


## ANALYSIS OF RISK FACTORS OF ISPA WITH THE OCCURRENCE OF ISPA IN TODDLERS AT SIMALINGKAR COMMUNITY HEALTH CENTER, MEDAN TUNGUNGAN DISTRICT IN 2024

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Article Info	ABSTRACT
<p><b>Keywords:</b>            Factor Analysis            ISPA            Toddlers</p>	<p>Acute Respiratory Tract Infection (ARI) is one of the causes of death in children in developing countries. ARI causes 4 out of 15 million deaths in children under 5 years of age each year. In general, there are 3 (three) risk factors for ARI, namely environmental factors consisting of indoor air pollution, home ventilation, housing density, individual child factors consisting of child age, birth weight, nutritional status, and immunization status, and behavioral factors, namely ARI management practices in the family. The purpose of this study was to analyze risk factors for ARI with the occurrence of ARI in toddlers at the Simalingkar Health Center, Medan Tuntungan District in 2024. The time of the study was carried out on April 26 - June 07, 2024. This study was descriptive correlative with a cross-sectional design. The population in this study were all toddlers diagnosed with ARI totaling 248 and a sample of 72 toddlers was taken by accidental sampling. Data collection was carried out by observation and providing questionnaires directly. Data were analyzed using the chi square test with a significant value of <math>p &lt; 0.05</math>. The results show that the risk factors for ARI that are often experienced by toddlers are behavioral factors with a p value smaller than other factors, namely 0.000 and a value of <math>\chi^2 = 19.502</math>. Therefore, it is expected that toddler families increase their knowledge by listening to counseling and maintaining the cleanliness of the family environment, as well as providing balanced nutrition to toddlers. Health center officers provide counseling on behavior to prevent ARI, foster relationships with the sub-district to invite the community to clean the environment so as to reduce the risk factors for ARI in the environment.</p>
<p>This is an open access article under the <a href="https://creativecommons.org/licenses/by-nc/4.0/">CC BY-NC</a> license</p> 	<p><b>Corresponding Author:</b>            Cahya            Sekolah Tinggi Ilmu Kesehatan Darmo            Medan            E-mail: <a href="mailto:aisyahdaulay19@gmail.com">aisyahdaulay19@gmail.com</a></p>

### INTRODUCTION

Acute Respiratory Tract Infection (ARI) is one of the causes of death in children in developing countries. ARI causes 4 out of 15 million deaths in children under 5 years of age each year (WHO, 2023). Every toddler is estimated to experience 3-6 episodes of ARI each year and the proportion of deaths caused by ARI covers 20-30% (Shaleh, 2018).

According to WHO (2023), ARI includes upper respiratory tract disease (URTI) and lower respiratory tract disease (LRTI) along with their adnexa. ARI causes death in children in small numbers, but can cause disabilities such as otitis media which is a cause of deafness. Meanwhile, almost all deaths due to ARI in young children are caused by Acute Lower Respiratory Tract Infection (ALRTI), the most common of which is pneumonia.

In Indonesia, Acute Respiratory Tract Infection (ARI) is one of the causes of 4 million deaths in toddlers (Maryunani, 2020). ISPA is also often on the list of 10 diseases the most in hospitals. The mortality rate of ARI in Indonesia is still very high and morbidity due to ARI in Indonesia per year ranges from 10% -20% of the toddler population (Shaleh, 2018).

Profile of the Aceh Government Health Office 2021, ARI is one of the main public health problems. In 2022, the coverage of ISPA findings in toddlers in the Aceh Government reached 37.53%. Pneumonia is the cause of death in toddlers in the Hospital. Based on the annual report of the East Simeulue Health Center in 2023, information was obtained that ARI is the most frequent case of visits in toddlers, out of 3,032 toddler visits for outpatient treatment at the East Simeulue Health Center, 1,658 toddler visits (54.84%) experienced ARI, while in 2020 the number of toddlers who went for outpatient treatment to the East Simeulue Health Center was 2,458 toddler visits with an ARI figure of 1,242 toddler visits (50.52%), although there was a decrease in the number of ARI, ARI is still ranked first out of the ten most frequent disease visits in toddlers.

According to the Indonesian Ministry of Health and Maryunani, (2020). In general, there are 3 (three) risk factors for ARI, namely environmental factors, individual child factors, and behavioral factors. Environmental factors consist of indoor air pollution, home ventilation, density of housing, and ownership of smoke holes. Individual child factors consist of the child's age, birth weight, nutritional status, and immunization status, while behavioral factors are the practice of handling ARI in the family.

Risk factors for ARI can also consist of economic conditions, population, geography, clean and healthy living behavior (PHBS), environment and global climate. Meanwhile, according to Suhandayani, the risk factors for ARI include nutritional status, exclusive breastfeeding, age, completeness of immunization, gender, provision of vitamin A, housing density, ventilation, type of floor, ownership of smoke holes, type of cooking fuel, presence of family members who smoke, presence of family members who suffer from ARI (Sofiyanti, 2023).

Research conducted by Yuwono (2018) at the Kawunganten Health Center, Cilacap Regency concluded that there is a relationship between ventilation, residential density and family member smoking habits with the occurrence of ARI in toddlers. Research was also conducted at the Pati I Health Center, Patigolongan Regency, concluding that there is a relationship between exclusive breastfeeding, bedroom density, bedroom ventilation and the presence of family members who smoke with the occurrence of ARI in toddlers (Suhandayani, 2023).

Based on a preliminary survey conducted on the environment of several houses in the Simalingkar Health Center area, Medan Tuntungan District, there was house ventilation that did not meet health standards, family members' habits of smoking in the house, and the size of the house that did not match the number of occupants. Interviews conducted with 10 families who have toddlers with ARI regarding prevention that can be done so that

ARI does not recur, it was found that 5 mothers said that ARI cannot be prevented, if the child is sick, they are taken to the Health Center. As many as 3 mothers said that coughs and colds are contagious, so keep away from ARI sufferers, if the child is sick, they are immediately taken to the Health Center. As many as 2 mothers said that ISPA can be prevented by addressing the causes such as frequently cleaning the environment, prohibiting family members from smoking in the house, providing good food for toddlers' immune systems. Oriented from the impact of the environment and behavior allows ISPA in toddlers to occur more often so that the morbidity rate of ISPA in toddlers remains in first place.

Based on the above phenomenon, the author is interested in conducting research on the Analysis of ISPA Risk Factors with the Occurrence of ISPA in Toddlers at the Simalingkar Health Center, Medan Tuntungan District in 2024.

Based on the background above, the author formulates the problem of how the relationship between ISPA Risk Factors and the Occurrence of ISPA in Toddlers at the Simalingkar Health Center, Medan Tuntungan District in 2024.

## **METHODS**

This study is an analytical study with a Cross Sectional approach that aims to analyze the risk factors of ARI with the occurrence of ARI in toddlers at the Simalingkar Health Center, Medan Tuntungan District in 2024. The study was conducted at the Simalingkar Health Center, Medan Tuntungan District. The time of the study was carried out on April 26 - June 07, 2024.

The population in this study were all mothers who had toddlers suffering from ARI who were outpatients at the Simalingkar Health Center, Medan Tuntungan District in 2024, totaling 248 toddlers. The sample in the study were mothers who had toddlers who then went for outpatient treatment at the Simalingkar Health Center, Medan Tuntungan District in 2024 and were diagnosed with ARI during the study with sampling using Accidental Sampling, with the criteria of toddlers who had KMS.

## **RESULTS AND DISCUSSION**

It is known that the majority of respondents are between 15-20 years old, which is 50%, and the majority of respondents' education is junior high school, 58.3%, and the majority of respondents' jobs are not working, only as housewives, which is 79.2%. It is known that environmental factors in toddlers are mostly at risk, which is 59.7%. It is known that individual child factors in toddlers are mostly not at risk, which is 68.1%. It is known that family behavioral factors in toddlers are mostly at risk, which is 61.1%. It is known that the majority of ISPA that occurs in toddlers is mild ISPA, which is 61.1%. It is known that environmental factors in toddlers are mostly at risk, which is 59.7%, as many as 4.2% of toddlers experience severe ISPA, as many as 29.2% of toddlers experience moderate ISPA and 26.4% of toddlers experience mild ISPA.

From the results of the statistical test  $p = 0.001 < 0.05$  and the value of  $\chi^2 = 13.153$ , it means that there is a contribution of environmental factors to the occurrence of ARI in toddlers. It is known that the individual factors of children in toddlers are mostly not at risk, namely 68.1%, no toddlers experience severe ARI, as many as 22.2% of toddlers

experience moderate ARI and 45.8% of toddlers experience mild ARI. From the results of the statistical test  $p = 0.023 < 0.05$  and the value of  $\chi^2 = 7.556$ , it means that there is a contribution of individual child factors to the occurrence of ARI in toddlers. It is known that behavioral factors in toddlers are mostly at risk, namely 61.1%, as many as 4.2% of toddlers experience severe ARI, as many as 31.9% of toddlers experience moderate ARI and 25% of toddlers experience mild ARI. From the results of the statistical test  $p = 0.000 < 0.05$  and the value of  $\chi^2 = 19.502$ , it means that there is a contribution of behavioral factors to the occurrence of ARI in toddlers.

### **1. Contribution of Environmental Factors to the Occurrence of ISPA in Toddlers**

The results of the study conducted on toddlers suffering from ARI at the Simeulue Timur Health Center, Simeulue Regency in 2024 showed that environmental factors were at risk for toddlers, namely 59.7%, as many as 4.2% of toddlers experienced severe ARI, as many as 29.2% of toddlers experienced moderate ARI and 26.4% of toddlers experienced mild ARI. From the results of the statistical test  $p = 0.001 < 0.05$  and the value of  $\chi^2 = 13.153$ , it means that there is a contribution of environmental factors to the occurrence of ARI in toddlers.

This is caused by toddlers living in an environment that allows for ARI. There are too many occupants in the house and it is not comparable to the size of the house. In the toddler's environment, there are family members who smoke indoors, in addition, the house is connected to the kitchen and does not have a smoke hole. The levels of CO such as smoke from burning and cigarette smoke that fill the room can stimulate headaches, coughs, and irritation of the throat. This condition makes it easier for ARI to occur because the toddler's environment is always exposed to cigarette smoke. Therefore, the child's environment should always be clean from air pollution from cigarettes, cooking smoke and dust from various household furniture. Likewise, families should consider reducing the number of occupants in a crowded house by moving so that toddlers get more fresh air.

The results of this study are supported by Prabu (2023), who stated that indoor air pollution is a supporting factor for the occurrence of respiratory tract infections for residents. The results of the study showed a relationship between ARI and air pollution, including an increased risk of bronchitis, pneumonia in children who live in more polluted areas. Cigarette smoke and smoke from burning fuel for cooking with high concentrations can damage the lung's defense mechanism, making it easier for ARI to occur.

### **2. Contribution of Individual Factors in Children to the Occurrence of ISPA in Toddlers**

The results of the study conducted on toddlers suffering from ARI at the Simalingkar Health Center, Medan Tuntungan District in 2024 showed that the individual child factor in toddlers was 68.1%, no toddlers experienced severe ARI, 22.2% of toddlers experienced moderate ARI and 45.8% of toddlers experienced mild ARI. From the results of the statistical test  $p = 0.023 < 0.05$  and the value of  $\chi^2 = 7.556$ , it means that there is a contribution of individual child factors to the occurrence of ARI in toddlers. This is because most toddlers are over 2 years old. Toddlers of this age should have good immunity or

antibodies because they have received immunization and vitamin A, but in the Health Center environment there are still toddlers whose immunizations are incomplete. This condition makes the toddler's body more susceptible to ARI. So toddlers should be given complete immunization so that they get resistance to infectious diseases including ARI. These results are supported by Soegijanto (2023), who stated that ARI can be prevented by immunization. Based on the results of the 2021 national health survey report, measles immunization coverage in Indonesia is 67.6%, still low compared to the target that must be achieved, namely 80%.

Breastfeeding in toddlers was found to be less than 2 years, some even less than 6 months. This condition makes toddlers not get passive protection in the form of anti-bacterial and anti-viral from the composition of breast milk, so they are easily attacked by ARI. Therefore, it is necessary to give breast milk to toddlers for 2 years to provide passive immunity so that toddlers do not get sick easily.

These results are in accordance with the opinion of Maryunani (2020), who stated that breast milk can provide passive immunization by delivering antibodies and immunocompetent cells to the surface of the upper respiratory tract. Babies who receive exclusive breastfeeding are more resistant to ARI (less likely to be attacked by ARI), because breast milk contains anti-substances against germs that cause ARI.

The nutritional status of toddlers is mostly good, but they are still affected by ARI even though the ARI is mild. This condition is caused by the different resistance of toddlers to disease attacks including ARI. Incomplete immunization, dirty environment and poor parenting patterns can make it easier to get ARI. Therefore, mothers should provide good and balanced nutrition to their toddlers, because it is not enough to just make the child full but mothers must pay attention to the nutritional value that will be consumed by toddlers so that toddlers are healthy and not easily attacked by disease.

These results are supported by the opinion that even though a toddler has good nutritional status, they can still be affected by ARI, because the physical condition and immune system of each child are different, such as not being fully immunized or poor parenting patterns (Choirudin, 2021).

### **3. Contribution of Children's Behavior to the Occurrence of ISPA in Toddlers**

The results of the study conducted on toddlers suffering from ARI at the Simalingkar Health Center, Medan Tuntungan District in 2024 showed that the behavioral factors in toddlers were mostly at risk, namely 61.1%, as many as 4.2% of toddlers experienced severe ARI, as many as 31.9% of toddlers experienced moderate ARI and 25% of toddlers experienced mild ARI. From the results of the statistical test  $p = 0.000 < 0.05$  and the value of  $\chi^2 = 19.502$ , it means that there is a contribution of behavioral factors to the occurrence of ARI in toddlers.

This is because toddlers who suffer from ARI live in houses with poor hygiene. Observations made inside the house showed that there were many dusty equipment and they looked untidy, because they were rarely cleaned, besides that around the house there were many piles of garbage and puddles of wastewater behind the house. Family behavior rarely washes hands with soap, only washing with water when they are about to eat.

Family members rarely wash their hands when they are going to come into contact with toddlers, such as feeding them while eating. This condition makes toddlers susceptible to infectious diseases including ARI because they are always in contact with unclean hands. Family members should continue to wash their hands to prevent the transmission of diseases including ARI. This result is supported by the Indonesian Ministry of Health as quoted from Al-Bahsyen (2018), which states that behavioral factors in preventing and treating ARI in infants and toddlers in this case are the practice of handling ARI in the family can be done by washing hands thoroughly using soap, because germs from outside can be transmitted through hand contact.

Toddlers suffering from ARI have families who do not cover their mouths when sneezing, so that germs released with the air when sneezing can be inhaled by toddlers. Family members should cover their mouths with handkerchiefs or masks when sneezing so that bacteria released through sneezing do not easily infect toddlers. This result is supported by the opinion that prevention efforts for ARI can also be done by covering the mouth when coughing or sneezing, increasing the family's immune system through physical activities carried out every day (Al-Bahsyen, 2018).

The consumption given by mothers to toddlers is not good because it is not in accordance with the 4 healthy 5 perfect. Mothers more often give food that children like without paying attention to the nutritional value in the food. The food served is instant noodles, crackers and side dishes with rice. This presentation makes children like to eat and produces good nutritional status, but in the food there is no balanced nutritional value needed for the body's resistance to disease. This makes children susceptible to disease because the nutritional value consumed is not balanced only to fill the child. These results are in accordance with the opinion that states that the factor of providing balanced nutrition to toddlers in sufficient quantities also affects the occurrence of ARI in toddlers, the more balanced the nutritional status of toddlers, the better their immune system so that it is difficult to be infected with ARI (Ministry of Health of the Republic of Indonesia, 2018).

## CONCLUSION

Based on the results of research conducted at the Simalingkar Health Center, Medan Tuntungan District, several Risk Factors for ISPA with the Occurrence of ISPA in Toddlers at the Simalingkar Health Center, Medan Tuntungan District in 2024 were found, namely:

1. There is a contribution between environmental factors and the occurrence of ISPA in toddlers with  
a p value = 0.001
2. There is a contribution between individual child factors and the occurrence of ISPA in toddlers with a p value = 0.023
3. There is a contribution between behavioral factors and the occurrence of ISPA in toddlers with a p value = 0.000

So, it is recommended for families or mothers to increase knowledge or information about behavioral factors that can cause ISPA in toddlers, by listening to counseling held at health centers. Then apply it into action by keeping the family environment clean, maintaining personal hygiene and providing balanced nutrition to toddlers. Thus reducing

the risk factors for ISPA in the family. It is recommended to provide education to the community about the importance of behavior to prevent ISPA at the family level, such as personal and environmental hygiene and good nutrition for toddlers. Apart from that, it can build relationships with sub-districts to invite the community to carry out mutual cooperation in environmental cleanliness every week. In this way, the environment is clean, thereby reducing the risk factors for ISPA in the environment.

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