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RESEARCH

Physical Condition of Mother and Children Aged Less Than Five Years in Public Health Center Depok III, Sleman, Yogyakarta

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ABSTRACT

Background: Nutritional status and health of mother and child as a determinant of the quality of human being. The period of a thousand days of life is a sensitive period for the impact of the baby at this time that will be permanent and not be corrected. Nutritional status of children is influenced by several factors, that is genetic and environmental factors. Family factors also have an important role, which the mother has a role in the childcare. It is an expectation that the nutritional status of mother as known as one of the impact of the nutritional status of children can be particularly efforts in a thousand days of life. **Objective**: To find out the relationship between physical condition of toddler's mother with the physical condition of toddlers in Puskesmas Depok III Sleman Yogyakarta. **Methods**: This was a cross sectional research, done in the Public Health Center Depok III, Sleman, Yogyakarta. Samples of this research was 104 toddlers. The research variables were the physical condition of toddler's mother (height and nutritional status) and the physical condition of toddlers (based on nutritional status of index height/age, weight/age, weight/height, and BMI/age). Chi square test was used to do a hypothesis test.
Result: Short and very short toddlers were 28.8%, based on the index of weight/age 7.7% were malnutrition and 2.9% were fat toddlers. Based on the index of weight/height 3.8% were very slim and skinny and 14.4% were fat, and based on the index of BMI/age 4.8% were very slim and skinny and 12.5% were obese. As much as 40.4% toddlers mother's height ≤150 cm (short) and 59.6% of normal category. P-value for the relationship between height and toddler's nutritional status, based on index of height/age was 0.135, p-value for relationship between mother's nutritional status and toddler's nutritional status, based on index of weight/age was 0.894, the index of weight/height was 0.929, and the index of BMI/age was 0.932, with no relationship between all of them. **Conclusion**: There was no significant relationship between mother height nutritional status of toddlers with an index based on height/age. There was no significant relationship between mother nutritional status and toddlers nutritional status based on the index of weight/age, weight/height, or BMI/age.
Keywords: Nutritional status, Mother's height

INTRODUCTION

The success of a nation's development is determined by the availability of quality human resources, namely human resources who have physical strength, strong mentality, excellent health, and intelligence. Empirical evidence shows that this is largely determined by good nutritional status and good nutritional status is determined by the amount of food consumed. If malnutrition and malnutrition continue to occur can be an inhibiting factor in national development(1).

Maternal and child nutrition and health status as a determinant of source quality human power, is increasingly clear with evidence that nutritional status and health mother in pre-pregnancy, during pregnancy and while breastfeeding is a very critical period. A thousand day period, i.e. 270 days during her pregnancy and 730 days in the first life of her baby, is a sensitive period due to the effects it has on the baby this period will be permanent and cannot be corrected. The impact is not only on physical growth but also on mental development and intelligence, which in adulthood can be seen from the physical size that is not optimal and non-competitive work quality which results in low economic productivity(2).

The period of children which is 1-5 years of age is the age in the life cycle where growth is not as fast as in infancy, but many activities. This period is also stated as a critical period in order to get quality human resources, especially in the first 2 years period is a golden period for optimal brain growth and development, therefore at this time it needs serious attention(3). Some factors thought to be related to the incidence of stunting in infants include the birth weight of a children aged less than five years, history of children aged less than five years infection, history of pregnancy disease, the height of parents, and socioeconomic factors(4).

Height is influenced by genetic and environmental factors during the growth period. Failure of linear growth is largely due to the intrauterine period and the first few years of life and is caused by inadequate intake and frequent infections[5]. This is reinforced by statements that short maternal height and poor maternal nutrition are associated with an increased risk of failure of intrauterine growth[6].

The nutritional status of children is also influenced by several factors, one of which is a family factor in which the mother holds the highest role in childcare. Good care is very important to ensure optimal child growth and development. Therefore, poor parenting can cause children to have poor nutritional status[7].

Nutritional status of children under five years by weight according to age in 2010 for the Yogyakarta region based on the 2010 Indonesian Basic Health Research data, namely 1.4% poor nutrition, 9.9% poor nutrition, 81.5% good nutrition, and 7 over nutrition, 3%. The prevalence of nutritional status of children under five years was based on height by age (height/age) in Yogyakarta, which was very short 10.2%, short 12.3%, normal 77.5%. The prevalence of under-five nutritional status based on body weight according to height was very underweight 2.6%, 6.5% underweight, 77.3% normal, and 13.6% fat[8]. Indonesian Basic Health Research 2013 data shows the tendency of the proportion of children under five years with malnutrition and short prevalence was increased when compared with the 2010 Indonesian Basic Health Research data. In contrast to the proportion of underweight children whose prevalence had decreased. However, all provinces in Indonesia still had a prevalence of less severe still above the limit of "non-public health problems" according to WHO which was 10.0% and for short problems of 20%, then all provinces are still in a state of public health problems[9].

The Public Health Center Depok III was a Public Health Center located in Depok, Sleman, Yogyakarta. This Public Health Center had 1 village working area namely Caturtunggal Village. Data from the Depok III Public Health Center in 2013 stated that of the 2358 children under five years who were weighed, the number of children under five with malnutrition with a weight according to age index was 119 children (5.55%), 14 children under five (0.65%), and nutrition more 67 toddlers (3.13%). Toddlers are short and very short with a height according to age index of 183 children aged less than five years (8.54%) and 79 children aged less than five years (3.69%), while according to the weight according to height index, obese toddlers are 69 children aged less than five years (3.22%), thin 43 children aged less than five years (2.01%), and very underweight 2 children aged less than five years (0.09%)[10]. Base on data, researchers wanted to find out the extent of the relationship between the physical condition of the mother of children aged less than five years and the physical condition of her children aged less than five years.

METHODS

This type of research was an observational analytic epidemiological study, with a cross-sectional design. The research site was conducted at the Posyandu located in the working area of the Public Health Center Depok III, Sleman, Yogyakarta and data was collected in May 2014. Population in this research were all children aged under five years in the working area of Public Health Center Depok III, Sleman, Yogyakarta.

The sample were children aged under five years and biological mothers of these children with inclusion and exclusion criteria. The inclusion criteria were children aged under five years who still have biological mothers, children aged under five years, and their mothers were willing to be respondents and were present at the time of the study, children do not have a history of premature / LBW, and child and mother were not suffering from illness. While the exclusion criteria were children aged under five years and mothers had clinical disorders, such as ascites, edema, tumors, hepatomegaly, and genetic and chromosomal abnormalities, and mothers were pregnant. The minimum sample size needed was 96 children aged under five years. The technique for determining Posyandu (Integrated Service Post) that will be used as a place to collect data in this study was by cluster random sampling. From 35 Posyandu in the working area of Public Health Center Depok III, 2 Posyandu were selected in this study, namely Posyandu Glendongan and Posyandu Papringan and were studied by all children aged under five years (104 children).

The independent variable in this study was the physical condition of the mother of children, namely the mother's height and mother's nutritional status. While the dependent variable in this study was the physical condition of children aged under five years, namely the nutritional status of children aged under five years based on the height/age, weight/age, weight/height, and BMI/age.

The primary data that was data on maternal and child identity, anthropometry of mothers including weight and height, child anthropometry including weight and height. Data collection tools or instruments were mother and child identity forms, mother and child weight over 2 years using digital stamped scales, mother's height using Microtoice, child weight less than 2 years using baby scale, child body height using Microtoice for children more than 2 years old, while children less than 2 years old were used a SECA stadiometer.

RESULTS

Characteristics of Research Subjects

A total of 104 children aged under five years were taken as research respondents. The characteristics of the children studied include the sex and age of the child, could be seen in the following table.

Table 1. Characteristics of children

Characteristics of children		Frequency	
		Child	Percentage
Gender	Man-child	60	57.7
	Girl	44	42.3
Age	0 – 24 month	69	66.3
	25 – 60 month	35	33.7
Total		104	100

From the results of the study note that the number of children aged less than five years who are male as many as 60 people (57.7%). while women as many as 44 people (42.3%). According to children' age. it was known that the majority of respondents are 0-24 months old. namely. 69 people (66.3%). while children over 2 years old or 25-60 months old were fewer, amounting to 35 people (33.7%).

Table 2. Characteristics of mothers

Characteristics of mother of children		Frequency	
		Mother of children	Percentage
Education	Elementary school	11	10.6
	Middle school	18	17.3
	High school	52	50
	University	23	22.1
Occupation	Housewife	82	78.8
	Private employees	21	20.2
	Civil servants	1	1
Total		104	100

The characteristics of the mothers of children studied included work and education of the mothers of children. From the results of the study. it was found that the majority of mothers of children with high school education were 52 people (50%) and the least was an elementary school. namely 11 people (10.6%). According to mothers' job. the majority of respondents were housewives as many as 82 people (78.8%). while the fewest were mothers who worked as civil servants (PNS). namely as many as 1 people (1%).

Research Variables

Table 3. Distribution of children aged less than five years by high/age

Nutritional status of height/age	Frequency	
	Child	Percentage
Very short	11	10.5
Short	19	18.3
Normal	72	69.2
High	2	1.9
Total	104	100

From the results of the study in the table 3. it was known that as many as 30 children aged less than five years (28.8%) have short nutritional status and are very short. The percentage of short children was higher than very short children.

Table 4. Distribution of children aged less than five years by weight/age

Nutritional status of weight/age	Frequency	
	Child	Percentage
Poor malnutrition	1	1
Malnutrition	7	6.7
Good Nutrition	93	89.4
More nutrition	3	2.9
Total	104	100

From the nutritional status of children under five based on the weight/age index, it was known that the majority of children under five years with good nutritional status was 93 children (89.4%), but there were also children with less or more nutritional status. About 8 children (7.7%) were malnourished and undernourished, while 3 children were over malnourished (2.9%). The complete data could be seen in table 4.

Table 5. Distribution of children aged less than five years by weight/height

Nutritional status of weight/ height	Frequency	
	Child	Percentage
Very thin	2	1.9
Thin	2	1.9
Normal	85	81.7
Fat	15	14.4
Total	104	100

Children aged less than five years with nutritional status are very thin and thin as many as 4 children (3.8%). while fat children are 15 children (14.4%). Data could be seen in the following table.

Table 6. Distribution of children aged less than five years by BMI/age

Nutritional status of BMI/age	Frequency	
	Child	Percentage
Very thin	2	1.9
Thin	3	2.9
Normal	86	82.7
Fat	13	12.5
Total	104	100

The nutritional status of children under five based on the BMI/Age index had the same category as the Weight/Body Lengtht or Weight/Height index ie there are 4 categories. From the results of the study note that children with nutritional status were very thin and thin as many as 5 children (4.8%). while children with fat nutritional status as many as 13 toddlers (12.5%).

Table 7. Distribution of mothers of children by height

Height	Frequency	
	Mother of children	Percentage
Thin	42	40.4
Normal	62	59.6
Total	104	100

The results showed that mothers whose height was ≤ 150 or short were 42 people (40.4%). while height >150 or the normal category were 62 people (59.6%).

Table 8. Distribution of mothers of children by nutrition status

Nutritional Status	Frequency	
	Mother of children	Percentage
Thin	8	7.7
Normal	62	59.6
Fat	34	32.7
Total	104	100

When viewed from the data above. nutritional problems in children aged less than five years were 32.7% fat and 7.7% underweight. Nutrition problems in toddlers were more dominant in overweight.

Relationship between Variables

Table 9. Children nutrition status (height/age index) based on mother's height

Height of mother	Nutritional status of children (height/age index)							
	Thin		Not Thin		Total		χ^2	p-value
	n	%	n	%	n	%		
Thin	16	38.1	26	61.9	42	100	2.229	0.135
Normal	14	22.6	48	77.4	62	100		
Total	30	28.8	74	71.2	104	100		

Based on the cross-tabulation above. it was known that of 42 short-term mothers of children there were 16 children (38.1%) under five years whose nutritional status was short (the combined nutritional status categories were very short and short).

Table 10. Children nutrition status (weight/age index) based on maternal nutrition status

Nutrition status of mother	Nutrition status of children (weight/age index)							
	Poor		Good		Total		χ^2	p-value
	n	%	n	%	n	%		
Thin	1	12.5	7	87.5	8	100	0.135	0.894
Normal	6	9.7	56	90.3	62	100		
Fat	4	11.8	30	88.2	34	100		
Total	11	10.6	93	89.4	104	100		

The most of the mothers of children under five years who were normal namely 62 people apparently the nutritional status of children under five years most were also not short (a combination of normal and high categories) that was 48 children (77.4%). The relationship between the nutritional status of mothers with the nutritional status of children under five based on Weight/Age index could be seen in the following table above. In Table 10. a merger of children aged under five years nutritional status categories was carried out. in which poor nutritional status. lack of nutrition. and more were put into one category. namely malnutrition. This was done because there were empty cells. so several categories were put together. From the table above. it was knew that mothers who have underweight. normal or obese nutritional status turn out to most have toddlers whose nutritional status was good. all with percentages above 80%. Whereas for malnutrition only a small part. for example from 42 skinny and obese mothers it turns out that the nutritional status of under-fives was only 5 children aged under five years (24.3%).

Table 11. Children nutrition status (weight/height index) based on maternal nutrition status

Nutrition Status of Mother	Status Gizi Balita Indeks Weight/Body Length atau Weight/Height							
	Abnormal		Normal		Total		χ^2	p-value
	n	%	n	%	n	%		
Abnormal	7	16.7	35	83.3	42	100	0.008	0.929
Normal	12	19.4	50	80.6	62	100		
Total	19	18.3	85	81.7	104	100		

In Table 11. a merger of children aged less than five years nutritional status categories. i.e. nutritional status. was very thin. underweight and fat which is used as one category. which was to be an abnormal category and underweight and obese categories for toddlers were made into one category into an abnormal category. This was done because there were empty cells. so several categories are put together.

Based on the cross-tabulation above. it was known that mothers whose nutritional status was not normal and normal apparently have children aged under five whose nutrition status was normal. namely 83.3% and 80.6%. respectively.

Table 12. Nutrition status (BMI/age index) based on maternal nutrition status

Nutrition Status of mother	Nutrition Status of Children BMI/Age Index							
	Abnormal		Normal		Total		χ^2	p-value
	n	%	n	%	n	%		
Thin	1	12.5	7	87.5	8	100	0.140	0.932
Normal	11	17.7	51	82.3	62	100		
Fat	6	17.6	28	82.4	34	100		
Total	18	17.3	86	82.7	104	100		

In Table 12, a merger of children aged under five years nutritional status categories. i.e. nutritional status. was very thin. underweight. and fat were used as one category. which was to be an abnormal category. This was done because there were empty cells. so several categories are put together.

From the table above it could be seen that women who were thin. normal. and obese have toddlers. most of whom have normal nutritional status. with a percentage of more than 80%. While the nutritional status of children under five is not normal for mothers whose nutritional status was normal and fat the percentage was almost the same. namely 17.7% and 17.6%. respectively.

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DISCUSSION

Relationship between Height of Mother and Children Nutrition Status Based on Height/Age Index

In this study. it was found that there was no relationship between maternal height of child and under five nutritional status based on Body Length/Age or Height/Age index with a value of p = 0.135 (p> 0.05). However. based on table 9. it was known that mothers who were short tend to have short children. as well as mothers whose normal height also tend to have children whose height was normal and high. From this biological aspect it was associated with internal factors. which were influenced by genetic factors originating from the mother[11]. In general. there were two factors that influence children's growth and development. namely genetic and environmental factors. Genetic factors were the basic capital in achieving the final results of the child's growth and development process. Through genetic instructions contained in fertilized eggs. quality and quantity of growth could be determined. Including genetic factors include various normal and pathological innate factors. gender. ethnicity or nation. Environmental factors were also a determining factor in whether or not the innate potential was achieved. A good enough environment will allow for the achievement of innate potential. while a less favorable one will inhibit it[(11)]. The most specific trait in children was growth and development. This trait has been programmed since the baby was conceived. It is undeniable that this specific trait was largely determined by the child's innate and direct or indirect environmental influenced on the child. But the bigger the child. the greater the influence of the environment[(12)]. Intake and disease factors play a role in determining whether a child born with a low birth weight will remain stunted throughout his lifetime or achieve a maximum catch-up growth[(13)]. From this. it can be seen that the lack of association between maternal height and nutritional status of children under five based on the Height/Age index can be caused by environmental factors which greatly affect the growth and development of children apart from internal/genetic factors themselves.

Relationship between Nutritional Status of Mother and Children Nutritional Status Based on Weight/Age Index

Chi square test analysis results obtained p value = 0.894 (p> 0.05). which means there is no relationship between the nutritional status of under-five mothers with under-five nutritional status based on the BB / U index. The results of this study are the same as a study conducted by Prashinta (2007) with the title Relationship between the Nutritional Status of Breastfeeding Mothers and the Nutritional Status of 4-Month-Old Babies at the Banguntapan I Health Center. Banguntapan Subdistrict. Bantul Regency where the results of the study are that there is no relationship between the nutritional status of breastfeeding mothers with nutritional status of infants (Weight/Age) aged 4 months[(14)]. The absence of a relationship between the nutritional status of mothers with the nutritional status of children under five can be caused by several factors not examined in this study. for example nutrition/feeding of children. mother's knowledge. and socioeconomics.

Almost all environmental factors of a child affect the maturation process. including consumption of energy and essential nutrients in food. illness. family characteristics. family structure and number. maternal biological characteristics. mother's education. and child care environment including mother-child interaction and stimulation in family. Socio-economic factors such as education. employment. technology. culture and family income also influence children's growth. These factors interact with each other so that it can affect nutrient input and infection in children[(15)]. The level of education will affect food consumption through food selection. People with higher education tend to choose food with quality and quantity compared to those with low education. The higher the education of parents. the better the nutritional status of their children[(16)]. There was a positive relationship between mother's education and knowledge of nutrition. health. and childcare. Mothers who have higher education generally have good knowledge of nutrition. health. and parenting. Maternal education is one of the determinants of infant and child mortality. because the level of mother's education affects the level of understanding of health care. hygiene. and awareness of the health of children and families[(17)].

Relationship between Nutrition Status of Mother and Children Nutrition Status Based on Weight/Height Index

The analysis showed the value of p = 0.929 (p> 0.05). From this p value it could be concluded that there is no relationship between the nutritional status of mothers of children under five with the nutritional status of children under five based on the Weight/ Body Length or Weight/Height index in the Depok III Public Health Center. Nutritional status is the health condition of a person's body or group of people caused by consumption. absorption (absorption). and use (utilization) of food nutrients. The nutritional status of these under-fives

mothers has not been proven to be significant on the nutritional status of children under five based on Wight/Body Length or Weight/Height index. Many factors influence. including food intake of the toddler and mother more specifically. demographics. and social and economic factors that affect the food of respondents[18].

Relationship between Nutrition Status of Mother and Children Nutrition Status Based on BMI/Age Index

Just like the nutritional status of children under five based on the Weight/Body Length or Weight/Height index. the nutritional status of children under five based on the BMI/Age index also has nothing to do with the nutritional status of the mother p-value = 0.932 (p> 0.05). The absence of a relationship between maternal nutritional status with the nutritional status of children under the BMI/Age index could be caused by other factors not included in the study such as infant food intake. such as children who are only given breast milk (exclusive breastfeeding). and weaning age. Exclusive breastfeeding is carried out for 6 months without giving food or drink other than Breast milk[19].

CONCLUSION

The nutritional status of children aged under five years who were short and very short as many as 30 children (28.8%). based on the Weight/Age index 8 child (7.7%) were of poor and poor nutritional status and 3 obese children (2.9%). based on the Weight/height index 4 children (3.8%) were very thin and thin and 15 children (14.4%) were fat. and based on the BMI/Age index 5 children (4.8%) were very thin and thin and 13 children (12.5 %) fat. A total of 42 mothers of children (40.4%) were 150 cm (short) in height and 62 people (59.6%) were in the normal category. There was no significant relationship between mother's height and the nutritional status of children under five based on Body Length/Age or Body Length/Age index. However. short mothers were biologically inclined to have short children. and vice versa. There was no significant relationship between the nutritional status of mothers of children with the nutritional status of children under five based on the Weight/Age. Weight/ Body Length or Weight/Height index. and BMI/Age.

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