

## **Relationship Of Nutritional Status With Acute Respiratory Infection Incidence In Toddlers**

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### **ABSTRACTS**

ARI (Acute Respiratory Infection) in Indonesia always ranks first as the cause of infant mortality as much as 32.1% of infant mortality in 2009, and 38.8% cause of death in under-fives in 2011. ARI is also often on the list of the 10 most common diseases in hospitals. Based on data from the disease eradication (P2) ARI Program the coverage of ARI patients exceeded the target, the target set was only 16,534 cases but the results obtained were 18,749 (13,4%). This research is a descriptive analytic study with a case control approach. The research was carried out at the Jambi Health Center. The population in this study was the number of toddlers who were at the Jambi Public Health Center on July 2021, 1,110 toddlers. The sample in this study were 89 toddlers using the Accidental Sampling technique. Collecting data using medical records and questionnaire sheets as research aids. Data were analyzed by univariate and bivariate. The results of statistical tests using *Chi-square* show a p-value of  $0.00 < 0.05$ , meaning that there is a significant relationship between nutritional status and the incidence of ARI in children under five at the Jambi Public Health Center in 2021. Efforts to reduce the incidence of ARI are expected in undernourished toddlers, as health workers must be more active in providing counseling to mothers who have toddlers about nutritious food needed by toddlers, it doesn't need to be expensive, the important thing is that the nutrients needed are fulfilled like Balanced Nutrition.

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## **1. Introduction**

Child health care efforts are aimed at preparing future generations who are healthy, intelligent and of good quality and to reduce child mortality. Children are the next generation who have the ability to be developed in continuing the nation's development. (1).

World Health Organization shows that the infant mortality rate in the world is 43 deaths per 1000 live births. In Indonesia, the under-five mortality rate is 32 per 1000 live births in 2015 (20). Children's health is still a serious concern among other health problems because the degree of children's health reflects the health status of the nation. Children are the next generation who have the ability to be developed in continuing the nation's development. Common childhood health problems include several diseases including acute respiratory infections (ARI), strep throat infections, allergic rhinitis, ear infections, chicken pox, diarrhea and skin problems (3).

ARI is an important health problem because it is the first cause of death in developing countries every year there are two million deaths caused by ARI. WHO estimates the incidence of ARI in developing countries is 0.29% (151 million people). ARI ranks first for diseases suffered by infants and toddlers in Indonesia. The prevalence of ARI in Indonesia is 25% with pneumonia morbidity in infants is 2.2% and under five is 3% while mortality in infants is 23.8% and under five is 15.5% (4)

In 2019 the coverage of ARI findings in children under five was 4,286 cases or with a coverage of 14.54%, while in 2020 it increased to 6873 cases with a coverage of 21.19% (5).

ARI is an acute infection that attacks one or more parts of the respiratory tract from the nose to the alveoli including the adnexa (sinus, middle ear cavity, pleura). Respiratory tract disease is an important source of poor health status and mortality among young children (6).

ARI is a major cause of infectious disease morbidity and mortality in the world. The mortality rate for ARI reaches 4.25 million every year in the world. The group most at risk is toddlers. In addition, ARI is also often on the list of the 10 most common diseases in hospitals. (7).

Risk factors that can influence and increase ARI morbidity and mortality such as: agents, immunizations, nutritional status, environment and clean and healthy living behavior. Acute respiratory infections are usually characterized by mild complaints and symptoms, but over time, these mild complaints and symptoms can become severe if not treated immediately. Mild symptoms usually start with fever, cough, stuffy nose and sore throat (4).

The initial survey conducted by researchers at the Jambi Health Center on March 10, 2021 showed that of the 12 children under five who had ARI, 5 of them had poor nutritional status, and 7 of them had good nutritional status and 7 of 12 mothers of children under five were interviewed during the survey. said that when a child under five had a cough, the family did not immediately take him to the nearest health center or health worker but was only left until the child had a fever or complained of a sore throat (5).

Based on the above background, it can be seen that the incidence of ARI is still high. Therefore, researchers are interested in taking the formulation of the problem, namely is there a relationship between nutritional status with the incidence of ARI (acute respiratory infection) in toddlers at the Jambi Public Health Center in 2021.

## **2. Materials and Methods**

This research is a descriptive analytic study with a case control approach. The study was carried out at the Jambi Health Center in June 2021. The population in this study was the number of children under five who were at the Jambi Health Center on July 13-21 2021 as many as 1,110 toddlers. The sample in this study were 89 toddlers using the Accidental Sampling technique. Two types of data collected in this study, is primary data secondary data. Collecting data using medical records and questionnaire sheets as research aids. Data

were analyzed by univariate and bivariate. Bivariate analysis is used to determine the relationship between two variables, namely the independent variable and the dependent variable which were analyzed using the *Chi-Square* statistical test with a significance limit of (0.05). Statistical decision making is done by comparing the value of P (*p-value*) with the value of (0.05).

### 3. Results and Discussion

#### 3.1. Distribution of ARI Incidence and Nutritional Status

The results of the research on the incidence of ARI in respondents' children under five at Jambi Health Center in 2021 there were 2 categories, namely ARI and No ARI. It is said to be ARI if the child has a cough, runny nose, sore throat and is diagnosed with ARI by a doctor. To find out the distribution of frequency and percentage can be seen in the following table:

**Tabel 3.1** Distribution based on the incidence of ARI in children under five

Incidence Of ARI	Frequency	%
ARI	53	59,6%
Not ARI	36	40,4%
Total	89	100%

To find out the distribution of frequency and percentage based on the nutritional status of children under five can be seen in the following table:

**Tabel 3.2** Distribution of Respondents Based on Nutritional Status

Nutritional Status	Frequency	%
Good status	42	47,2%
Bads status	47	52,8%
Total	89	100%

#### 3.2. Relationship between nutritional status and incidence of ARI in children under five

To find out whether there is a relationship between nutritional status in children under five and the incidence of ARI at the Jambi Health Center in 2021, this study used bivariate analysis with chi-square statistical tests to obtain a significant relationship between the independent and dependent variables. These results can be seen in table below :

**Tabel 3.3** Relationship between nutritional status and incidence of ARI in children under five

No	Nutritional Status	ARI Incidence			Total		p-Value
		ARI Total	Not ARI Total	%	Total	%	
1	Bad Nutritional Status	31	11	16.7%	42	100	100%
	Jumlah %	34,8 %	12,4%				
2	Good Nutritional Status	22	25	20.8%	47	100	100%
	Jumlah %	24,7%	28,1%				
	Total	53	36	100	89	100	

Based on Table it is known that of 89 respondents who have children under five with poor nutritional status 31 children (34.8%) of them suffer from ARI, then from 35 respondents who have children under five with good nutritional status 22 children (24.7%) of them suffer from ARI, then of the 24 respondents who have children under five with poor nutritional status 11 children (12.4%) of them do not suffer from ARI, and the remaining 30 respondents have children under five with good nutritional status 25 do not suffer from ARI.

The results of the chi-square analysis obtained  $p\text{-value} = 0.04 < 0.05$ . If the  $p\text{-value} > 0.05$  then  $H_0$  is rejected, meaning that the two variables have a significant relationship, so it can be concluded that there is a significant relationship between nutritional status and the incidence of ARI.

### 3.3. Overview of Nutritional Status of Toddlers at the Sarolangun

The results of the research on nutritional status showed that 48 children under five (53.9%) had poor nutritional status. The results of this study are in line with the research, where there are 59 toddlers (56.73) who have poor nutritional status at the Pajang Health Center Surakarta (6).

A person's nutritional status can affect susceptibility to infection, and vice versa, toddlers are a group vulnerable to various health problems so that if they are malnourished, they will be very susceptible to infection, one of which is pneumonia (8).

The input of nutrients obtained at the stage of growth and development of children is influenced by: age, physical condition, health condition, digestive physiological health, availability of food and activities of the child itself, nutritional status assessment can be carried out, among others, based on anthropometry: birth weight, body length, height, upper arm circumference (9).

In this study, researchers measured nutritional status based on weight, sex and age of children under five using the category table and the WHO 2011 Threshold for Child Nutritional Status based on body weight by age, toddlers were said to be malnourished if their  $z\text{-score} < -3\text{ SD}$  undernourished if the  $z\text{-score}$  is  $-3\text{ SD}$  up to  $< -2\text{ SD}$ , a toddler is said to be well nourished if the  $z\text{-score}$  is  $-2\text{SD}$  up to  $2\text{ SD}$ , a toddler is said to be over-nourished if the  $z\text{-score}$  is  $> 2\text{SD}$  (10).

From interviews with respondents, most of them stated that their toddlers looked thinner than other toddlers their age and they didn't have a good appetite. Efforts to reduce malnutrition in children under five, as health workers must be more active in providing counseling to mothers who have toddlers about nutritious food and it doesn't need to be expensive but the nutrients needed are fulfilled, such as balanced nutrition.

### 3.4. Relationship between nutritional status and incidence of ARI in toddlers

Based on the results of the study, out of 12 respondents who had children under five with poor nutritional status, 12 children (17.2%) of them suffered from ARI, then from 48 respondents who had children under five with poor nutritional status, 38 children (65.5%) of them suffered from ARI. and the remaining 10 children (32.2%) did not suffer from ARI, then from 25 respondents who had children under five with good nutritional status 7 children (12.2%) had ARI and the remaining 18 children (47.5%) did not suffer from ARI, Furthermore, from 4 respondents who have children under five with nutritional status more than 3 children (5.3%) of them suffer from ARI and the remaining 1 child (23.2%) does not suffer from ARI.

The results of this study are in line with the research in the Tunikamaseang Health Center Work Area with the results of the chi-square test with a  $p\text{-value}$  of 0.03 less than the alpha value (0.05), meaning that there is a relationship between nutritional status and the incidence of ARI. In toddlers (11).

From the research above, it can be seen that 12 children under five who have poor nutritional status all suffer from ARI, it can happen that nutritional status can affect ARI and vice versa. And there are also 38 children whose nutritional status is less suffering from ARI, this is because there are other factors related to the incidence of ARI, the data is strengthened through interviews with parents of toddlers who say that some have never received vitamin A at all and some say that incomplete immunization status (12).

Furthermore, from the results of the study obtained 7 children under five who have good nutritional status but have suffered from ARI. This is because there are other factors associated with the incidence of ARI. The data is strengthened by the results of interviews, the data is strengthened by interviews with parents of toddlers who say that some have never received vitamin A at all and some say that their immunization status is incomplete.

So it can be concluded that it is not only nutritional status that is related to the incidence of ARI, but there are several other factors such as immunization status and vitamin A administration

Toddlers with poor nutrition will be more susceptible to ARI than toddlers with normal nutrition because of the lack of immune factors. Infectious diseases themselves will cause toddlers to have no appetite and lead to malnutrition, in conditions of poor nutrition, toddlers are more susceptible to ARI (13).

From interviews with respondents, most of them stated that their toddlers looked thinner than other toddlers their age and they didn't have a good appetite. Efforts to reduce malnutrition in children under five, as health workers must be more active in providing counseling to mothers who have toddlers about nutritious food and it doesn't need to be expensive but the nutrients needed are fulfilled, such as balanced nutrition.

#### 4. Conclusions

Based on the results of research and discussion it can be concluded as follows, as many as 89 children under five, 53 children (59.6%) were diagnosed with ARI and 36 children (40.4%) were not diagnosed with ARI. As many as 89 respondents, it was found that the respondents who had under-fives who were malnourished were 42 (100%) and 47 (100%) of respondents who had well-nourished children. There is a significant relationship between nutritional status and the incidence of ARI in children under five at the Jambi Health Center in 2021. Expected Efforts To reduce the incidence of ARI, it is expected for families to carry out immunizations and provide vitamin A as well as to under-fives who are malnourished so as health workers must be more active in providing counseling to mothers who have toddlers about nutritious food needed by toddlers, it is not necessary expensive, the important thing is that the nutrients needed are fulfilled, such as balanced nutrition

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