Undernutrition Affects the Occurrence of Acute Respiratory Infections in Children under Five Years Old in Cipacing, Jatinangor Subdictrict, West Java from October to November 2012

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Abstract

Background: Millennium Development Goals' (MDGs) aims to decrease mortality in children will be achieved if the cause ofmortality include acute respiratory infections (ARIs) is eliminated. Acute respiratory infections are influenced by some factorssuch as nutritional status. The objective of this study was to analyze the correlation between nutritional status andthe occurrence of ARIs in children.
Methods: This study used retrospective cohort approach during October–November 2012. One hundred and ten mothers with children under five years old with different nutritional status were randomly selected and then asked about their history of respiratory symptoms. Data were analyzed using chi square test.
Results: About 66 under five children (60%) with good nutrition status had ARIs occurrence of <7 times and 5 children (4.5%) had ARIs≥7 times. In children with undernutrition, about 30 children (27.3%) had ARIs<7 times and 9 children (8.2%) had ARIs≥7 times. Bivariate analysis result showed that there was a correlation between nutritional status with the occurrence of ARIs in under five children (p<0.05).
Conclusions: Acute respiratory tract infections are often experienced by undernutrition children. This study strengthens the essential to correct nutritional status to prevent the infections in children. [**AMJ**.2015;2(3):395–97]

Keywords: Acute respiratory infections, children under five, nutritional status

Introduction

Acute respiratory infections (ARIs) are common in under-five children and spread through direct contact with the etiologic organisms through the air.[1] Acute respiratory infections are caused by microorganisms into the length of the respiratory tract starting from the nose to the alveoli and takes place for a period up to 14 days.[2] Acute respiratory infections-causing microorganisms are rhinovirus, coronavirus, influenza virus, parainfluenza virus, adenovirus, and group A beta hemolytic streptococcus.[3] According to the Indonesian Ministry of Health, the average child gets ARIs 3–6 times per year.[4]

The symptoms of ARIs are listed based on the classification such as cough, runny nose, fever, sneezing, nasal congestion, and sore throat. Severe respiratory infection may develop bluish fingernails and lips (cyanosis), and tension in the chest wall breath sounds rough and dry.[3] Factors which influence the occurrence of ARIs are nutritional status, socio-economic, socio-cultural, environmental, treatment-seeking behavior, readiness and preparedness of health workers as an effort to provide the best services for the treatment and prevention of the disease.[4]

Nutritional status is a balance of a person's food intake in the form of specific variables. Factors which affect the nutritional status are the biological environment, the physical environment, psychosocial factors and family factors.[5] Anthropometric assessment of nutritional status uses an index based on weight for age (W/A) according to the WHO 2005.[6]

In this case, nutrition in children determines the tendency to be affected by ARIs in children. Good nutrition will form a good endurance in children against the environment. Conversely, children with poor nutrition do not develop

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Table 1 Description Nutritional Status in Children

Nutritional Status	Frequency	Percentage (%)
Good nutrition	71	64.5
Undernourished	39	35.5

Table 2 Description of ARIs in Children

ARIs	Frequency	Percentage (%)
<7 times	96	87.3
≥7 times	14	12.7

strong endurance so that these children are more likely to have the diseases, especially infections.[7]

Arsyad[8] stated that nutritional status, immunization, home environment, and socio-economic factors influence the occurrence of ARIs in under-five children in Bantimurung subdistrict. A similar study shows that there is a relationship between nutritional status with the occurrence of ARIs in Soetomo Hospital Surabaya.[9] A previous study shows that there is a correlation between nutritional status with the incidence ARIs in which undernourished children tend to experience the recurrent ARIs.[10]

This study calculated the frequency of ARIs in the past year experienced by children. The objective of this study was to analyze the correlation between nutritional status and the occurrence of ARIs in children.

Methods

This qualitative study was conducted in Cipacing during the period October–November 2012 to 110 mothers who have under-five children with different nutritional status were randomly selected and then asked about their history of respiratory symptoms. This study used retrospective cohort approach.

Informed consent was signed by the mothers for approval and respondents who did not agree were not included in the study. Respondents were asked about symptoms of respiratory infections that occurred in children. Respiratory symptoms asked were cough, fever, runny nose, wheezing, pain or discharge from the ears, bluish lips or pale skin, snoring, shortness of breath and husky. The frequency of ARIs in the previous year, was classified into <7 times and ≥7 times. It was based on the average number of children getting ARIs for 3–6 times in a year.[4]

The nutritional status of children was assessed by the WHO anthropometric standard 2005 after the categories of nutritional status were classified by the ministry of health. Assessment of nutritional status by index weight for age (W/A) were performed according to WHO 2005. The Z value for each level of nutritional status were severe undernourished <-3SD, undernourished -3 SD to <-2 SD, good nutrition -2 SD to 2 SD, and obese >2 SD. Children with incomplete measurement W/A data were not included in the study.[6]

Data were analyzed statistically using nonparametric chi-square test. The study variables were bivariate and the distribution of data was abnormal.

Results

Children with good nutrition were more than

Table 3 ARIs Distribution Based on The Nutritional Status

Nutritional Status	ARIs	
	Frequency	Percentage (%)
Good nutrition	66 (60)	5 (4.5)
Undernouris	30 (27.3)	9 (8.2)

the undernourished ones (Table 1). Children who had ARIs <7 times were more than those with ARIs ≥7 times (Table 2).

Children with good nutritional status tended to have less ARIs <7 times while undernourished children suffered more ARIs ≥7 times (Table 3). The results of the analysis found that the chi square test for the variable nutritional status with the occurrence of ARIs shows a significant p value of p = 0.016 (p<0.05). P <0.05 mean that there was a relationship between nutritional status with the occurrence of ARIs in children under five years old.

Discussion

Nutritional status is a balance of one food intake expresses in the form of specific variables. Nutritional status describes the adequacy or inadequacy of nutrients in a person as undernourished, good nutrition, and obese.[5]

Nutrition plays a role in our bodies in form antibodies as a defense against infections or diseases that comes from environment. Children with good nutrition will form adequate antibodies and are more rarely infected than undernourished ones.[7]

The result of this study showed that there was a correlation between nutritional status with the occurrence of ARIs. Children with good nutrition were less likely to get a respiratory infection than undernourished children who had a tendency to get infected. Therefore, it is important to improve nutritional status in children to prevent infection in the environment.

Acute respiratory infections are influenced by many factors such as nutritional status, socio-economic, socio-cultural, environmental, treatment-seeking behavior, readiness and preparedness of health workers as an effort to provide the best service for the treatment and prevention of the disease. This study only used two variables and could not compare more significant factors influencing the occurrence of ARIs in children. Biased recall might occur because the symptoms of ARIs asked were from the previous year .

It was mentioned that many factors can affect the nutritional status of children such as biological factors, physical environment, psychosocial factors and family factors. As a conclusion, improvement in these factors will improve the nutritional status in children.[5]

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