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**Relationship of Exclusive Breastfeeding with History of Acute Respiratory Infection (ARI) in Children Aged 0-24 Months in Siwalima Village in November 2021**

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**ABSTRACT**

**Background.** Acute respiratory infection (ARI) is a respiratory infection that affect both upper or lower respiratory tracts. The virus or bacteria causes ARI which lasts for 14 days. Indonesia had the highest mortality rate for ARI, in 2008 around 36.4% children infected; in 2009 around 32.1%; in 2010 around 18.2%; and in 2011 around 38.8%. The prevalence of ARI in Siwalima Health Center around 3240 children in 2020. Breastfeeding has huge benefit for both moms and babies. The prevalence of breastfeeding in Indonesia is 66.1%, but there are two provinces, West Papua (34%) and Maluku (37.2%) that have not reach the target yet. The purpose of this study is to find out if there is a relationship between Exclusive breastfeeding with history of Acute Respiratory Infection (ARI) in children in November 2021 in Siwalima Village, Aru Island, Maluku. **Methods:** This study uses observational analytical research methods, and cross-sectional design. The subject of this study are children age 0 - 24 months and lived in Siwalima Village. The sample of this study is using total sampling technic and there are 186 respondents. Questioners with yes or no answer are using in this study. **Results:** The result of chi-square test showed that there was a relationship between Exclusive breastfeeding with history of Acute Respiratory Infection (ARI) in children in November 2021 in Siwalima Village, Aru Island, Maluku. There are 84 respondent (45.2%) had ARI and 102 respondent (34.8%) didn't, also 91 respondents (48.9%) didn't receive exclusive breastfeeding and 95 respondent receive exclusive breastfeeding. **Conclusion:** Breastfeeding can be increased, especially for children aged 0 - 6 months in order to prevent infection.

**1. Introduction**

Indonesia is a tropical area that has a high potential for the occurrence of several infectious diseases that can pose a threat to public health. The increase in cases and deaths due to ARI has a close relationship with the consequences of environmental pollution caused by smoke due to forest fires, exhaust gases originating from transportation facilities, indoor air pollution due to kitchen smoke, cigarette smoke, and climate change such as changes in air temperature, humidity, and rainfall.<sup>1</sup> One of the public health problems in developed and developing countries is Acute Respiratory Infection (ARI) because it can cause high infant and toddler mortality, namely 1 in 4 deaths

that occur.<sup>2</sup> Acute Respiratory Tract Infection (ARI) is an acute respiratory infection that attacks the upper and lowers respiratory tract. ARI itself is caused by a virus or bacteria and lasts for 14 days, and is characterized by one or more symptoms such as painful swallowing, runny nose, dry cough, or phlegm. According to WHO, ARI is the main cause of death from infectious diseases in the world, especially in developing countries. ARI is the main cause of treatment or consultation for children in hospitals or health centers. Data according to the Ministry of Health in 2012 that in Indonesia ranks first cause of infant mortality due to acute respiratory infections. A total of

36.4% infant mortality in 2008; 32.1% in 2009; 18.2% in 2010 and 38.8% in 2011. Based on data from the Siwalima Health Center itself in 2020 it is known that the incidence of ARI is the number one disease in most children, namely, around 402 aged 0-1 years, 1082 children aged 0-1 1-5 years, and 1756 children aged > 5 years.<sup>3-5</sup>

Risk factors that can cause ARI in children are unhealthy environmental factors (lack of air circulation, children are exposed to cigarette smoke), incomplete immunizations in children, low birth weight, lack of nutrition in children so that the immune system is not optimal, level of low parental education, gender and children do not get exclusive breastfeeding. Breast milk has a protective effect that tends to help reduce morbidity in children in the early months of birth. Based on the research, it was stated that the incidence of ARI was 4.96 times greater in children who did not receive exclusive breastfeeding compared to children who received exclusive breastfeeding.<sup>6,7</sup> ASI (Mother's Milk) is a food that contains nutrients needed by children to help increase the child's immune system from various infections. Breast milk is a source of nutritional intake for newborns, which is exclusive, namely by giving it to infants aged 0-6 months without being given any additional food.<sup>8-10</sup>

In Indonesia in 2020, of the number of infants aged less than 6 months who received exclusive breastfeeding, around 66.1%. The achievement indicator of the percentage of infants aged less than 6 months who are getting exclusive breastfeeding has met the 2020 target, which is 40%. However, based on the provincial distribution, as many as 32 provinces have achieved the expected target and there are still 2 provinces that did not reach the target, namely West Papua (34%) and Maluku (37.2%). Breastfeeding is very beneficial for babies, mothers, and socio-economically. According to research, breastfeeding can reduce the

incidence of infections that often occur in infants such as ARI, diarrhea, otitis media, and urinary tract infections so that breastfeeding plays a very important role in reducing infant mortality. Breast milk contains an immune substance, namely lactoferrin which is a protein in breast milk that functions to prevent bacterial infections from infections caused by bacteria, viruses, fungi, and others. In addition to lactoferrin, breast milk also contains substances that are immune to other infections such as oligosaccharides, immunoglobulin A and antibodies.<sup>11</sup>

## **2. Methods**

The research design is an analytical observational with a cross-sectional design which was carried out in the Siwalima Village, Aru Islands, Maluku in November 2021. This study sought the relationship between exclusive breastfeeding and a history of acute respiratory infection (ARI) in children aged 0-24 months in the Siwalima village by having the independent variable (exclusive breastfeeding) and the dependent variable (incidence of ARI). The subjects of this study were all children aged 0-24 months who were in the Siwalima Village, Aru Islands in November 2021, totaling 186 people. Sampling in this study using a total sampling technique.

Collecting data from research subjects using primary data obtained from interviews with parents of research subjects. Primary data explored were sociodemographic data, frequency of exclusive breastfeeding, and history of ARI incidence. Furthermore, data analysis was carried out using SPSS version 25 software. First, a univariate analysis was carried out which presented the frequency distribution. Furthermore, a bivariate analysis was performed to see the relationship between exclusive breastfeeding and the history of the incidence of ARI with chi-square,  $p < 0.05$ .

### 3. Results

Table 1. Distribution of samples by age

Children's Age	Frequency	%
0 – 6 months	101	54.3
7 – 13 months	57	30.6
14 – 20 months	17	9.1
21 – 24 months	11	5.9
Total	186	100

Table 1 shows the distribution of samples based on the age of children in Siwalima Village, Aru Islands,

Maluku, which is dominated by the age of 0-6 months, as many as 101 respondents (54.3%).

Table 2. Distribution of samples based on gender

Gender	N	%
Male	93	50
Female	93	50
Total	186	100

Table 2 shows the distribution of the sample based on the sex of children residing in the Siwalima Village, Aru Islands, Maluku, which obtained the number of

sexes between female and male - the same male, namely 93 respondents (50%).

Table 3. Distribution of the frequency of exclusive breastfeeding

Gender	N	%
Exclusive Breastfeeding	95	51.1
Not Exclusively Breastfeeding	91	48.9
Total	186	100

Table 3 shows that from 186 respondents the results were not too much difference between children who were given exclusive breastfeeding, namely 95

respondents (51.1%) and those who did not receive exclusive breastfeeding were 91 respondents (48.9%).

Table 4. Frequency distribution of history of ARI

Gender	N	%
No ARI	102	54.8
ARI	84	45.2
Total	186	100

Table 4 shows that from 186 respondents, 102 respondents (54.8%) did not experience ARI, while

those who had ARI were 84 respondents (45.2%).

Table 5. The relationship between breastfeeding exclusion and history of ARI

Breastfeeding Exclusive	History of ARI				p value *
	Not ARI		ARI		
	Frequency	%	Frequency	%	
Exclusive breastfeeding	81	85.3	14	14.7	0.001
Not Exclusive breastfeeding	21	23.1	70	76.9	
Total	102	54.8	84	45.2	

\*Chi-square,  $p < 0.05$ .

Table 5 shows the results of the analysis of the relationship between exclusive breastfeeding and history of ARI obtained by 14 respondents (14.7%), while those who were given exclusive breastfeeding but not ARI were 81 respondents (85.3%). There was a significant relationship between exclusive breastfeeding and the history of ARI,  $p < 0.05$ .

#### 4. Discussion

Acute Respiratory Infection (ARI) is characterized by symptoms of fever followed by cough or runny nose that lasts no more than 10 days and requires treatment. ARI also attacks children under the age of 5 years, especially more in boys than girls. The results of this study are in line with the study in which 96 respondents found that 50 respondents (52.1%).<sup>12,13</sup> The results also showed that from 186 respondents, 91 respondents (48.9%) did not give exclusive breastfeeding, while 95 respondents (51.1%). Exclusive breastfeeding is breastfeeding alone without additional fluids for 6 months. Breastfeeding for children has various benefits, such as it containing complete nutrition that helps increase the body's resistance to help protect against allergies, infectious diseases such as otitis media, diarrhea, or respiratory tract diseases; improve mental and emotional intelligence; and helps provide stimulation to the nerves and intelligence development.<sup>14</sup> The results of this study are in line with research which states that children who are not exclusively breastfed have a 4.79 times greater risk of developing ARI than children who are exclusively breastfed.<sup>15,16</sup>

Breast milk itself consists of various substances, namely secretory IgA, lactoferrin, -lactalbumin, oligosaccharides and glycoconjugates. In addition, breast milk also contains various hormones, cytokines,

chemokines, growth factors and so on. The secretory IgA contained in breast milk can protect babies from the dangers of infection with germs such as *Campylobacter*, *Shigella*, *Escherichia coli* and *Giardia lamblia*. In addition, oligosaccharides have an anti-adrenergic effect which plays a role in preventing infection with *Haemophilus influenza* and *Streptococcus pneumonia* which are the most common bacteria causing ARI by preventing the attachment of bacteria to receptors on mucous membranes. Breast milk also functions to prevent acute and recurrent otitis media which is one part of ARI. This research is also in line with studies that state that exclusive breastfeeding for the first 6 months is protective for the development of respiratory tract infections in infants and as a reduction in the risk of lower respiratory tract infections after the baby is 4 years old.<sup>18-20</sup>

#### 5. Conclusion

There is a relationship between exclusive breastfeeding and history of ARI occurrence in Siwalima Village, Aru Island, Maluku in November 2021.

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