(44,5)	0,000	0,674 (0,388 – 1,171)
Good	49	44,5	73	66,4	122(55,5)		
Hand washing practices							
Poor	85	77,3	76	69,1	161(73,2)	0,000	0,657 (0,360 – 1,200)
Good	25	22,7	34	30,9	59(26,8)		
Source of water							
Poor	21	19,1	14	12,7	35(15,9)	0,002	1,210 (0,704-2,078)
Good	89	80,9	96	87,3	185(84,1)		
Sanitation							
Poor	54	49,1	28	25,5	82(37,3)	0,000	0,354 (0,200 – 0,626)
Good	56	50,9	82	74,5	138(62,7)		

Table 3. Summary of multiple logistic regression

Characteristics	Stunting		Normal		Total n (%)	B	SE	p
	n	%	n	%				
Basic immunization						0,260	0,380	0,000
Incomplete	10	9,1	2	1,8	12(5,5)	0,957	0,311	0,888
Complete	100	90,9	108	98,2	208(94,5)			
Child health care						0,939	0,339	0,852
Poor	61	55,5	37	33,6	98(44,5)			
Good	49	44,5	73	66,4	122(55,5)			
Hand washing practices						1,914	0,317	0,040
Poor	85	77,3	76	69,1	161(73,2)			
Good	25	22,7	34	30,9	59(26,8)			
Source of water						0,414	0,325	0,007
Poor	21	19,1	14	12,7	35(15,9)			
Good	89	80,9	96	87,3	185(84,1)			
Sanitation						0,414	0,325	0,007
Poor	54	49,1	28	25,5	82(37,3)			
Good	56	50,9	82	74,5	138(62,7)			

Table 2 shows that the number of children with complete immunization was higher than that of children with incomplete immunization. Most mothers of stunting children did not do child health care so well. The practice of hand washing on stunting and normal groups was largely bad (unqualified). The source of clean water and drinking water in the stunting group and the normal large sections is good. Sanitation in the stunting and normal group is more eligible (good).

The result of statistical analysis with Chi-square tests showed that the complete basic immunization given to the children significantly affected stunting ($p = 0.000$). Children who were not given complete basic immunization were at risk for stunting 4.4 times greater than children given complete basic immunization. The test results also indicated that child health care practices affected stunting ($p = 0.000$). Children who received less health care were 1.5 times greater risk of stunting than children who were well treated by their mother. Hand washing practices also affected stunting ($p = 0,000$). Mothers who did good handwashing practices were 1.5 times less likely to have stunting compared to mothers who did poor handwashing practices. Sources of clean water and drinking water affected stunting ($p = 0.002$). It means that families with poor sources of clean water and drinking water were 1.2 times more likely to have stunting compared to families with good sources of clean water and drinking water. Finally, we also noted that sanitation affects stunting ($p = 0,000$), meaning that families with poor sanitation were 2.8 times more likely to have stunting than families with good sanitation.

Table 3 shows that the results of multivariate analysis with multiple logistic regression test, we can see that the sources of clean water and drinking water ($p = 0.040$; $B = 1.914$), sanitation ($p = 0.007$; $B = 0.414$) and basic immunization completeness ($p = 0.000$ $B = 0.260$) were the dominant factors affecting the incidence of stunting in children. However, child health care practices and hand washing practices did not significantly affect stunting for pediatric health ($p = 0.888$; $B = 0.957$) and for handwashing practice ($p = 0.852$; $B = 0.939$).

Discussion

The respondents of this study were dominated by low-educated mothers. Education is one of the factors that can influence the practice of mother care for children because it is closely related to knowledge. Highly

educated mothers generally have an understanding of better child care and nutrition than low-educated mothers. Highly educated mothers also have the ability to read and understand health information media so as to have greater opportunity to be exposed to nutrition and childcare education¹². The respondents were mostly housewives. Housewives have more time and will spend their daily lives caring for children at home so that they tend to perform better maintenance practices compared to mothers working outside¹³.

The results of the present study have shown that complete basic immunization, child health care, hand washing, drinking water and clean water, and sanitation had significant effects on stunting. Providing immunization to children during early life can improve child immunity so that children are not susceptible to certain infectious diseases which in turn can aggravate health conditions and nutritional status. The results of this study were consistent with other studies showing that vaccination had a significant effect on stunting, children who were not given complete immunization were three times more likely to have stunting than children who were given complete immunization¹⁴. Most of the respondents's children had a complete baseline immunization history and the immunization proceedings were effective. However, complete basic immunization if not matched with a good intake of macronutrients and micronutrients and the presence of recurrent infections in children can worsen stunting conditions in children¹⁵.

The results of the present study is also in accordance with other research results in Nigeria showing that there is a significant relationship between child health care with stunting. Mothers who are able to perform child health care routinely check the health conditions of children in health facilities and understand the actions that need to be done if the child is sick, then the child has a smaller risk to experience infectious diseases and malnutrition⁹.

Hand washing practices also affect stunting in children. Most respondents did not perform good hand washing habits before preparing food, before meals, and before feeding the children. Hand washing practices are associated with stunting and child malnutrition through episodes of infectious diseases in children. The results of this study are consistent with other studies showing that poor handwashing practices in mothers with children younger than 2 years in urban areas with

low socioeconomic levels are associated with higher episodes and duration of diarrhea¹⁶.

Source of clean water, drinking water and sanitation also affects the incidence of stunting in children. The results of this study are consistent with studies in Ethiopia showing that good water quality can reduce the incidence of diarrhea in children¹⁷. Sources of clean water and drinking water is the first route of exposure to infectious diseases and better water sources will not be beneficial to health if not accompanied by improved sanitation and good water storage practices^{18,19}.

Providing a good source of clean water and drinking water will reduce the incidence of infection in children through the prevention of microbiological contamination or certain chemicals during hand washing, on cutlery, bathing, drinking and cooking. Drinking water from an uncooked spring can result in food borne disease. The ripening process of drinking water for children is needed to minimize child contact with pathogens and reduce the incidence of diarrhea. Other research results in India and Indonesia also show that water consumption with water filters and bottled water use is associated with reduced risk of diarrhea in children²⁰.

Poor sanitation practices are associated with stunting incidence. This result is consistent with research conducted in India showing that an increase in open defecation by 10% is associated with an increase in stunting events of 0.7%²¹. Wastes exposed in open areas with poor sanitation conditions and ineligibility can be a potential spot for flies to spawn and multiply, resulting in faecal borne disease. Poor sanitation practices can result in poor environmental health, thus increasing the vulnerability of children to infectious diseases that are one of the causes of malnutrition including stunting³.

Conclusion

Basic immunizations, sources of clean water and drinking water, and sanitation affect stunting in children. Based on these conclusions, it is suggested to Community Health Centers to improve the socialization of hygiene practices in the community to prevent infectious diseases in children. Further research is needed on other factors that affect stunting incidence in children, especially those related to socio-cultural factors of the local community.

Conflict of Interest : There was no conflict of interest in the study.

Ethical Clearance

The study was received ethical approval from the Health Research Ethics Committee, Faculty of Public Health, Airlangga University

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