

# Factors Associated With Ari Disease in Toddlers at Desa Lumbutarombo, Banawa Selatan District, Donggala Regency

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## ABSTRACT

Acute Respiratory Infection (ARI) is an acute infection that attacks one part and or more of the respiratory tract starting from the nose (upper tract) to alveoli (lower tract) including tissue adenexes, such as the sinuses, middle ear cavity, and pleura. The purpose of this study was to determine the factors associated with is a disease in children under five, consisting of smoking in the house, romanization, and the use of biomass cooking fuel. This is Analytical survey research with an approach cross-sectional. This research was conducted in Desa Lumbutarombo, Banawa Selatan District, Donggala Regency in February until March 2020, with a sample of 66 respondents. The results showed that there was a correlation between smoking in a clean water supply house and ARI in children under five as evidenced by statistical tests with a p-value of  $0.039 < 0.05$ . The results showed that there was a correlation between roomization and ARI in children under five as evidenced by statistical tests with a p-value of  $0.000 < 0.05$ . The results showed that there was no correlation between the use of biomass cooking fuel and ARI in children under five as evidenced by statistical tests with a p-value of  $0.275 > 0.05$ . This is hoped that the government and health workers and the community in Lumbutarombo Village will always protect the surrounding environment and conduct health service surveys and conduct counseling so that it can reduce the risk of ARI disease.

**Keywords** – Smoking in the Home, Kamarization, Use of Biomass Cooking Fuels, ARI Disease in Toddlers

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## INTRODUCTION

Acute Respiratory Infections (ARI) are the leading cause of acute disease worldwide and the most important cause of death in infants and children (1). Acute Respiratory Infection (ARI) is an acute infection that attacks one part and or more of the respiratory tract starting from the nose (upper tract) to alveoli (lower tract) including adnexal tissue, such as the sinuses, middle ear cavity, and pleura (2).

Acute Respiratory Infections (ARI) is a disease that often occurs in children. The incidence by age group under five is estimated at 0.29 episodes per child/year in

developing countries and 0.05 episodes per child/year in developed countries. This shows that there are 156 million new episodes in the world per year of which 151 million episodes (96.7%) occur in developing countries. Episodes of colds in toddlers in Indonesia are estimated 2-3 times per year (3).

In Indonesia, Acute Respiratory Infection (ARI) is a disease that often occurs in children. The episodes of cold cough in children under five in Indonesia are estimated to be 3 to 6 times per year. This means that an average toddler gets cough and cold bouts of 3 to 6 times a year. As a disease group, ARI is also one of the main causes of patient visits to health facilities. As many as 40% - 60% of the medical visits at the health center and 15% - 30% of the visits to the outpatient and inpatient sections of the hospital were caused by ARI.

The World Health Organization (WHO) estimates that the incidence of Acute Respiratory Infection (ARI) in developing countries with an under-five mortality rate above 40 per 1000 live births is 15% - 20% per year (4). According to WHO, ± 13 million children under five in the world die every year, where ARI is one of the main causes of death by killing ± 4 million children under five every year ([HTTP: // syair.wordpress.com/ Word Health Organization](http://syair.wordpress.com/WordHealthOrganization)).

From the 2013 Riskesdas results, the prevalence and prevalence periods in 2013 were 1.8 percent and 4.5 percent. The five provinces with the highest incidence and prevalence of ARI for all ages are East Nusa Tenggara (4.6% and 10.3%), Papua (2.6% and 8.2%), Central Sulawesi (5.10% and 5, 7%), West Sulawesi (3.1% and 6.1%), and South Sulawesi (2.4% and 4.8%).

Acute Respiratory Infections in Toddlers based on the District / City Health Center Report of Central Sulawesi Province in 2018 reached 174 cases while in 2019 specifically, Donggala reached 77.6%. In 2019, the highest number of cases found and handled was Puskesmas Lembasada with an estimated number of people suffering from Acute Respiratory Tract Infection (ISPA) of 148 cases out of a total of 2,848 toddlers. (Health Profile of Donggala District, Lumbutarombo Village, 2019).

Based on the description above, it shows that Acute Respiratory Infections (ARI) is a disease with a high morbidity and mortality rate, so Acute Respiratory Infections (ARI) need integrated, directed treatment aimed at improving quality. environment or housing conditions as well as patient management at the Puskesmas. Keeping in mind the morbidity and mortality rates from Acute Respiratory Infection (ARI) which are quite high, so that in handling it requires a higher awareness of both the public and officers, especially the factors that affect the degree of health.

Based on preliminary observations made in Lumbutarombo Village, it can be seen that many people smoke in the house. Apart from that, many houses do not meet the requirements for a healthy house, unsuitable occupancy density, incomplete immunization status plus the environmental sanitation around the house is polluted. both air pollution and pollution around community settlements. As so result of not complying with the rules

of healthy housing and public health will result in risk factors for the transmission of certain diseases, such as ARI.

Based on research from previous researchers, Vovo Novianti in 2012, about the factors that influence the incidence of ARI in toddlers around the area of landfills (TPAS) Tamangapa City of Makassar, it was found that there was a relationship between ventilation, roomization, occupancy density. The relationship between smoke hole ownership and the incidence of Acute Respiratory Infection (ARI) in children under five. There is a relationship between the presence of family members who smoke and the incidence of Acute Respiratory Infection (ARI) in children under five.

The purpose of this study was to determine the factors associated with ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency.

## METHODOLOGY

This type of research is analytic with a Cross-Sectional Study approach to know the factors associated with ARI disease in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency. This research was conducted from February to March 2020 and was carried out in Lumbutarombo Village, Banawa Selatan District, Donggala Regency.

## RESULTS

**Table 1. The relationship between smoking in the house and ARI disease in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency**

Smoking in the Home	ARI disease in children under five				Total	P-Value	
	Suffer		Not Suffering				
	f	%	f	%	f		%
<b>There is</b>	2	3,9	49	96,1	51	100	0,039
<b>Nothing</b>	3	20,0	12	80,0	15	100	
<b>Total</b>	5	7,6	61	92,4	66	100	

Source: Primary Data 2020

The results showed that of the 51 respondents who included smoking in existing homes, there were 2 incidents of ARI disease in children under five (3.9%) who suffered from and 49 incidents of ARI disease in children under five (96.1%) who did not suffer, while those who include smoking in a home that is NONE out of 15.

Respondents who included smoking in the non-existent house, there were 3 ARI diseases in children under five (20.0%) who had and 12 ARI diseases in children under five (80.0%) who did not suffer. The results of statistical tests showed a p-value of 0.039 <0.05, so H0 was rejected, which means there was a relationship between smoking in the home and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency.

**Table 2. Correlation between Kamarization and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency**

Kamarization	ARI disease in children under five				Total	P-Value	
	Suffer		Not Suffering				
	f	%	f	%			
<b>Qualify</b>	0	0	58	100	58	100	0,000
<b>Not eligible</b>	5	62,5	3	3,75	8	100	
<b>Total</b>	5	7,6	61	92,4	66	100	

Source: Primary Data 2020

The results showed that of the 58 respondents who included roomization that met the requirements there were 0 ARI diseases in children under five (0%) who had and 58 ARDs in children under five (100%) who did not suffer, while that showed that of the 8 respondents covering roomization that does not meet the requirements there are 5 ARI diseases in children under five (62.5%) who suffer from it and 3 incidents of ARI disease in children under five (37.5%) who do not suffer. The results of statistical tests show that the p-value is  $0.000 < 0.05$ , so  $H_0$  is rejected, which means that there is a correlation between roomization and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency.

**Table 3. The relationship between the use of biomass cooking fuel and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency**

Use of Cooking Fuels	ARI disease in children under five				Total	P-Value	
	Suffer		Not Suffering				
	f	%	f	%			
<b>Use</b>	4	6,6	57	93,4	61	100	0,275
<b>Do not use</b>	1	20,0	4	80,0	5	100	
<b>Total</b>	5	7,6	61	92,4	66	100	

Source: Primary Data 2020

The results showed that of the 61 respondents who included the use of biomass cooking fuels, there were 4 ARI diseases in children under five (6.6%) who suffered from and 57 diseases of ARI in children under five (93.4%) who did not suffer, while those who shows that of the 5 respondents who include the use of biomass cooking fuel that does not use there is 1 ARI disease in children under five (20.0%) who suffer from and 4 diseases of ARI in children under five (80.0%) who do not suffer. The results of statistical tests showed a p-value of  $0.275 > 0.05$ , so  $H_0$  was accepted, which means that there was no

relationship between the use of biomass cooking fuel and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency.

## DISCUSSION

### **The relationship between smoking in the house and ARI disease in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency**

The results of the analysis showed that there was a significant relationship between smoking in the house and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency, as evidenced by statistical tests with a p-value of 0.039.

According to the researchers' assumptions, this can occur because cigarette smoke released by a smoker contains harmful pollutants and particulates, the dangers of smoking are not only for the smoker but also dangerous for people who inhale the smoke (passive smokers) and cigarette smoke is not only a direct cause of the incident (5). ARI in toddlers, but is an indirect factor that can weaken the immune system of toddlers, can reduce the ability of macrophages to kill bacteria (6).

According to Bustan (2015), cigarettes are one of the industrial products that contain around 3,000 chemicals. Important elements include tar, nicotine, benzopyrene, methyl-chloride, acetone, ammonia, and carbon monoxide. CO is 1-5% of cigarette smoke. Children are exposed to the dangers of smoking through cigarette smoke pollution from second-hand smoke, parents or adults living in the same household. Besides being harmful to people who smoke, cigarette smoke that contains CO is also dangerous for people around it because the smoke is inhaled. The more cigarettes smoked by the family, the greater the risk of ARI incidence.

This is in line with Millom's research (2015) (5) regarding a relationship between smoking habits in the home and the incidence of ARI in children aged 1-5 years at the Sario Health Center, Manado City, with a p-value = 0.002.

This is in line with the research of Trimurti (2016) (6) regarding the relationship between the smoking habits of family members and the incidence of ARI in children under five at Sukoharjo Health Center, with a p-value = 0.006.

Based on the results of research and observation and literature review, it is necessary to increase the socialization of the dangers of cigarette smoke to avoid and reduce the occurrence of ARI disease (7).

### **The relationship between roomization and ARI disease in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency**

The results of the analysis showed that there was a significant relationship between roomization and ARI disease in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency, as evidenced by statistical tests with a p-value of 0,000.

According to the researchers' assumptions, this can happen because the room does not have a division room so that it is easy to transmit ARI disease. Kamarization is a part of the room in the house, if the house does not have room division, it is easier for disease transmission to occur. For example, in the house there are people with ARI disease because there is no room, the transmission is faster.

This is in line with the research of Sahruani (2010) that there is a relationship between unqualified roomization and the incidence of ARI with a p-value = 0.001. This is in line with Herman's research (2011) that there is a relationship between unqualified roomization and the incidence of ARI in children under five in Bantimurung Village, London Tallasa District, Pangkep Regency, with a p-value = 0.020.

Based on the results of research and observation and literature review, the importance of romanization must be further increased so that disease transmission, especially in toddlers, can be prevented.

### **The relationship between the use of biomass cooking fuel with ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency**

The results of the analysis showed that there was no significant relationship between the use of biomass cooking fuel and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency, as evidenced by by statistical tests with a p-value of 0.275.

According to the researchers' assumptions, this could occur because the biomass that the respondents used was mostly firewood (8). Given that firewood is very easy to get and some people already use gas stoves. So that the smoke generated is little, so it cannot be inhaled by toddlers and does not cause an ARI (9).

The combustion that occurs in the kitchen of the house is a human activity that is a source of pollution or air pollution (10). The effect on health can be seen when levels of impurities increase in such a way that disease occurs.

The type of fuel used for cooking will affect the smoke pollution in the kitchen in the house where the kitchen is attached to the house and the type of fuel used is relatively less likely to cause smoke than firewood (11).

This is in line with research by Ike Suhandayani (2007) which shows that there is no relationship between ownership of kitchen smoke holes and the incidence of ARI in toddlers with a p-value = 0.53.

This is in line with the absence of a relationship between the ownership of kitchen smoke holes and the incidence of ARI in children under five in the area of the landfill of Tamangapa Makassar City waste in 2012 with p-value = 0.876.

Based on the results of research and observation and literature review, it is necessary to prevent the smoke around the environment so that it does not cause ARI disease.

## **CONCLUSIONS**

This study concludes that there is a relationship between smoking in the house and ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency, where  $0.039 < 0.05$  means that  $H_0$  is rejected, indicating that this variable has a significant relationship. Then there is a relationship between roomization and ARI disease in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency, where  $0.000 < 0.05$  means that  $H_0$  is rejected, indicating that this variable has a significant relationship. And there is no relationship between the use of biomass cooking fuel with ARI in children under five in Lumbutarombo Village, Banawa Selatan District, Donggala Regency, where  $0.275 > 0.05$  means that  $H_0$  is accepted, indicating that this variable does not have a significant relationship.

## **SARAN**

It is hoped that the government and health workers and the community in the work area of the Lembasada Community Health Center will always protect the surrounding environment and carry out health service surveys and conduct counseling to reduce the risk of ARI disease.

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