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Relationship Between Nutritional Status And Classification For Cough Or Difficult Breathing Of Children Under Five Years In Community Health Center Of Piyungan Bantul Yogyakarta

[1]Masta Hutasoit, [2]Latifah Susilowati

[1,2] Faculty Member, Nursing Study Program, University of Jenderal Achmad Yani Yogyakarta,
Jl. Brawijaya, Ambarketawang, Gamping, Sleman,
Yogyakarta 55294, Indonesia,
Email : hutasoitmasta@gmail.com

Abstrak

Batuk atau sulit bernapas adalah merupakan masalah yang sering terjadi yang menyebabkan tingginya angka morbiditas dan mortalitas pada balita. Menurut bagan MTBS (Management Terpadu Balita Sakit) tahun 2015 bahwa kesulitan bernafas atau batuk diklasifikasikan kedalam tiga diagnosis yaitu batuk bukan pneumonia, pneumonia dan pneumonia berat. Status gizi pada balita sangat penting untuk pembentukan kekebalan tubuh terutama dalam mencegah infeksi. Kekurangan gizi pada balita mengakibatkan anak rentan terhadap berbagai infeksi seperti pneumonia. Tujuan penelitian ini adalah mengetahui hubungan antara status gizi anak balita dan klasifikasi batuk atau sulit bernafas berdasarkan MTBS di Puskesmas Piyungan Bantul Yogyakarta Indonesia. Jenis Penelitian yang digunakan adalah deskriptif korelasional dengan pendekatan restrospekstif. Teknik pengambilan sampel menggunakan simple random sampling. Subjek dalam penelitian ini berjumlah 46 responden, yaitu balita yang datang ke Puskesmas Piyungan dengan keluhan batuk pada periode Juni-Agustus 2017. Pengumpulan data menggunakan data sekunder dengan mengidentifikasi data rekam medis tentang berat badan, usia dan klasifikasi batuk berdasarkan MTBS. Hasil penelitian menunjukkan mayoritas status gizi dalam kategori baik sebesar 74%, klasifikasi batuk sebagian besar masuk klasifikasi batuk bukan pneumonia sebesar 69,6%. Analisis data bivariat dalam penelitian ini menggunakan rumus Spearman. Ada hubungan status gizi dengan klasifikasi batuk pada balita dengan nilai p = 0,001 (α <0,05) dengan hubungan (r) -0,558 (sedang). Hipotesisnya dapat diterima. Ada hubungan yang signifikan antara status gizi dan klasifikasi batuk menurut MTBS di Puskesmas Piyungan Bantul. Artinya semakin baik status nutrisi balita semakin rendah klasifikasi batuk pada balita.

Kata kunci *: Status Gizi, Balita, Klasifikasi Batuk atau Kesulitan Bernafas, Pneumonia, MTBS*

Abstract

Cough or difficulty breathing is a common problem that causes the increased rate of mortality and morbidity in children under five years old. According to the chart of Integrated Management of Childhood Illness (IMCI) in 2015 shows cough or difficulty breathing is classify into three, there are cough or cold no pneumonia, pneumonia, and severe pneumonia. Nutritional status of children is important to forming body immune, especially in preventing infection. Malnutrition in children is vulnerable to various infections. Determining the relationship between nutritional status of children under five years old and cough or difficult breathing classification based IMCI in Community Health Center of Piyungan Bantul Yogyakarta Indonesia. The study was a descriptive correlational retrospective approach. Sampling technique was used simple random sampling. Subjects in this study were children under five years old and cough or difficult breathing classification based IMCI

amounted to 46 respondents. Inclusion criteria of this study was children who come to the Community Health Center of Piyungan with complaints of cough in the period from June to August 2017. Data collection using secondary data by identifying the medical record data about weight, age and cough or difficulty breathing classification based IMCI. The result showed the majority of nutritional status in good categories by 74%, the classification of a cough or difficult breathing mostly cough or cold no pneumonia at 69.6%. Bivariate data analysis in this study using the formula of Spearman. There was a relationship between the nutritional status of the classification of a cough in children under five years old with a value of p = 0.001 (α <0.05) with the relationship (r) of -0.558 (medium). The hypothesis is acceptable. There is a significant relationship between nutritional status and cough or difficulty breathing classification by IMCI in Community Health Center of Piyungan Bantul. It means better the nutritional status of children under five years old making a lower classification of a cough in under five years children.

Keywords: *Nutritional Status, Children Under Five Years, Cough Or Difficult Breathing Classification, Pneumonia, IMCI*

INTRODUCTION

Cough or difficult breathing in children under five years is a common problem. It is caused by a variety of causes, ranging from mild illness and even serious illness. According to the IMCI (Integrated Management of Childhood Illness) that cough or difficult breathing can be classified into three, there are a cough or cold no pneumonia, pneumonia, and severe pneumonia. The classification is based on signs and symptoms of cough experienced by the child, based on the presence or absence of signs of danger, pull into the chest wall and the frequency of breathing, and with specific treatment for each classification of the disease (1).

The main causes of mortality and morbidity of children worldwide are pneumonia. Globally pneumonia accounted for 18% of children mortality, especially in children aged 0-4 years (2). In Indonesia, the disease accounts for the highest mortality nationally was 10,000 children under five years old was died because of pneumonia. According to data from the Indonesian Health Profile (2014) of pneumonia in children under five in Yogyakarta Indonesia was children 11.88%.

Pneumonia is an infection disease in the lung parenchyma that is characterized by high fever, chills, shortness of breath, rapid breathing, coughing, and chest wall attraction into. Children who experience pneumonia seen shortness of breath and coughing, it caused by an accumulation of fluid or pus in the alveoli.[1] Lungs in patients with decreased ability to expand so that the child has shortness breathing. Pneumonia can increase lung rigidity that manifests against the withdrawal of the chest wall into the body. Children with pneumonia potentially being hypoxia due to poor handling and the condition will affect child mortality (3).

Risk factors of pneumonia are not given exclusive breastfeeding, not to wash their hands with soap, incomplete immunization, malnutrition, the smoke of burning houses and exposed to cigarette smoke (4,5). According to the framework on the prevention of pneumonia initiated by

UNICEF that good nutrition can prevent children from developing pneumonia (5).

The nutritional status of children is food received and utilized by the body to meet its energy needs, physical activity, and child development. Needed nutrients such as carbohydrates, proteins, fats, vitamins and minerals (6). Nutritional status of children is very important for the formation of immune, especially in preventing infection. Malnutrition in children will result in the child's body more susceptible to infection. Based on research Sukmawati, there is a relationship between nutritional status and the incidence of ARI in children (7). Furthermore, according to Said that children under five years old suffering from severe malnutrition will undergo a matter of concern and increase the mortality rate in children with pneumonia (8).

Based on the high mortality rate due to pneumonia and malnutrition to be one of the risk factors of pneumonia, research needs to be done to determine the relationship between nutritional status of children under five years old and cough or difficult breathing classification based IMCI in Community Health Center of Piyungan Bantul Yogyakarta Indonesia. The results of this study are expected to increase the awareness of health professionals and parents about the importance of the nutritional status of children in order to prevent the occurrence of pneumonia.

MATERIALS AND METHODS

The study was a descriptive correlational retrospective approach. The research was conducted in the Community Health Center of Piyungan Bantul Yogyakarta. Data were collected from September to November 2017. Data collection using secondary data by identifying the medical record data about weight and age and cough or difficult breathing classification based on IMCI.

The populations in this study were children who were in Community Health Center of Piyungan Bantul Yogyakarta that was diagnosed cough or difficult breathing classification based IMCI in the last 3 months (May-July) of 85 children under five years old (aged 0-59 months). The sampling technique by using simple random is done randomly without regard to strata that exist in the population. Randomization was done with the help of a computer. Based on the sample size calculation Slovin formula then obtained a sample of 46 respondents.

Method of data collection in this study is based on secondary data. The data retrieved from the medical record of patients included patient's age, weight, diagnosis of cough or difficult breathing classification based IMCI. Z score of every respondent is calculated using a formula to determine the nutritional status. Nutritional status classified into four, included severe undernutrition (<-3SD), moderate undernutrition (≥-3SD until -2SD), normal (-2SD until +2SD), overweight (>2SD). While the classification of a cough by IMCI guidelines are divided into two cough or cold no pneumonia and pneumonia.

The univariate analysis was performed to get an overview of the characteristics of each variable research by presenting the frequency distribution. The bivariate analysis used in this study to determine the relationship between nutritional status and cough or difficult breathing classification based IMCI. Bivariate data analysis in this study using the formula of *Spearman* because the data are not normally distributed and the data were ordinal and nominal (9).

RESULTS AND DISCUSSION
Respondent Characteristics

Analysis results Table 1 shows that most respondents were male (58.7%). Most respondents age category 13-36 month age group by 50%. The majority of respondents who have a normal nutritional status of 74%, the cough or cold no pneumonia 69.6% and the respondents were classified as pneumonia 30.4%.

Table 1. Frequency Distribution of Respondents by Gender, Age Group, Nutritional Status and Classification of Cough in Community Health Center of Piyungan Bantul. (n = 46 respondents)

Characteristics of Respondents	Frequency	Percentage (%)
Gender		
Male	27	58.7
Female	19	41.3
The age group		
0-12 months	9	19.6
13-36 months	23	50
37-59 months	14	30.4
Nutritional status		
Moderate undernutrition	10	21.7
Normal	34	74
Overweight	2	4.3
Cough and difficulty breathing		
Cough or cold no pneumonia	32	69.6
Pneumonia	14	30.4
Total	46	100

Result analysis table 2 shows that normal nutritional status at most male respondents were 19 (55.9%). The age group most is the age range of 13-36 months and 37-59 months is almost the same. Age 13-36 months by 15 (44.1%) and 37-59 months of age by 14 (41.2%).

Results of analysis of table 3 show that the cough or cold no pneumonia that most of the men were 17 (53%), respondents who experienced pneumonia the most male of 10 (71.4%). Respondents most in the category of cough or cold no pneumonia and pneumonia are age 13-36 months are 46.9% and 57.1%.

Bivariate Analysis

Analysis results in table 4 show the relationship between nutritional status and cough and difficult breathing classification in children under 5 years with a value of $p = 0.001$ ($p < 0.05$). The relationship indicated by the value of the correlation coefficient (r) of (-0.558) medium relations category.

Table 2. Frequency Distribution Characteristics of Respondents Based on Nutritional Status in Community Health Center of Piyungan Bantul. (n = 46 respondents)

Respondent Characteristics	Nutritional status			TOTAL	
	Moderete undernutrition	Normal	Overweight	N	%
Gender					
Male	7 (70%)	19 (55.9%)	1 (50%)	27	58.7
Female	3 (30%)	15 (44.1%)	1 (50%)	19	41.3
Age group					
0-12 months	3 (30%)	5 (14.7%)	1 (50%)	9	19.6
13-36 months	7 (70%)	15 (44.1%)	1 (50%)	23	50
37-59 months	0 (0%)	14 (41.2%)	0 (0 %)	14	30.4

Table 3. Frequency Distribution Characteristics of Respondents Based on Cough and Difficult Breathing Classification in Community Health Center of Piyungan Bantul (n = 46 respondents)

Respondent Characteristics	Cough and difficult breathing Classification		TOTAL	
	Cough or cold no pneumonia	Pneumonia	N	%
Gender				
Male	17 (53.1%)	10 (71.4%)	27	58.7
Female	15 (46.9%)	4 (28.6%)	19	41.3
Age group				
0-12 months	6 (18.8%)	3 (21.4%)	9	19.6
13-36 months	15 (46.9%)	8 (57.1%)	23	50
37-59 months	11 (34.4%)	3 (21.4%)	14	30.4

Nutritional	Cough and difficult breathing classification		n	p-value	The correlation coefficient (r)
	Cough or cold no pneumonia	Pneumonia			
Moderete undernutrition	2 (6.2%)	8 (57.1%)	10		
Normal	28 (87.5%)	6 (42.9%)	34	0.001	-0.558
Overweight	2 (6.2%)	0 (0%)	0		
Total	32	14			

DISCUSSION

The Nutritional Status in Community Health Center of Piyungan Bantul

The nutritional status of 74% respondents was normal, but children under five years old suffered from pneumonia were 57.1% and the nutritional status was moderate undernutrition. In this study indicator of nutritional status assessed based index of weight for age which can indicate nutritional problems in general. Good nutritional status is most male respondents. In line with previous studies conducted by Devi reported that male children more well-nourished than female children (10). The nutritional needs of men and women are different. Male children usually require nutritional needs are more than females because boys have a higher physical activity (11).

The results show that good nutrition and malnutrition of the most widely experienced children in the age group 13-36 months. Research conducted Suhendri reported that children under five years old in the age group 13-36 months at most have a good nutritional status and undernutrition. Children are the age group that has growth and rapid development and rapid. This conditions lead to children require high nutrients in every kilogram of body weight. Therefore the nutritional status of children should be monitored regularly to determine the adequacy of the fulfillment of growth and development of children because this group is included in the critical period of growth and the risk of failure of growth if not met with good nutrition (12).

Cough and Difficult Breathing Classification Based on IMCI in Community Health Center of Piyungan Bantul

The result was found the most cough and difficult breathing classification is a cough or cold no pneumonia according to IMCI guidelines. The case of cough or cold no pneumonia amounted 69.6%, while under-five children suffering from pneumonia of 30.4%. Furthermore, the data showed that most children who suffer pneumonia are male. In accordance with the Basic Health Research pneumonia suffered by children with a male than female. The results showed that the incidence of pneumonia was highest in the age group 13-36 months. These results are consistent with the results of Basic Health Research in 2013, which reported that the period of a high prevalence of pneumonia occurred in the age group 1-4 years. While the incidence of pneumonia per 1,000 children under five height at age 12-35 months (3). The percentage of children who fall into the classification of cough or cold no pneumonia are located mainly in the age group 13-36 months and children with male gender are not much different from the female. Basic Health Research report acute respiratory infection not pneumonia, the highest in group 1-4 years and did not differ between men and female (3).

Relationship between Nutritional Status with Cough and Difficult Breathing Classification Based on IMCI in Community Health Center of Piyungan Bantul

The results indicate a significant relationship between the nutritional status with a cough classification of children under five years old based IMCI guidelines in the Community Health Center of Piyungan Bantul with the result of p = 0.001. While the analysis results of nutritional status indicate the majority of children with pneumonia have undernutrition status. The results showed the level of closeness of the relationship is a negative correlation (-0.558). The negative correlation is a correlation between the two variables in the direction opposite or contradictory. Based on these results concluded that a good nutritional status in children the incidence of pneumonia is getting a little, and vice versa when the nutritional status of children less or worse than the higher the incidence of pneumonia.

In line with the above results of the research is Nurnajiah, Rusdi, and Deswati which states that there is a significant association between nutritional status and degree of pneumonia and most children with pneumonia have undernutrition status (13). Results of other studies conclude that there is a relationship with the nutritional status of pneumonia in children (14). Based on research conducted by Mading and Adyana concluded that nutritional status is one of the factors supporting the occurrence of pneumonia in children under five in addition to factors immunization status and scope of exclusive breastfeeding (15).

According to the Indonesia Ministry of Health that one of the risk factors for pneumonia is nutritional status. Nutritional status of children extremely important to the incidence of pneumonia. The growth rate of physical and endurance capacity (immunologic) a person can be influenced by the nutrients into the body. Malnutrition in children can cause someone to be very susceptible to various types of diseases including pneumonia. Nutritional status also contributes to increased severity of the disease condition of a person (3). Research by Ghozali concluded that there is a significant relationship between nutritional status and classification of pneumonia. One of the risk factors for the onset of pneumonia is the lack of breastfeeding exclusive, malnutrition, air pollution, low birth weight and not immunized against measles (16). Results of research by Efni, Machmud and Pratama states that there is a significant relationship between nutritional status and pneumonia. Children with malnourished suffer 9.1 times more at risk of developing pneumonia compared to children with undernutrition. Malnutrition is the most important risk factors to the incidence of pneumonia caused by the intake is less. Malnutrition can inhibit the formation of specific antibodies. Lack of nutrients due to less food intake. Maternal knowledge shall be responsible for the fulfillment of a varied food menu that will be consumed by children under five (17).

Classification of cough by IMCI consists of 2 that cough or cold no pneumonia and pneumonia. Pneumonia is a disease that infects the lungs (alveoli), which resulted in someone having difficulty breathing, cough, sore throat, runny nose, ear pain and fever. Pneumonia is one of ARI (Acute Respiratory Infection). Acute Respiratory Infection is an acute infection that attacked one of/over the airways began to nose to the alveoli, including the surrounding tissue (sinuses, middle ear cavity and pleura) (1,18). The condition of the body have an infection caused by infections, viruses and parasites can be associated with malnutrition include lack of or poor nutritional status on a person. According to Scrimshaw *et.al* in Supriasa revealed the presence of a synergistic interaction between malnutrition with infectious diseases, which means that infections can affect the occurrence of malnutrition and reverse malnutrition affects

a person prone to infection. The mechanism of malnutrition and infection can occur individually or simultaneously. At the time of infection decreased nutrient intake due to a lack of appetite and increasing loss of essential nutrients in the body. Also in the case of malabsorption and increased body metabolism. Such conditions result in a person suffering from malnutrition or declining nutritional status (11).

Declining nutritional status decreases the body's immunity against infection, damage to the epithelium of the body, weight loss, and impaired growth. The condition causes the body vulnerable to infection. In childhood malnutrition, resulting in the development of atrophy of the thymus disrupted so that the thymus gland. Atrophy of the thymus as a result of a decrease in T cell proliferation effect on T cells CD4 and CD8 T-cells become immature so that the body will be more prone to infection availability of complementary components are low and the function of phagocytes decreased for children suffering from malnutrition directly affect the ability to eliminate or kill pathogens which enters the body. Defense body through an epithelial barrier in malnourished children due to malfunctioning hipotropic microvilli, reduction in the number of lymphocytes and a decrease in immunoglobulin A (IgA) including the IgA on respiratory tract mucosal fluids that served as protection in the event of an invasion of microorganisms (19). A significant association between nutritional status and classification of pneumonia obtained also in other studies. The decline in the ability of leukocytes fagocyt as the body's defenses to attack the disease in children suffering from severe malnutrition or undernourishment. This led to a child suffering from pneumonia.

CONCLUSION AND RECOMMENDATION

The majority nutritional status in a good category by 74% of the respondent while 21.7% of respondents are undernourishment and malnutrition of 4.3% respondents. A cough classification based IMCI identifies a cough is not pneumonia by 69.6% and pneumonia cases are founded on 4% respondents. By statistical measurement, the nutritional status has a significant relationship and a cough classification of toddlers with p = 0.001 and the closeness level was (-0.558). It means a good nutritional status of toddlers decreases the incidence of pneumonia is getting lower, and a poor nutritional status will higher the incidence of pneumonia cough. The parents require to improve the attention against nutritional status of children under five to lowering the incidence of pneumonia. Giving proper nutrition (micronutrients and macronutrients) in toddlers is required to support growth and development as well as for the baby's body resistance.

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