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A Correlation Between Knowledge And Smoking Habits And The Occurrence Of Ari In Toddlers In The Coastal Area Of Luas Health Center In Kaur Regency

Dewi Putri Kemala Sari [1], Darmawansyah [2], Wulandari [3]
[1,2,3] Program Studi Kesehatan Masyarakat, Fakultas Ilmu Kesehatan

Corresponding Author:
kesmasyunived@gmail.com

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ABSTRACT

Intoduction: According to the World Health Organization (WHO), Acute Respiratory Infection (ARI) is an upper or lower respiratory tract infection, usually contagious, that can cause a wide spectrum of illnesses ranging from asymptomatic or mild infections to severe and fatal illnesses (WHO, 2023). In 2023, the number of ARI cases at Luas Health Center in Kaur Regency was 120 (Puskesmas Luas, 2024). The purpose of this study was to determine the relationship between smoking knowledge and habits and the occurrence of ARI in toddlers at Luas Health Center in Kaur Regency. ***Method:*** The method used in this study was a survey with a cross-sectional approach. The sample consisted of 73 mothers with toddlers. Data analysis was performed using the chi-square test with a 95% significance level using SPSS 22 software. ***Result and Discussion:*** The results of the univariate analysis showed that 38 people (52.1%) experienced mild ARI. A total of 34 people (46.6%) had poor knowledge, and 47 people (64.4%) had a family member who smoked. Bivariate analysis results showed a significant correlation between knowledge (p-value = 0.022) and attitude (p-value = 0.017) and the occurrence of ARI in toddlers (<α – 0.05) in the working area of Luas Health Center in Kaur Regency. ***Conclusion:*** It is expected that the community health center will provide input for community health center programs to reduce the occurrence of ARI, especially in terms of improving the knowledge and attitudes of mothers of toddlers regarding ARI prevention.

INTRODUCTION

Acute Respiratory Infections (ARI) are upper or lower respiratory tract diseases, usually contagious, that can cause a spectrum of illnesses ranging from asymptomatic or mild infections to severe and fatal diseases, depending on the causative pathogen, environmental factors, and host factors (The World Bank, 2023).

Incidence by age group Among toddlers, the estimated incidence is 0.29 episodes per child per year in developing countries and 0.05 episodes per child per year in developed countries. This means that there are 156 million new episodes worldwide each year, of which 151 million episodes (96.7%) occur in developing countries. The highest number of cases occur in India (43 million), China (21 million), Pakistan (10 million), Bangladesh, Indonesia, and Nigeria, each with 6 million episodes. Of all cases that occur in the community, 7-13% are severe and require hospital care. Cough and cold episodes in Indonesian toddlers are estimated to occur 2-3 times per year. ARI is one of the main causes of patient visits to community health centers (40%-60%) and hospitals (15%-30%) (Kemenkes RI, 2022).

In 2019, the number of visits by toddlers with coughs or breathing difficulties amounted to 7,047,834 visits, in 2020 it was 4,972,553 visits, a 30% decrease from 2019 visits, and in 2021 it decreased again to 4,432,177, which ultimately had an impact on the discovery of pneumonia in toddlers. (Kementerian Kesehatan RI 2022).

Based on data from the Bengkulu Provincial Health Office, ARI was the second most common disease in 2021, with 33,949 cases, and there was a significant increase in 2022, with 64,638 cases (Bengkulu Provincial Health Office, 2023). Furthermore, the number of ARI cases in Bengkulu Province in 2023 was recorded at 40,841 cases. (Dinkes Provinsi Bengkulu, 2024).

Data from the Kaur District Health Office shows that there were 1,486 cases of ARI in 2020, 1,167 cases in 2021, and 1,321 cases in 2022, with an increase in cases in 2023 to 2,933 cases. (Dinkes Provinsi Bengkulu, 2024). Data from the Kaur District Health Center shows that there were 155 cases of respiratory tract infections recorded in 2021, 148 cases in 2022, and 120 cases in 2023. (Puskesmas Luas Kabupaten Kaur, 2024).

There are several risk factors for ARI originating from the mother or family and the home environment. Maternal factors include knowledge and attitude, while infant factors include nutritional status and exclusive breastfeeding. According to Notoatmodjo (2017), internal factors of a mother include knowledge and attitude. A mother's knowledge of the signs and symptoms of ARI is very important in determining her behavior in recognizing and deciding on the attitude to take, including the preventive measures taken in dealing with ARI in toddlers.

In addition to knowledge, smoking behavior can also affect respiratory infections in toddlers. Family members who smoke around toddlers can cause them to become passive smokers who are constantly exposed to cigarette smoke. The dangers of smoking are not only for family members who smoke (active smokers) but also for toddlers who do not smoke when they inhale cigarette smoke (passive smokers). In fact, the effects on passive smokers are far more dangerous than those on active smokers. Cigarette smoke from family members who smoke can damage the lungs when inhaled by toddlers. (Gobel Bella, et al, 2021).

Infants exposed to cigarette smoke for more than 20 minutes per day will develop respiratory infections. Smoking is a habit that can be enjoyable for smokers, but on the other hand, it can have adverse effects on both the smokers themselves and those around them. The adverse effects of cigarette smoke are greater for passive smokers (people who inhale cigarette smoke) than for active smokers (people who smoke cigarettes). Cigarette smoke from parents or other members of the household living with infants is a serious indoor pollutant and increases the risk of toxic harm to children. Continuous exposure to infants can cause respiratory problems, particularly aggravating acute respiratory infections and lung disorders. (Gobel Bella, et al, 2021).

Data from the Luas Community Health Center in Kaur Regency shows that ARI is among the 10 most common diseases in 2024. Preliminary study results from the Luas Community Health Center involving 10 mothers with toddlers who visited the Luas Community Health Center showed that 2 toddlers suffered from ARI with symptoms of cough and flu. Interview results showed that mothers with toddlers did not know what ARI was, its signs and symptoms, and the risk factors that cause ARI. Furthermore, of the two toddlers who had ARI, there were family members who had a habit of smoking inside the house.

RESEARCH METHODS

This study used a descriptive quantitative research design with a descriptive analytical research method using a cross-sectional design. The study was conducted at the Luas Community Health Center in Kaur Regency in July 2025. The population studied consisted of mothers with toddlers at the Luas Community Health Center in Kaur Regency, totaling 270 toddlers suffering from mild, moderate, and severe respiratory tract infections. The sample in this study consisted of mothers with toddlers who visited the Luas Community Health Center in Kaur Regency. In this study, the sample was taken using simple random sampling. Bivariate analysis was performed on two variables that were suspected to be related or correlated. In addition to univariate analysis, the data obtained was also analyzed bivariately between the independent and dependent variables using the Chi-Square test. To determine the significance of the statistical calculations, a significance level of 5% was used. Based on the results of this statistical test, it can be concluded whether the relationship between the two variables is significant or insignificant.

RESULTS

Tabel 1. Frequency Distribution

Variable	Frequency (n)	Percentage (%)
Occurrence of ARI		
Heavy	5	6,8
Medium	30	41,1
Ligth	38	52,1
Knowledge		

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Insufficient	34	46,6
Adequate	20	27,4
Good	19	26,0
Smoking Habits		
There are family members smoke	47	64,4
No family members smoke	26	35,6

Sumber: Data Diolah, 2025

The frequency distribution of ARI cases shows that most respondents experienced mild ARI, totaling 38 respondents (52.1%). The frequency distribution of knowledge shows that almost half of the respondents had insufficient knowledge, totaling 34 respondents (46.6%). The frequency distribution of smoking habits shows that almost all respondents have family members who smoke, with 47 (64.4%) respondents.

Tabel 2. The Relationship Between Knowledge and occurrence ARI in the coastal area of Luas Health Center in Kaur Regency

Knowledge	Occurrence of ARI						Total		X^2	P
	Heavy		Medium		Ligth					
	n	%	n	%	n	%	n	%		
Insufficient	3	8,8	18	52,9	13	38,2	34	100	11,443	0,022
Adequate	1	5	10	50	9	45	20	100		
Good	1	5,3	2	10,5	16	84,2	19	100		
Total	5	6,8	30	41,1	38	52,1	73	100		

Sumber: Data Diolah, 2025

Based on Table 2. the results of the study of 73 respondents showed that there was a relationship between the level of knowledge and the incidence of acute respiratory infections (ARI). Of the 34 respondents who had insufficient knowledge, most experienced moderate ARI in 18 people (52.9%), followed by mild ARI in 13 people (38.2%), and severe ARI in 3 people (8.8%).

Tabel 3. The Relationship Smoking Habits and occurrence ARI in the coastal area of Luas Health Center in Kaur Regency

Smoking Habits	Occurrence of ARI						Total		X^2	P
	Heavy		Medium		Ligth					
	n	%	n	%	n	%	n	%		
There are family members smoke	5	10,6	23	48,9	19	40,4	47	100	8,168	0,017
No family members smoke	0	0	7	26,9	19	73,1	26	100		
Total	5	6,8	30	41,1	38	52,1	73	100		

Sumber: Data Diolah, 2025

Based on Table 3 the results of the study of 73 respondents show that having family members who smoke is associated with the incidence of acute respiratory infections (ARI). Of the 47 respondents who had family members who smoked, most experienced moderate ARI in 23 people (48.9%), followed by mild ARI in 19 people (40.4%), and severe ARI in 5 people (10.6%).

DISCUSSION

The Relationship Between Knowledge and occurrence ARI in the coastal area of Luas Health Center in Kaur Regency

The results of the bivariate analysis show that the majority of respondents with low knowledge tended to experience moderate ARI, namely 18 people (52.9%), while 13 people (38.2%) experienced mild ARI, and 3 people (8.8%) experienced severe ARI. This shows that low knowledge is associated with a high level of ARI severity. Meanwhile, in the group of respondents with adequate knowledge, most also experienced moderate ARI, namely 10 people (50%), followed by mild ARI in 9 people (45%), and only 1 person (5%) experienced severe ARI. This shows that better knowledge slightly reduces the risk of severe ARI. Meanwhile, in the group of respondents with good knowledge, the majority experienced mild ARI, namely 16 people (84.2%), only 2 people (10.5%) experienced moderate ARI, and 1 person (5.3%) experienced severe ARI. This shows that many factors are associated with ARI in toddlers, including unsupportive attitudes and low maternal education. Other factors such as family members' smoking habits or unsuitable physical conditions of the home are factors associated with ARI in toddlers.

The results of the study show that there is a correlation between knowledge and the incidence of ARI at the Luas Community Health Center in Kaur Regency. This study shows that the better a person's knowledge, the lower the incidence of ARI in toddlers, and conversely, the less knowledge a person has, the higher the incidence of ARI in toddlers.

Lack of knowledge about ARI is significantly associated with the incidence of ARI at the Besulutu Community Health Center. This shows that public knowledge about ARI is very important in the process of prevention, treatment, and care of patients with ARI. Reference to the research by Setriani, et al (2019), which also shows a significant relationship between knowledge and the incidence of ARI in Ketapang Regency, West Kalimantan, supports your findings and reinforces the evidence that knowledge plays a key role in public health, especially in the context of ARI.

The Relationship Smoking Habits and occurrence ARI in the coastal area of Luas Health Center in Kaur Regency

The results of the study show that almost all respondents have a smoking habit (there are family members who smoke) as many as 47 (64.4%). In toddlers, exposure to cigarette smoke can increase the risk of Acute Respiratory Infections or ARI. In families where smoking occurs, statistically, children are twice as likely to develop ARI compared to children from families where smoking does not occur. Additionally, other studies have found that episodes of ARI increase twofold as a result of parental smoking.

Infants exposed to cigarette smoke for more than 20 minutes per day will develop respiratory infections. Smoking is a habit that can be enjoyable for smokers, but on the other hand, it can have adverse effects on both the smokers themselves and those around them. The adverse effects of cigarette smoke are greater for passive smokers (people who inhale cigarette smoke) than for active smokers (people who smoke cigarettes). Cigarette smoke from parents or other members of the household living with infants is a serious indoor pollutant and increases the risk of toxic harm to children. Continuous exposure to infants can cause respiratory problems, particularly exacerbating acute respiratory infections and lung disorders (Seprianus Seda et al, 2021).

This is in line with research conducted by Bella et al (2021), which states that the habit of close relatives smoking indoors can have a negative impact on family members, especially toddlers. The longer toddlers are exposed to cigarette smoke, the higher their risk of developing ARI, as cigarette smoke interferes with the respiratory defense system. Nutritional status also influences the incidence of ARI in toddlers.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research on the relationship between knowledge and smoking habits and the incidence of ARI in toddlers, it can be concluded that there is a relationship between knowledge and the incidence of ARI and that there is a relationship between smoking habits and the

incidence of ARI. The researchers' suggestion for community health centers is that the results of this study can be used as input for community health center programs to reduce the incidence of ARI, especially in terms of increasing the knowledge and attitudes of mothers of toddlers in preventing ARI.

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