



RESEARCH PAPER

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Less Nutrition Influencing Factors for the Children in North Sumatra

Jon Piter Sinaga*, Roy Hendra Sitepu

Department of Public Health, Institute of Health of Deli Husada, Deli Tua, Medan, North Sumatera, Indonesia

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Abstract

The problem of nutrition deficiency has been a public debate in developing countries and the nutritional status of children under five in Indonesia still shows in less nutrition. To know the nutrition problem in North Sumatra, a survey research with an analytic and cross sectional design was applied. Therefore, this research aimed at obtaining the influential factors that affect the underweight nutritional status in under five years in Pekan Labuhan Public Health Center of Medan Municipal in 2017. In the field a questionnaire was used as instrument to collect data. To calculate the obtained data, the Chi square test with 95% confidence level, $\alpha = 0.05$ with multivariate analysis was used. The research result showed that influence of food nutrition of the under nutrition status of children under five years old (p value: 0,004), there was a significance influence of disease history to the under nutrition status of children under five years old (p value: 0,011), there was influence of food availability on less nutrient status of children under five years old (p value : 0,010), there was influence of parenting pattern to under nutrition status of children under five years old (p value: 0,001), there was influence of health service to under nutrition status of under-five (p value: 0,002). It concluded that the pattern of diet, history of disease, food availability, parenting and health services have affected the malnutrition status of children under-five in Pekan Labuhan Public Health Center in 2017.

* **Corresponding Author:** Jon Piter Sinaga ✉ jondelihusada@gmail.com

Introduction

Problems of nutrition for the children are concerning with the human resources development. Lack of nutrients will have huge impact on the growth and development, especially children under five. Children under five who have severe malnutrition (Endris *et al.*, 2017) may have the Intelligence Quotient (IQ) low and increase the death rate.

This situation is threat to effort the improvement of the quality of Indonesian human resources, because the less energy of protein that is closely related to the failure grow of children under five including low levels of intelligence (Dahlia, 2012). Department of Health of Indonesia in 2013 revealed that 19.6% of children under five have malnutrition, consist of 5.7% children with bad nutrition and 13.9% with less nutritional status and 4.5% of children under five with more nutrition. If we compared to the national prevalence rate in 2007 (18.4%) and 2010 (17.9%), the prevalence of malnutrition of children under five in 2013 is increasing. The mainly changes in the prevalence of malnutrition is 5.4% in 2007, 4.9% in 2010, and 5.7% in 2013. The Millennium Development Goals (MDGs) target in 2015 is 15.5%, then nationally prevalence of less nutrition should be lowered to 4.1% in the period 2013 to 2015, but its figure has no progress.

Nutrition affected the qualified human resources who have strong physical, strong mental, excellent health, and smart, according to empirical evidence, are largely determined by good nutritional status (International Food Policy Research Institute, 2016), and good nutritional status is determined by the amount of food intake consumed. It is reported that each year more than one-third death of children in the world related to malnutrition, which can weaken the immune system against illness. The mothers who have malnutrition during pregnancy, or their children have malnutrition in age of the first 2 years, the physical growth and mental development will be slow. One of the health indicators that assessed for achievement in the Millennium Development Goals (MDGs) is the nutritional status of children under five

(Buse & Hawkes, 2015).

This study was aimed at obtaining the influential factors that responsible for nutrition problems in North Sumatra Indonesia. Total Dietary Survey (2014) found that the average energy sufficiency rate for children under-fives is 101% with 55.7% of children under-five get energy intake which less than the Energy Sufficiency and 17.1% of children under five get energy intake exceeds Adequacy Rate Nutrition (ARN) that recommended, as many as $\geq 130\%$ Energy Sufficiency. Based on these data, the nutritional status of under-five children is still big problem in Indonesia (Ministry of Health, 2015). Good nutrition intake often cannot be fulfilled by a child because external factors and internal factors.

A diet pattern is food choice of children under five and the food is responsible toward physiological, psychological, cultural and social growth of children.

Diet pattern is also called eating habits, food habits or food patterns. A diet pattern can be defined as stay habit in relation to food consumption based on the type of staple food, protein, vegetable, fruit, and based on frequency: daily, weekly, and never (Almatsier, 2002). External factors include the income, while internal factor dietary pattern in family.

The family income economically is factor that effect on diet and nutritional adequacy of children; mothers' low education factor gives an impact on mother's knowledge about healthy, lifestyles and the importance of nutrients for health. Following the Dewi's report in 2010 which examined the important factors of less nutrition, the initial survey in the Pekan Labuhan Public Health Center in 2017 found 683 children under five underweight on the December 2016, and 99 children under five with weight under the red line and 10 children under five with malnutrition. In finding further nutrition data the researchers were interested in conducting a research about responsible factors that affect to less nutrition status of children under five.

Materials and methods

This research applied a survey design with an analytic and cross sectional technique (Levin, 2006). It aimed to analyze the factors that influence the under nutrition status of children under five of Pekan Labuhan Health Center in 2017. The population of this study was 1200 children under-five of Pekan Labuhan Public Health Centre; while the sample was 92.

Primary data were obtained through survey with questionnaires. It probed the diet pattern of that families applied for feeding the children under five, history of disease, availability of food, mother care pattern, and health service. Secondary data which collected were references and documents about malnutrition and dietary patterns.

The analysis with Bivariate technique (Denis, 2016) was implemented to know the relation of independent variable with dependent variable by using chi-square test on 95% confidence level ($\alpha = 0,05$). With

provision, if value $p \leq 0.05$, there is a significant relation between two variables. Multivariate analysis (Haider, 2017) was used to know the factors that most influenced toward the malnutrition of children under five at Pekan Labuhan Public Health Center, Medan Municipality.

Results and discussion

Results

The results of this research revealed the effect of diet pattern on less nutrition status for children under five of Labuhan Pekan Public Health center in 2017, as follows:

From the table 1, it was found that 24 subjects (26.1 %) of 44 were in less nutrition status with the p value = 0.004. It showed that the diet pattern of children under five was not good, because the educational background of mothers was responsible to the lack of knowledge and information about good diet pattern to fulfill the nutritional needs of children under five.

Table 1. The Effect of Diet Pattern on Less Nutrition Status for Children Under Five of Pekan Labuhan Public Health Center in 2017.

No	Diet pattern	Less nutritional status				Total		P value
		Less nutrition		Normal		N	%	
		N	%	n	%			
1.	Good	20	21.8	37	40.2	57	62.0	0,004
2.	Bad	24	26.1	11	11.9	35	38.0	
Total		44	47.9	48	52.1	92	100.0	

The second data obtained concerning with the influence of history of disease on less nutritional status that presented in the following table:

Table 2 indicated that the subjects who have been recorded experienced the less nutrition were 31 (33.7 %) of 44. The value calculated 0.011. It means that there was a reciprocal relationship between the detected disease infection with malnutrition problems in children under five. These kids with malnutrition experienced the decreased immune endurance then others who were susceptible to get infectious diseases. This part showed the influence of food availability on the less nutritional status of kids. Table 3 showed the

effect of food availability to less nutrition of 28 (30.4 %) of 44 subjects with the p value = 0.010. The results showed many mothers were unable to fulfill the needs of fruit, vegetables, and milk. It is because the source of vegetables and fruits rarely in the area and many mothers who found it difficult to fulfill the milk for children due to poverty. Low income causes the family cannot afford to buy food to meet the nutritional needs of children.

Table 4 indicated the influence of parenting pattern made the nutrition of subjects so bad. It was found 35 (38.1 %) of 44 subjects that experience less nutrition status due to parenting pattern.

Table 2. Influence of History of Disease on Less Nutritional Status of Children Under five in Work Area of Pekan Labuhan Public Health Centre in 2017.

No	History disease	Less nutritional status				Total	p value	
		Less nutrition		Normal				
		N	%	N	%			
1.	Yes	13	14.1	35	38.1	48	52.2	0,011
2.	Nothing	31	33.7	13	14.1	44	47.8	
Total		44	47.8	48	52.2	92	100.0	

Influence of parenting pattern against less nutrition status

Table 4 indicated the influence of parenting pattern made the nutrition of subjects so bad. It was found 35 (38.1 %) of 44 subjects that experience less nutrition status due to parenting patern.

Influence of health service against less nutrition status

Table 5 showed the Public Health Services which affected nutrition problem. In Pekan Labuhan Health Center it was found 30 of 44 subjects that encounter unsatisfied service. The existing health care system is

expected to provide affordable basic health care facilities by children who need it. Thus, Health services that received by children fewer and it gave the bad effect to the nutritional status of children.

Discussion

This part presents the discussion of 5 influential factors which affected the nutrition of children. From data that presented on table 1, 2, 3, 4 and 5, it led to discuss three influential factors which responsible for lack of nutrition; Diet pattern, Influence of history of disease and food availability, parenting pattern, and public health service.

Table 3. Influence of Food Availability on Nutrition Status of Children Under Five at Public Health centre of Pekan Labuhan in 2017.

No	Availability of food	Less nutritional status				Total	P value	
		Bad nutrition		Normal				
		N	%	n	%			
1.	Good	16	17.4	40	43.5	56	60.9	0,010
2.	Bad	28	30.4	8	8.7	36	39.1	
Total		44	47.8	48	52.2	92	100.0	

Diet pattern is a direct factor that affects the nutritional status of children. Progressively, food intake deficiency causes mucosal damage, decreased resistance to colonization and germ pathogens. The decreased immunity and mucosal damage have major role in the body's defense mechanisms, and finally it will give affect the incidence of disease. The nutritional health depends on the level of nutrient intake that contained in the daily food. The level of consumption is determined by the quality of food. The quality of food indicates the existence of all the nutrients which body needs in the food composition and the ration of food than others. Quality of food

shows the amount of each nutrient to the body's needs. If the composition of food fulfill the body's needs, both in quantity and quality, then the body will get the health condition of nutrition as well as possible.

It is called adequate consumption. This report showed the poor consumption of quality and quantity that make the condition of less nutritional health or deficit condition. This finding was in line with Rahim's study (2014). Basically, good feeding is essential for nutritional intake, not only in terms of what the child eats, but the mother's attitude also

plays a role. For example, the presence of mothers to accompany children in feeding helps children. Good feeding will support the nutritional status of children. Along with the age of the child, the variety of food that given must be complete and balanced nutrition

so it is important to support the growth and development of children (Adriani, 2012). Mothers who have children under five of Pekan Labuhan Public Health Center mostly housewife with education level of high school graduated.

Table 4. Influence of Parenting Pattern on Less Nutritional Status of Children Under Five at Public Health Centre of Pekan Labuhan in 2017.

No	Care pattern	Less nutritional Status				Total		p value
		Less nutrition		Normal		n	%	
		N	%	N	%			
1.	Good	9	9.8	41	44.5	50	54.3	0,001
2.	Bad	35	38.1	7	7.6	42	45.7	
Total		44	47.9	48	52.1	92	100.0	

The third data showed the results of the questionnaires that sorted as many as 44 children have a history of disease. The common illnesses were the diarrheal diseases and upper respiratory tract infections. Infectious diseases including ARI and diarrhea make the exacerbated state of nutrition through food input disorders and loss of bodily essential substances. The impact of infection on growth, such as weight loss, was caused by the lower appetite of sufferers. The kids had the input or intake of nutrients and energy was less than that of their needs. One of the impacts of infection for growth was

the loss of body weight; the loss of appetite of sufferers with the infectious disease made the energy less than requirement. On the other hand, children under five who suffered from acute disease tended to suffer from less nutrition until malnutrition. The disease disrupted the metabolism, hormonal balancing and immune function. The biggest infectious disease was found in the first rank of the top ten most diseases in Indonesia is Acute Respiratory Infection (ARI), diarrhea greatly affects the nutritional status of children under five (Almatsier, 2009).

Table 5. Influence of Health Service Against Less Nutritional Status of Children Under five Public Health Centre of Pekan Labuhan in 2017.

No	Health service	Less nutritional status				Total		p value
		Less nutrition		Normal		N	%	
		N	%	n	%			
1.	Good	14	15.2	32	34.8	46	50.0	0,002
2.	Bad	30	32.6	16	17.4	46	50.0	
Total		44	47.8	48	52.2	92	100.0	

Infectious diseases reduced the kids' ability to absorb energy or nutrients from food. Infectious diseases directly reduced the consumption of food for the children under five. It also made the lowering of their appetite. Thus, symptoms such as nausea, vomiting, abdominal pain, dry mouth already decreased their appetite. Even infectious diseases suppressed the patient central nervous system that controls appetite.

By synthesizing cytokine interleukin that is secreted by cells from the immune system in response to infection, the sample experienced malnutrition.

Food availability is the condition of the fulfillment of food for the household which is reflected from the availability of adequate quantity and quality of food, safe, equitable, and affordable. It is also an integrated

system of subsystems of distribution and consumption availability. If one of them does not work properly, so there will be a problem of food insecurity or vulnerability. The fulfillment of food for healthy and active life is measured by using three main points that covering the aspect of food availability, such as available food enough for the whole family, then the distribution aspect includes the food absorption to all family members, then the food consumption aspect such as the family is able to access enough food and manage Consumption in accordance with the adequacy of nutritional status and health includes vegetable and foods to fulfill the need of carbohydrates, proteins, fats, vitamins and minerals along with its derivatives, which are benefit to human health. Following Almatsier's report, the data in Medan Municipal showed that the fulfillment of food with safe conditions, free from biological, chemical, and other biological contamination can interfere with, harm, and endanger human health (Almatsier, 2009) affected the subjects.

The result of food availability and the nutritional status of children of poor family in Pekan Labuhan showed the less nutrition. This finding glorified the Gani's research (2015) which reported that in Kuta Alam sub-district Banda Aceh was found the level of family on food availability which affects the nutritional status of children under five. Families with good food availability have children under five with good nutritional status, and vice versa families with unaffordable food availability have children under five with less nutritional status.

Concerning with the mother's parenting pattern _ their attitude in dealing with her child in terms of maintaining nutritional status of children under five can be seen in many ways, among others, from how the way parents give rules to children under five about eating patterns, how to give gifts and punishments, how parents show authority and the way parents give attention or response to the child's desire that related to nutritional status. Every mother who has children expected to provide time, attention, and support to children under five to grow well,

physically, mentally and socially. Improper care is caused by a lack of mother's knowledge and skills which resulting in unhealthy behavior (Health Department, 2014). Therefore, efforts to improve the nutrition of children under five must be done through the empowerment of mothers; so it can be increased the independence of mothers fulfill the nutritional needs and overcome the nutritional problems of children.

The parenting pattern of poor family put children on the condition that have risk on problems that related to nutritional status. The wrong parenting is an indirect cause of malnutrition problems in children. Therefore, parenting patterns closely are related to nutrition as the most important aspect in the pattern of nutritional care. It is the family ability in choosing healthy food according to purchasing budget, practice of breastfeeding, food preparation, food processing, food storage, personal hygiene, the way of doing communication by the family to children in the fulfillment of nutrition. The research of Kusumawati (2012) that found that most of the respondents have poor eating pattern (60.5%) and also influenced the nutritional status of children comparatively was bigger than that of data mothers education, knowledge and role in feeding practices in Pekan Labuhan Medan Municipal.

Some aspects of basic health services related to the nutritional status of children less than five years are: immunization, child weighing, child health education, and health facilities such as Integrated Post Service, Public Health Centre, hospital, midwife practice and doctor, the higher the reach of the community towards basic health care facilities that mentioned above, the less risk of malnutrition. The utilization of good health services is a way to protect children under five from infectious diseases which related to less nutrition for children under five. Health services will have an impact on improving the nutritional status of children under five if the health services that have received are adequate and qualified. Regular health care, not only when child is sick, having health checkup and weighing the child regularly every

month, will support the child's growth and development.

According to researcher's assumption, health care declared less good because officers are less to provide information that related to the provision of nutritional intake for children under five. After weight weighing, giving additional feeding activities at Posyandu (Integrated Health Post) have been completed. Mothers can go home immediately without getting health education. The additional food which provided is also quite monotonous. Health workers who are less friendly and lacking clarity for giving explanation resulted in the bad perception in the eyes of respondents. They assessed the health service is poor and families have no willing to bring children to Posyandu (Integrated Health Post).

Conclusion

Based on the results of study, it can be concluded:

Pattern of diet, history of disease, food availability, parenting and health services have affected the malnutrition status of children under-five in Pekan Labuhan Public Health Center in 2017 (p value <0.05). Based on multivariate analysis with multiple logistic regression test, the most dominant variable affecting incidence of malnutrition status in Pekan Labuhan Public Health Center in 2017 was parenting pattern (p: 0,001). Mothers who have children under five in Pekan Labuhan Public Health Center came from low educational background that make their knowledge and insight or understanding of nutritional status of children under five and improve pattern care of children under five was indicated very low.

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