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Socio-Family Culture Against Stunting Risk: A Cross-Sectional Population-Based Study

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ABSTRACT

Background: Stunting and wasting are one of the public health nutrition problems globally. Elementary school-aged children are at risk and groups of vulnerable to nutrition. Children at elementary school-aged also are prone to malnutrition if the child is exposed to lack of food intake and intake of macro and micro nutrients as well as infectious diseases. This study aimed at analyzing the socio-cultural family of the incidence of stunting in students.

Methods: This research used quantitative method with a cross sectional study approach. Population were students in class I to class VI at SDIT Al-Fikri Makassar City. The sampling technique used exhaustic sampling. Samples were 209 students. The research instruments used were digital and microtoise scales, semi-quantitative FFQ sheets for food types and research questionnaires. This questionnaire refers to the questionnaire from previous researchers and modified by the researcher. Analysis of nutritional data using WHO Anthroplus software. Processing and data analysis using the SPSS program with the Chi-Square test and Linear Logistic Regression at a confidence level of 95% or $\alpha = 5\%$.

Results: The results showed that the variables of eating culture, CED status, consumption of worm medicine, type of food, family support were related to the incidence of stunting ($p = 0.000 < 0.05$), but the most related variable was the type of food with $p = 0.000$ (lower limit is 0.252 and upper limit is 0.556).

Conclusion: The conclusion is that the socio-cultural determinant of the family is a determining factor for the occurrence of stunting in elementary school-aged children. Students and the school can monitor the nutritional status of students by means of anthropometric measurements that are routinely carried out every month.

Keywords: Stunting, Socio-family Culture, Elementary School-aged Children

INTRODUCTION

Public health nutrition problems in elementary school-aged children, especially the incidence of stunting, are the impact of chronic nutritional status when the child is under five years of age and in the womb. The incidence of stunting is caused by the nutritional status of the mother and is not supported by adequate intake of micronutrients in the process of improving the pursuit of growth for a long time. The risks and problems in children are influenced by adequate nutritional intake. Likewise, the inhibition of the development of student knowledge which has an impact on students' ability to accept and understand lessons taught at schools (WHO & UNICEF., 2013).

Based on a demographic and health survey of sub-Saharan Africa between 2006-2016, it was revealed that elementary school-aged children with a prevalence of stunting were short (33.2%), thin (7.1%) thin and very thin (16.3%). In Cameroon, the prevalence of stunting, wasting and underweight was respectively 32.5%, 5.6% and 14.6%, respectively (Akombi et al., 2017). In addition, Lloyd et al. (2011) found that high climate change could result in a relative increase in stunting risk by 23% in Sub-Saharan Africa and 62% in South Asia by the 2050s (Lloyd et al., 2018). Indonesia with the fifth largest prevalence of stunting in the world. Based on national data from Basic Health Research or Riset Kesehatan Dasar (Riskesdas) (2018), the prevalence of stunting is 30.8%, consisting of 19.3% of short

children and 11.5% of very short children. The stunting rate according to South Sulawesi Province is 35.7% among Indonesian provinces (Riskesdas Indonesia, 2018).

Stunting is caused by multi-factorial various risk factors ranging from practical child feeding (complementary feeding, breastfeeding, feeding frequency, or food diversity), socio-culture, family and household economics (body mass index, education, maternal height, early marriage, child immunization, access to drinking sources and hygiene and sanitation, indoor air ventilation, and family income) (Kim et al., 2017). In several previous studies, it was stated that biological, social, cultural and socio-economic factors influenced children to become stunted. The socio-demographic factors that influence the incidence of stunting include the gender of the children, the mother's age at delivery, the mother's height, mother's Body Mass Index (BMI), the number of children in the family, education, parent's occupation and monthly income (Kismul et al., 2018).

In addition, other studies show the inequality of socio-cultural determinants in nutrition of primary school children from lower middle income families who have the opportunity for children to become stunted compared to middle and upper middle families (Kismul et al., 2018). Socio-cultural factors other than income such as low education are factors that cause stunting (Amin & Julia, 2014). The occurrence of stunting is influenced by the maintenance of inappropriate eating culture, lack of nutritional knowledge from pre-pregnancy to post-delivery. A study conducted by Tando (2012) at an elementary school in Malala sub-district found that 94% of children with a frequency of illness over than 6 times a year had an increased risk of becoming stunted and 2 times more likely to have stunted children with a duration of illness more than 3 days (Tando, 2012). From study done by Torlesse (2016), 40.1% of stunted children came from poor families. In addition, children who live in an unhealthy environment can cause stunting (Torlesse et al., 2016), and the results of Eliza and Anas (2017) research show that 16.8% of new students entering elementary or primary school suffer from stunting (Olsa et al., 2018).

Therefore, stunting incidents need to be overcome with steps that are taken from an early age, such as implementing a proper and balanced eating culture in pregnant women. Although efforts have been made to reduce the incidence of stunting, stunting is influenced by a strong and traditional family culture and low knowledge of nutrition so that many elementary school students are still stunted. Analyzing the socio-cultural family of the risk of stunting in students of the Al-Fikri Islamic Primary School in Makassar City is the aim of this study.

METHODS

Quantitative method with a cross sectional study design is a type of research that was conducted at the Al-Fikri Islamic Elementary School in Makassar City. Population were students in class I to class VI at SDIT Al-Fikri Makassar City. The sampling technique used exhaustic sampling. Samples were 209 students. The research instruments used were digital and microtoise scales, semi-quantitative FFQ sheets for food types and research questionnaires. This questionnaire refers to the questionnaire from previous researchers and modified by the researcher. Analysis of nutritional data using WHO Anthroplus software. Data were processed and analyzed using the SPSS program with univariate, bivariate (chi-square) and multivariate analysis (linear logistic regression).

RESULTS

Table 1. Variable Distribution of Students' Characteristics

Students' Univariate Variables	f	%
Gender		
Male	113	54.1
Female	96	45.9
Age Group (Year-Old)		
5-7	86	41.1
8-10	96	45.9
11-13	27	12.9
Class		
I	44	21.1
II	48	23.0
III	49	23.4
IV	30	14.4
V	22	10.5
VI	16	7.7
BMI/A		
9-10	6	2.9
11-12	17	8.1
13-14	74	35.4
15-16	67	32.1
17-18	15	7.2
19-20	10	4.8
21-22	10	4.8
23-24	4	1.9
≥25	6	2.9
Nutritional Status H/A		
Very Short	13	6.2
Short	39	18.7
Normal	157	75.1

Based on table 1, data shows that 209 students at the Al-Fikri Islamic Primary School in Makassar City consisted of mostly male students as many as 113 students (54.1%) and female students as many as 96 students (45.9%). The highest was the age group of 8-10 years as many as 96 students (45.9%) and the lowest in the 11-13 years age group was 27 students (12.9%). The highest was class III as many as 49 students (23.4%) and the lowest was class VI as many as 16 students (7.7%), the highest BMI / A of 13-14 kg were 74 students (35.4%) and the lowest BMI / A of 23-24 kg were 4 students (1.9%) and the nutritional status based on H/A was obtained very short as many as 13 students (6.2%), short as many as 39 students (18.7%) and normal as many as 157 students (75.1%).

Table 2. Socio-family Culture Against Stunting

Socio-family Culture	Nutritional Status H/A						p-Value
	Very Short		Short		Normal		
	f	%	f	%	f	%	
Eating Culture							

Not Healthy	10	17.2	33	56.9	15	25.9	58	0.000
Healthy	3	2.0	6	4.0	142	94.0	151	
CED Status								
CED	13	20.3	34	53.1	17	26.6	64	0.000
Non-CED	0	0.0	5	3.4	140	96.6	145	
Consumption of Worm Medicine								
No	13	20.6	34	54.0	16	25.4	63	0.000
Yes	0	0.0	5	3.4	141	96.6	146	
Type of Food								
Not Varied	13	21.7	32	53.3	15	25.0	60	0.000
Varied	0	0.0	7	4.7	142	95.3	149	
Family Support								
Supporting	10	22.2	23	51.1	12	26.7	45	0.000
Not Supporting	3	1.8	16	9.8	145	88.4	164	

Table 2 shows that the relationship between socio-family culture and the incidence of stunting. The results showed that out of 58 students who were categorized as unhealthy eating culture, 10 students (17.2%) were stunted and 33 students (56.9%) were very short, and normal 15 students (25.9%). Meanwhile, of the 151 students who were categorized as healthy eating culture, there were 3 students (2.0%) who suffered from stunting, the short category was very short, 6 students (4.0%) and normal 142 students (94.0%). Based on Chi-Square analysis with a value of ρ = 0.000 <0.05, it means that family eating culture has a significant impact on the incidence of stunting. So it can be concluded that there is a relationship between family eating culture and the incidence of stunting in elementary school-aged children. Of the 64 mothers who were categorized as having chronic energy deficiency (CED), there were 13 students (20.3%) who suffered from stunting, short 34 students (53.1%) and 17 normal students (26.6%). Meanwhile, of the 145 mothers who were categorized as non-CED status, there were students who suffered from stunting in the very short category of 0 students (0.0%), short 5 students (3.4%) and normal 140 students (96.6%). Based on Chi-Square analysis with a value of p = 0.000 <0.05, which means that the CED status is significant for the incidence of stunting. So it can be concluded that there is a relationship between CED status and the incidence of stunting in elementary school students. Of the 63 students who were categorized as not taking deworming medicine, there were 13 students who suffered from stunting in the very short category (20.6%), 34 students (54.0%) and normal 16 students (25.4%). Meanwhile, of the 146 mothers who were categorized as consuming deworming medicine, there were students who suffered from stunting in the very short category of 0 students (0.0%), short 5 students (3.4%) and 141 students (96.6%) normal.

Based on the Chi-Square test with a value of p = 0.000 <0.05, it means that consumption of deworming drugs (worm medicine) has a significant effect on the incidence of stunting. So it can be concluded that there is a relationship between the consumption of worm medicine and the incidence of stunting in elementary school students. Of the 60 mothers who were categorized as non-varied types of food, there were 13 students who suffered from stunting in the very short category (21.7%),

32 students (53.3%) and normal 15 students (25.9%). Meanwhile, from 149 students who were categorized as varied types of food, there were students who suffered from stunting in the very short category of 0 students (0.0%), short 7 students (4.7%) and normal 142 students (95.3%). With a value of p = 0.000 <0.05, it means that the type of food has a significant impact on the incidence of stunting. So it can be concluded that there is a relationship between the type of food and the incidence of stunting of elementary school students. Of the 45 mothers who were categorized as not having family support, there were 10 students who suffered from stunting in the very short category (22.2%), 23 students (51.1%) and normal 12 students (26.7%). Meanwhile, of the 164 mother students who were categorized as having family support, there were 3 students (1.8%) who suffered from stunting, short 16 students (9.8%) and normal 145 students (88.4%). The results of Chi-Square analysis with a value of p = 0.000 <0.05, which means that family support is significant for the incidence of stunting. So it can be concluded that there is a relationship between family support and the incidence of student stunting.

Table 3. Multivariate Analysis on Socio-family Culture Against Stunting

Variabel	Std. Error	Beta	Exp(B)/ OR	P-value	95% Confidence Interval	
					Lower Limit	Upper Limit
Eating Culture	0.079	0.129	2.121	0.035	0.012	0.324
CED Status of Mother	0.086	0.207	3.057	0.003	0.093	0.431
Consumption of Worm Medicine	0.084	0.285	4.295	0.000	0.195	0.527
Type of Food Intake	0.077	0.314	5.250	0.000	0.252	0.556
Family Support	0.082	0.004	0.071	0.943	0.157	0.168
Constant	0.114		5.604	0.000		

Table 3 shows that the five socio-family cultural factors that can affect the incidence of stunting in elementary school-aged children were eating culture, chronic energy deficiency (CED) status, consumption of worm medicine, type of food and family support. The results of linear logistic regression analysis showed eating culture (ρ = 0.035), CED status (ρ = 0.003), consumption of worm medicine (ρ = 0.000), type of food (ρ = 0.000), and family support (ρ = 0.943). The type of food with the degree of significance (ρ = 0.000 <0.005) or the OR value = 5.250 (0.252-0.556) is the most dominant factor that can affect the incidence of stunting in students of the Al-Fikri Integrated Islamic Elementary School in Makassar City.

DISCUSSION

Eating Culture with Stunting Incidents

The family eating culture is a habit, belief or tradition that is inherent and adhered to by families from generation to generation related to eating habits such as food taboos which can have a negative impact on the nutritional status of school children so that they have a negative impact on children's abnormal development due to past inadequate nutritional intake (Passmore & Smith, 2019). The findings of the study indicate that there is a relationship between family eating culture and the incidence of stunting in elementary school students. This is due to the fact that the family eating culture is very supportive in influencing stunted children. The terms of this factor are related to family dietary restrictions which are believed to be hereditary, such as moringa leaves, durian, outs, salted fish, fish eggs, shrimp, squid, and crab. It can also be seen in table 2 that changes in healthy eating culture, there is an increase in unhealthy eating culture, which supports the occurrence of stunting, reaching 74.1%. In this case, the family states that children who are short and thin are not necessarily healthy, snacks, drinks and fast food are also not good for children, the family realizes the importance of a regular diet and a nutritionally balanced diet for their children who are short and thin.

Culture influences children's feeding practices in terms of beliefs, values, and behaviors related to different foods (Saxton et al., 2016). The family, especially the family eating culture, has a very important role in children's health and the pattern of nourishing stunting children. So that the role of the family in promotion and health care is needed to prevent the impact of stunting in the future which is balanced with the intake of nutritious and healthy food so that the family can be independent in implementing a healthy lifestyle for their stunted children which has an impact on changes in the BMI of primary school aged children. This study is in line with research by Sholihah et al. (2014) on taboo food among pregnant women, which states that the food taboo culture in pregnant women is still widely believed and even practiced by people in Indonesia (Sholihah & Sartika, 2014). The incidence of stunting experienced by elementary school-aged children at this time is the impact of an unhealthy family eating culture in the past, especially pregnant women who bear children with negative belief patterns in food. There is a prohibition on eating for pregnant women according to the socio-culture and beliefs of the local community, and it is believed that it can cause bad luck or trouble when giving birth to their baby.

CED Status of Mother with Stunting Incidents

Stunting in elementary school-aged children is greatly influenced by the nutritional status of the mother, especially the chronic energy deficiency (CED) status. Mothers who experience CED malnutrition in pregnant women, especially macro and micronutrient intake will have an impact on the health of the mother and child and will give birth to children with low body weight and height below the normal line so that there is a big risk of experiencing stunting and wasting because the nutritional adequacy rate is not fulfilled by adequate nutritional intake (Oktriyani et al., 2016). CED status in mother with the incidence of stunting in elementary school students is related based on the results of the chi-square analysis, this is due to mothers who suffer from malnutrition in macro and micronutrients and suffer from worms so that the mother is at risk of giving birth to a low birth weight baby. The busyness of mothers who work outside the home tends not to pay attention to the pattern of child nutrition parenting will have an effect and in the end the growth and development of the child will also be disrupted, especially if the child has a malnourished status. According to Sartono's research (2013), in line with this study, it was found that the relationship between mothers who had chronic energy deficiency and the incidence of stunting was p = 0.042 0.05. In addition to the factor of working mothers, it seems that they do not play a role as the main cause of child nutrition problems, but this work is referred to as a factor that influences child nutritional care and status of the mother.

Consumption of Worm Medicine with Stunting Incidents

One of the factors causing stunting is an infectious disease caused by worms, such as poor nutritional status and decreased intelligence (Widiarti et al., 2020). With a value of p = 0.000<0.05, it means that consumption of deworming is significant and is associated with the incidence of stunting. People with worms, especially elementary school-aged children who do not take deworming once every six months, are at risk of developing intestinal worms, if they occur chronically, they will interfere with their growth (Shang et al., 2010). Moderate to severe worm infection affects the growth and development of school age children. There is a significant difference between groups of infected and non-infected children with worms (Wellina et al., 2016). Worms can cause decreased nutritional status, intelligence, work productivity and chronic anemia in sufferers (Campbell et al., 2017). Worms can affect the nutritional status of the sufferer because it causes anorexia, increases energy requirements, inhibits the ability of the intestinal mucosa to absorb nutrients and loss of blood. Ascaris lumbricoides infection associated with growth problems in children. Based on a cohort study in North Eastern Brazil of children aged 2-7 years for 9 years it was found that children with helminthiasis were associated with 4.63 cm shorter age at 7 years of age (Simarmata et al., 2015).

Type of Food with Stunting Incidents

Inadequate nutritional intake and unvariable diet of primary school children have an impact on growth and development failure. The nutritional status of children is greatly influenced by food intake. If the food intake meets the body optimally which is needed, it will get a good nutritional status and will avoid other infectious diseases. This can be done by consuming various types of foods that contain four healthy five perfect. This finding shows a relationship between the type of food and the incidence of student stunting and is the variable most associated with the incidence of stunting. This shows the role of mothers in terms of eating culture, especially consuming various types of food provided for family members in supporting the children's physical growth process and children's nutritional intake is fulfilled because according to the composition of children's food given based on the recommended nutritional adequacy rate for school age children can avoid nutritional problems, especially stunting and wasting which have a long-term impact. Research by Rendy et al. (2017) describes that the consumption of various types of food and worms is a factor that causes stunted children. However, less food consumption can affect the physical growth of children (Manuhutu et al., 2017). The amount of food consumed both in terms of quality and quantity greatly affects the nutritional status of children, especially for child development. In this study, it was found that various types of food consumed by school children, especially those that were low in nutrients such as somai, ice rolls, crackers, fried foods and others.

Family Support with Stunting Incidents

The role and support of families in improving and maintaining children's health is very important in preventing and overcoming stunting. One way is to increase the role of the family, especially the family's ability to manage food and the nutrition patterns of stunting and wasting children and the family to provide nutritious and balanced meals, low in fat and in accordance with balanced nutrition guidelines. Of the 45 mothers who were categorized as not having family support, there were 10 students who suffered from stunting in the very short category (22.2%), 23 students (51.1%) and normal 12 students (26.7%). Meanwhile, of the 164 mother students who were categorized as having family support, there were 3 students (1.8%) who suffered from stunting, short 16 students (9.8%) and normal 145 students (88.4%). Based on the results of the Chi-Square test with a significance value

of 0.000 (ρ <0.05), it means that family support is significant for the incidence of stunting. So it can be concluded that these results indicate a relationship between family support and the incidence of stunting in elementary school students. Family members have a role in changing eating habits and supporting children who are not stunted and losing, for example monitoring the child's weight and height measurements every month and giving praise (Pratiwi et al., 2016). Family support in controlling stunting children in this study is the ability, family skills to provide nutritional parenting, spiritual and social health support for stunted children such as varied nutritional intake and food for children to meet their nutritional needs (Kadek, 2014).

This study is in line with Wulandari's study (2020) which states that there is an effect of family support and mother's motivation as a base of family support in preventing stunting (Wulandari & Kusumastuti, 2020). Involving families in preventing stunting, especially children's diet and nutritional behavior, is very good in supporting optimal growth and development and has the opportunity to promote children's health and develop effective partnerships for children and families in terms of nutrition and health of school children.

CONCLUSION

The conclusion is that the variables of eating culture, chronic energy deficiency status, consumption of worm medicine, type of food and family support are the socio-family cultural determinants on the incidence of stunting which is statistically significant. However, the variable that has more influence on the incidence of stunting is the type of food. Families, health workers and teachers are needed to be more active in realizing promotional and preventive efforts to prevent stunting by monitoring the nutritional status of elementary school-aged children or students every month.

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CONFLICT OF INTEREST:

The author (s) declare that they have no conflict interest

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ETHICAL CLEARANCE:

Ethical approval has been obtained from Ethical Commission of Health Research, Faculty of Public Health Universitas Hasanuddin, with protocol number UH910183001.

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