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Factors Associated with the Risk of Acute Respiratory Tract Infection (ARI) Symptoms in Toddlers Reviewed from the Home Environment in Bababan Village, Tulungagung Regency

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ABSTRACT
Background: Acute Respiratory Tract Infection (ARI) is a common illness caused by viral or bacterial infections, often perceived as non-threatening. ARI symptoms range from mild to severe and depend on pathogens, environmental factors, and host immunity.
Purpose: This study aimed to identify factors associated with ARI symptoms in toddlers, focusing on home environmental conditions in Babadan Village, Tulungagung Regency.
Methods: The study was conducted in 2023–2024 using a cross-sectional design with 60 respondents. Participants were mothers of toddlers showing ARI symptoms, living in Babadan, and willing to participate. Data were collected using questionnaires and observation sheets assessing home ventilation, air pollution, smoking behaviors, and ARI symptoms. Statistical analysis with Chi-Square was used to evaluate the relationship between environmental factors and ARI symptoms.
Results: The findings indicated significant relationships between ARI symptoms in toddlers and home ventilation ($p = 0.004$), indoor air pollution ($p = 0.012$), and family members' smoking behavior ($p = 0.017$). Among these factors, smoking behavior posed the highest risk for ARI symptoms in toddlers.
Conclusion: The study concludes that poor home ventilation, indoor air pollution, and smoking significantly contribute to ARI symptoms in toddlers, with smoking behavior being the most critical risk factor. Addressing these environmental issues could reduce ARI risks in children.

Keywords: home ventilation, indoor air pollution, smoking behavior of family members in the home, symptoms of ARI in toddlers

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BACKGROUND

Acute Respiratory Tract Infection (ARI) is a disease that often occurs in the community and is considered common or harmless. Acute Respiratory Tract Infection (ARI) is a disease of the upper or lower respiratory tract, caused by viruses or bacteria that are usually contagious so that it can cause various spectrums Diseases range from asymptomatic diseases to severe and deadly diseases, depending on the causative pathogen, environmental factors, and host factors. A group of diseases that are included in acute respiratory tract infection (ARI) are pneumonia, influenza, and respiratory syncytial virus (RSV). (Zolanda et al., 2021).

Acute Respiratory Tract Infection (ARI) is still the main cause of morbidity and mortality of infectious diseases in the world. The ARI mortality rate reaches 4.25 million every year in the world. The World Health Organization (WHO) in 2020 knew that acute respiratory tract infection (ARI) in toddlers aged 1-5 years had 1,988 cases with a prevalence of 42.91%.(Sarma et al., 2024).

The most at-risk group is toddlers, around 20-40% of patients in hospitals and health centers among children due to ARI, with around 1.6 million deaths due to pneumonia in children under five per year. ARI disease in developing countries is a 25% contributor to child mortality, especially in infants less than two months old. Indonesia is among the developing countries with the highest cases of acute respiratory tract infection (ARI).(Budhyanti et al., 2021) In Indonesia, it always ranks first in the cause of death in infants and toddlers. Acute Respiratory Tract Infection (ARI) also often ranks in the list of the 10 most common diseases in hospitals and health centers. ARI disease in developing countries is a 25% contributor to child mortality, especially in infants less than two months old. Indonesia is among the developing countries with the highest cases of acute respiratory tract infection (ARI). (Setyoningrum & Mustiko, 2020).

Based on the prevalence of Acute Respiratory Tract Infection (ARI) by province, East Java is included in the 10 provinces with the highest incidence of Acute Respiratory Tract Infection (ARI) in children under five based on the diagnosis of health workers, which is 50.93% and ranks fourth after leprosy and HIV/AIDS from the 6 most common diseases in East Java Province. (Praseteya et al., 2022).

As well as recorded at the District Health Office Tulungagung in 2023, based on data, in the 34th week of 2023, the number of Acute Respiratory Tract Infection (ARI) cases with the category Influenza-Like Illness (ILI) penetrated up to 496 cases. In Babadan Village, Tulungagung Regency itself, it has been recorded that from 2023 to 2024 there are 185 people, including 60 children under five with a diagnosis of acute respiratory tract infection (ARI). By Observation beginning The researcher conducted an interview at the Babadan Village Police Regency Tulungagung with the mother midwife village, who said that risk factors for acute respiratory tract infection (ARI) events include humidity, lighting (house ventilation), exposure to cigarette smoke, and cooking fuel.(Mokoginta et al., 2013).

This study is important because ARI in children under five is still a major cause of morbidity and mortality in Indonesia, especially in areas with high environmental pollution. Previous studies have highlighted the relationship between home ventilation, air quality, and smoking habits on ARI risk. However, this study fills the gap by focusing on specific risk factors in Babadan Village, Tulungagung, such as home ventilation, indoor air pollution, and the smoking behavior of family members. The results are expected to contribute significantly to environment-based ARI prevention. (Arifah et al., 2023).

So based on the description above, the researcher is interested in conducting a study with the title "Factors Related to the Risk of Symptoms of Acute Respiratory Tract Infection.

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Acute Respiratory Tract Infection (ARI) in toddlers reviewed from the indoor environment in Babadan Village, Tulungagung Regency".

METHODS

This study was conducted from July 22 to August 30, 2024, in Babadan Village, Tulungagung Regency, with a population of 140 toddlers and a sample of 60 toddlers using the simple random sampling method. Inclusion criteria included parents with toddlers aged 0-59 months who lived in the study location and were willing to be respondents, while exclusion criteria were those who did not meet these requirements. The research instrument was a closed questionnaire consisting of 30 questions to collect data related to home ventilation, air pollution, and the smoking behavior of family members. Data analysis was carried out through univariate and bivariate statistical tests using the chi-square method, with data processing stages including editing, coding, scoring, tabulating, and cleaning. This study also obtained an ethical feasibility test with an ethics certificate as a research requirement. (Purwanza, 2022).

RESULTS

Research Location

Babadan Village is an area located in the administrative area of Karangrejo District, Tulungagung Regency. From all regions in Tulungagung Regency, Babadan Village is a village located on the north side of Tulungagung Regency. Located approximately 10 km from the center of Tulungagung Regency, the number of residents living in Babadan Village is 3081 individuals consisting of 1542 men, 1539 women and 165 toddlers aged 0-5 years. Of this number, there are 1170 families. 70 Therefore, to facilitate the administrative reach that will be carried out by the Babadan Village government, it is divided into 4 hamlets, 8 RWs and 22 RTs.

General Data

Age

Characteristics of respondents based on the age of toddlers in Babadan Village, Tulungagung Regency:

Table 1. Characteristics of Toddlers Based on Age in Babadan Village, Tulungagung Regency

No	Age	Frequency	Percentage
1.	12-24 months	16	26,7%
2.	25-36 months	19	31,6%
3.	37-48 months	15	25%
4.	49-59 months	10	16,7%
	Total	60	100%

Based on the table above, it shows that the symptoms of Acute Respiratory Tract Infection (ARI) in toddlers are dominated at the age of 25-36 months with a total of 19 (31.6%), while the age of 49-59 months of toddlers has the least number, which is 10 (16.7%).

Gender

Characteristics of respondents based on the gender of toddlers in Babadan Village, Tulungagung Regency:

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Table 2. Characteristics of Toddlers Based on Gender in Babadan Village, Tulungagung Regency

No	Gender	Frequency	Percentage
1.	Man	29	48.3%
2.	Woman	31	51,7%
Total		60	100%

Based on the table above, it shows that the symptoms of Acute Respiratory Tract Infection (ARI) in toddlers are dominated by the female sex amounting to 31 (51.7%).

Spesial Data

Home Ventilation

The home ventilation variable was used to determine the condition of home ventilation with the risk of acute respiratory tract infection (ARI) symptoms in toddlers. Based on the results of the study, the characteristics of house ventilation conditions show the following results:

Table 3. Frequency Distribution of Research Results Based on Ventilation of Toddlers' Houses in Babadan Village, Tulungagung Regency

No	Broad Ventilation	Frequency	Percentage
1.	Meet Condition	18	30%
2.	Not Qualify	42	70%
Total		60	100%

By table The above shows that the number of houses whose house ventilation is not eligible is greater, with a total of 42 houses (70%).

Indoor Air Pollution

Indoor air pollution variables are used to know the condition of indoor air pollution with the risk of acute respiratory tract infection (ARI) symptoms in toddlers. Based on the results of the pollution characteristics research, air deep house showed the following results::

Table 4. Distribution Frequency Research Results By Air Pollution Reviewed from the Indoor Environment in Babadan Village, Tulungagung Regency

No	Water pollution	Frequency	Percentage
1.	Not Polluted	19	31,7%
2.	Polluted	41	68,3%
Total		60	100%

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By table above shows that of the total number of air pollution is dominated in houses with the most polluted category with the largest number of 41 (31.7%).

Behaviour Smoke Family Members Deep House

The variable of smoking behavior of family members in the house was used to determine the smoking behavior of family members in the house with the risk of acute respiratory tract infection (ARI) symptoms in toddlers. The characteristics study yielded the following results. The smoking behavior of family members in the house showed the following results:

Table 5. Frequency Distribution of Research Results Based on Smoking Behavior of Family Members in the House in Babadan Village, Tulungagung Regency

No.	Behaviour Smoke	Frequency	Percentage
1.	Heavy	38	63,3 %
2.	Keep	22	36,7 %
Total		60	100 %

By the table above shows that the behavior of smoking members in the home is dominated by the largest category of heavy smoking behavior of 38 people (63.3%).

Symptoms of Acute Respiratory Tract Infection (ARI) in Toddlers

Symptoms of ARI in toddlers are used to determine the risk of symptoms of ARI in toddlers. Based on the results of the research on the Acute Respiratory Tract Infection (ARI) symptom category in toddlers, the results show the following:

Table 6. Frequency Distribution of Research Results Based on Symptoms of Acute Respiratory Tract Infection (ARI) in Toddlers in Babadan Village, Tulungagung Regency.

No	Symptoms of Acute Respiratory Tract Infection (ARI) Toddler	Frequency	Percentage
1.	Light	27	45%
2.	Keep	22	36,7%
3.	Heavy	11	18,3%
Total		60	100%

By The table above shows that the symptoms of Acute Respiratory Tract Infection (ARI) in toddlers are dominated by mild symptoms with as many as 27 (45%), while the least number is severe Acute Respiratory Tract Infection (ARI) symptoms 11 (18.3%).

Statistical Test of the Risk of Acute Respiratory Tract Infection (ARI) Symptoms in Toddlers

Based on the analysis that has been carried out, the results of statistical tests with Chi-Square on factors related to the risk of symptoms of acute respiratory tract insufficiency (ARI) in toddlers reviewed from the indoor environment in Babadan Village, Tulungagung Regency, in 2024, according to the work at SPSS 22 with statistical tests, obtained the following data:

Home Ventilation

Table 7. Results of Chi-Square Test of House Ventilation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.112	9	.004
N of Valid Cases	60		

From the results of the Chi-Square statistical test showing the number p value = 0.004 (p = 0.004 < α = 0.05), then H1 is accepted; thus it can be concluded that there is a relationship between the factor of symptoms of COPD in toddlers from house ventilation and the risk of symptoms of COPD in toddlers..

Deep Air Pollution House

Table 8. Result Test Chi-Square Indoor Air Pollution

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48.939	90	.012
N of Valid Cases	60		

From the results of the Chi-Square statistical test, the number p value = 0.012 (p = 0.012) < α = 0.05, then H1 is accepted; thus it can be concluded that there is a relationship between the factor of symptoms of Acute Respiratory Tract Infection (ARI) in toddlers from.

Smoking Behavior of Family Members In The Home

Table 9. Chi-Square Test Results of Smoking Behavior of Family Members in the Home

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	71.320	40	.002
N of Valid Cases	60		

From the results of the Chi-Square statistical test, the p-value = 0.002 (p = 0.002 < α = 0.05), then H1 is accepted; thus it can be concluded that there is a relationship between the symptom factor of Acute Respiratory Tract Infection (ARI) in toddlers from the smoking behavior of family members in the house and the risk of Acute Respiratory Tract Infection (ARI) symptoms in toddlers.

DISCUSSION

Analyzing the Symptoms of Acute Respiratory Tract Infection (ARI) in Toddlers in Babadan Village, Tulungagung Regency

Indoor air pollution and the risk of symptoms of ARI in toddlers. The results of the study found that almost half of the toddlers experienced mild symptoms of ARI in the last 3 months, with a total of 27 (45%). The toddlers who experienced moderate ARI symptoms amounted to 22 (36.7%), and the least toddlers who experienced severe ARI symptoms, with

the number being 11 (18.3%). The average answer from mothers of toddlers to mild symptoms of ARI experienced by toddlers is that toddlers experience stones, hoarseness, runny nose, heat, or fever with a body temperature of >37° C. In the symptoms of moderate ARI, the average mother of Value Df Asymp. Sig. (2-sided) Pearson Chi-Square 48.939 90 .012 N of Valid Cases 60 Value df Asymp. Sig. (2-sided) Pearson Chi[1]Square 71.320 40.002 N of Valid Cases 607 toddlers answered the symptoms that have been experienced by toddlers are toddlers experiencing rapid breathing, toddlers experiencing fever with a temperature of >39°C, red patches appear on the toddler's skin resembling measles, and when the toddler breathes like snoring (snoring). While the symptoms of severe ARI mothers of toddlers on average answered the symptoms that toddlers have experienced are decreased consciousness, toddlers appear restless, toddlers have difficulty breathing, and red throats. Based on the results obtained by the researchers, the researcher entered the diagnosis of ARI symptoms in toddlers based on information from midwives and village nurses at the research site. Factors that affect the risk of ARI symptoms in toddlers are home ventilation, indoor air pollution, and smoking behavior of family members in the house.

Several regions in Indonesia have the potential for forest fires and have experienced several forest fires, especially in the dry season. Smoke from fires can cause COPD and aggravate the condition of someone who is already suffering from pneumonia, especially in toddlers. In addition, household smoke that still uses firewood is also one of the risk factors for ARI. This can be exacerbated if the ventilation of the house is not good and the kitchen is integrated with the living room or room. (Gobel et al., 2023)

Analyze The Relationship between Home Ventilation and the Risk of ARI Symptoms in Toddlers in Babadan Village, Tulungagung Regency

Based on the results of research conducted in Babadan Village, Tulungagung Regency, with the target of toddlers with ARI symptoms in the location, it was found that almost all houses already had house ventilation, but almost half of the houses in the location did not meet the requirements. According to the results obtained from interviews and observations, researchers lack knowledge about the importance of the wide condition of home ventilation. From the house ventilation variable, a research measuring tool was used in the form of observation based on the observation results that out of 60 respondents, 18 houses (30%) had house ventilation that met the requirements. Meanwhile, 42 houses (70%) have house ventilation that does not meet the requirements. According to the(Fandeli, 2021), Ventilation is the process of bringing in and spreading air from the inside to the outside or air from the outside that has been treated as recycled into the room. The air ventilation that is made and the lighting in the house are very necessary because it will reduce smoke pollution in the house so that it can prevent someone from inhaling the smoke, which over time can cause ARI disease. The area of permanent air conditioning or ventilation of the house is at least 10% of the floor area.

This research is in line with (Istifaiyah et al., 2019), saying that the results of the study showed that most (73.9%) of the respondents had unqualified room ventilation conditions and most (54.1%) had experienced ARI. The results showed that there was a significant relationship between ventilation and the incidence of ARI disease (p=0.004z). The more unqualified the ventilation, the more respondents tend to experience ARI. In the house ventilation variable, there are two indicators, namely the ownership of ventilation in the house and the ventilation area of the house that has met the requirements, which is >10% of the floor area of the house. In the first indicator, almost all houses already have house ventilation, which means good, while the second indicator is almost half of the houses whose house ventilation does not meet the requirements, which <10% means bad.

Analyse The Relationship Between Indoor Air Pollution and the Risk of Acute Respiratory Tract Infection (ARI) Symptoms in Toddlers in Babadan Village, Tulungagung Regency

Based on the results of research conducted in Babadan Village, Tulungagung Regency, with the target of toddlers with symptoms of Acute Respiratory Tract Infection (ARI) in the location, it was found that almost half of the houses in the location had air pollution in the house. In the variable of indoor air pollution, a research measuring instrument was used in the form of observation. The results obtained were almost half of the houses whose indoor air had air pollution; namely, out of 60 houses, there were 41 houses (68.3%) of the indoor air in the house polluted. Meanwhile, 19 houses (31.7%) have no air pollution in the house.

Air pollution in a house is a condition in which there is one or more pollutants in the house that, due to its concentration, can be at risk of causing health problems for the residents of the house. Air pollutant risk factors are elements that affect health due to air pollution physically, chemically, and biologically. (Saidal Siburian & Mar, 2020).

Based on data analysis through the Chi-Square Test, air pollution in homes with a risk of Acute Respiratory Tract Infection (ARI) symptoms in toddlers has a significant value of 0.012 ($P < 0.05$), which means that HI is accepted and H0 is rejected. If the significant value is smaller than the alpha value, which is $0.012 < 0.05$, it can be concluded that there is an influence between indoor air pollution and the risk of acute respiratory tract infection (ARI) symptoms in toddlers in Babadan Village, Tulungagung Regency.

This study is in line with (Garmini & Purwana, 2020a), saying that the results of the variables of mosquito repellent use, indoor smokers, ventilation, nutritional status, and immunization status statistically showed a meaningful relationship with the incidence of acute respiratory tract infection (ARI) in toddlers, while the variables of SO_2 levels in the house and the age of toddlers statistically did not show a meaningful relationship with the incidence of acute respiratory tract infection (ARI) in toddlers. (Almira, 2017).

Based on the results of the study, the researcher's opinion is that in the environment in the house, toddlers still use firewood as a material when cooking on the grounds that mothers of toddlers are more economical in using it. The lack of chimneys in the kitchen, where the smoke comes out for cooking, means some houses are also still many without chimneys. The use of mosquito repellent and how to process waste by burning almost all mothers of toddlers are still doing this; therefore, indoor air pollution is very risky for acute respiratory tract infection (ARI) symptoms in toddlers. (Keman, 2022).

The factors that are most at risk for the symptoms of acute respiratory tract infection (ARI) in toddlers in Babadan Village, Tulungagung Regency, are the air in the house that is polluted due to the use of cooking fuel using firewood and gas stoves, the wood used emits a brownish liquid that makes the eyes sting, there is no chimney for cooking smoke to come out of the kitchen, there is no partition between the kitchen and other rooms, and the existence of toddlers who are in the kitchen when the toddler's mother is cooking.

Analyzing The Relationship between Family Members' Smoking Behavior in the House and the Risk of ARI Symptoms in Toddlers in Babadan Village, Tulungagung Regency

Based on the results of research conducted in Babadan Village, Tulungagung Regency, with the target of toddlers with symptoms of ARI in the location, it was found that almost half of the houses in the location had air pollution in the house. In the variable of indoor air pollution, a research measuring instrument was used in the form of observation. The results obtained were almost half of the houses whose indoor air had air pollution; namely, out of 60 houses, there were 41 houses (68.3%) of the indoor air in the house

polluted. Meanwhile, 19 houses (31.7%) have no air pollution in the house. (Arikunto, 1998) Air pollution in a house is a condition in which there is one or more pollutants in the house that, due to its concentration, can be at risk of causing health problems for the residents of the house. Air pollutant risk factors are elements that affect health due to air pollution physically, chemically, and biologically. (Nurjazuli, 2022).

Based on data analysis through the Chi[1]Square Test between air pollution in homes with a risk of ARI symptoms in toddlers, there is a significant value of 0.012 (P<0.05), which means that HI is accepted and H0 is rejected. If the significant value is smaller than the alpha value, which is 0.012 < 0.05, it can be concluded that there is an influence between indoor air pollution and the risk of ARI symptoms in toddlers in Babadan Village, Tulungagung Regency.

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The use of mosquito repellent and how to process waste by burning almost all mothers of toddlers are still doing this; therefore, indoor air pollution is very risky for ARI symptoms in toddlers. The factors that are most at risk for the symptoms of ARI in toddlers in Babadan Village, Tulungagung Regency, are the air in the house that is polluted due to the use of cooking fuel using firewood and gas stoves, the wood used emits a brownish liquid that makes the eyes sting, there is no chimney for cooking smoke to come out of the kitchen, there is no partition between the kitchen and other rooms, and the existence of toddlers who are in the kitchen when the toddler's mother is cooking.

Analyzing The Relationship between Family Members' Smoking Behavior in the House and the Risk of ARI Symptoms in Toddlers in Babadan Village, Tulungagung Regency

Based on the results of research conducted in Babadan Village, Tulungagung Regency, targeting toddlers with symptoms of ARI in the location, it was found that all respondent houses inside there were smokers, and almost half of the houses in the location had the smoking behavior of family members in the house categorized as heavy smokers. In the variables of smoking behavior of family members in the house, research measuring tools were used in the form of interviews and filling out questionnaires; the results obtained were almost More than half of the households with smoking behavior of family members who are heavy smokers, namely out of 60 houses, there are 38 houses (63.3%) whose smoking behavior members go out in the houses of heavy smokers. Factors that affect the smoking behavior of family members in heavy smoker homes are more than half of the homes of family members who smoke more than one person in it 37 (61.7%). Almost all family members who smoke indoors consume more than one cigarette per day. Another factor is that cigarette ashtrays at home are not stored far from the reach of 33 (55%) toddlers; almost more than half of the family members who smoke in the house do not wash their hands after smoking 43 (71.7%) and change their clothes 55 (88.3%). In gathering with family, there are still very many members who smoke in the house 52 (86.7). Almost all respondents answered that when toddlers feel uncomfortable with cigarette smoke, people who smoke around

toddlers do not turn off their cigarettes, but half of the respondents answered that when someone smokes around toddlers, one of the family members takes the toddler away from cigarette smoke, 32 (53.3%).

Actually, children are very easily affected by air pollution. Common hazards experienced by children from inhaling cigarette smoke are malfunctions of the nasal organs. If the nasal organs and respiratory tract are damaged, irritation can occur in the respiratory tract and even irritation to the lungs. If the irritation is followed by microorganisms or pathogens that cause ARI, it can cause infections in the respiratory tract. According to the results of a study conducted by (Mariza & Trisnawati, 2018) about factors related to the occurrence of COPD in infants in the working area of the Raja Basa Indah Health Center Bandar Lampung, it was explained that exposure to cigarette smoke can cause indoor oxygen levels to decrease and increase CO levels so that they inhale more CO than oxygen.

Based on the analysis of data through the Chi-Square Test, the smoking behavior of smoking members in the house and the risk of ARI symptoms in toddlers has a significant value of 0.002 ($P < 0.05$), which means that HI is accepted and H0 is rejected. If the significant value is less than the alpha value, which is $0.002 < 0.05$, it can be concluded that there is an influence between the smoking behavior of family members in the house and the risk of ARI symptoms in toddlers in Babadan Village, Tulungagung Regency.

This research is in line with (Seda et al., 2021)who said that the results of the study showed that respondents who smoked and toddlers who suffered from mild ARI were 46.5%, moderate ARI 44.2%, and did not suffer from ARI 9.3%. Non-smoking respondents and toddlers who suffer from mild ARI are 28.6%, moderate ARI is 21.4%, and no ARI is 50%. The p-value of 0.004 is smaller than the significant level of 0.05. The conclusion of this study is that there is a relationship between the smoking behavior of the closest people and the incidence of ARI in toddlers who are treated at the Cempaka Health Center in Banjarmasin. This study suggests that nurses more intensively provide counseling to families or the community about the dangers of smoking, which also affects the health of toddlers, including ARI in toddlers.

sed on the results of the research, the researcher's opinion is that when in the field, there are still many smoking behaviors of family members who are not good. Like 11 family members who smoke in the house, family members who smoke more than one person, family members who smoke consume more than one cigarette in a day, when smoking bait is not kept away from family members who smoke. And some of the respondents' houses have coffee stalls where there are very many people who smoke in the area, and toddlers are also in the area with the mother of the toddler. So that the risk of ARI symptoms in toddlers has a very large potential in the behavior of family members who smoke poorly. Poor smoking behavior of family members is very risky for the symptoms of ARI in toddlers, such as family members who smoke in the house and near toddlers, families who smoke in the house with more than one person, and when the family gathers, they also smoke near the toddler, when the toddler feels uncomfortable with the lack of awareness of family members who smoke to turn off their cigarettes.

Analyzing the Most Dominant Between Home Ventilation, Indoor Air Pollution and Smoking Behavior of Family Members in the House in Babadan Village, Tulungagung Regency

Based on the results of the analysis on the house ventilation variables, the statistical result of OR = 4.333 (95% CI: 1.596-11.768), which means that in a house that does not have ventilation that meets health requirements, there is a risk of toddlers being exposed to ARI 9-10 times more than in a house that has ventilation that meets health requirements.

Based on the results of the analysis on indoor air pollution variables in the statistical test, the result of OR = 9.726 (95% CI: 2.132-44.373) was obtained, meaning indoor air pollution is associated with a risk of 20-30 symptoms of COPD in toddlers.

Based on the results of the analysis on the variables of smoking behavior of family members in the house in the statistical test, the result of OR = 13.239 (95% CI: 10.466-156.715), so it can be concluded that toddlers who live with family members who have poor behavior in smoking in the house have a 40-41 times risk of suffering from ARI disease.

Based on the above results, the researcher's opinion can be concluded from the three factors or variables that are most dominant or have a major influence on the risk of ARI symptoms in toddlers: the smoking behavior of family members in the house with a statistical test obtained the result of OR = 13,239 (95% CI 10,466-156,715).

CONCLUSION

Based on the results and discussions above, conclusions can be drawn. Houses with unqualified house ventilation or said <10% of the floor area of the house as many as 42 houses (70%), deep air Houses that were polluted due to the use of firewood, kitchens that did not have smoke outlets in the kitchen, the use of mosquito repellent, and waste management by burning in front of the house were 19 houses (31.7%). smoking behavior of family members who smoke heavily in the house, as many as 38 houses (63.3%), symptoms of ARI in toddlers with mild category 27 toddlers (45%), moderate ARI symptom category 22 toddlers (36.7%), severe ARI symptom category 11 toddlers (18.3%), there was a relationship between home ventilation and ARI symptoms in toddlers with significant value. results as 0.004, there is a relationship between indoor air pollution and ARI symptoms in toddlers and outcomes of significant value. 0.012, there is a relationship between behavior, smoking, family members, and symptoms of ARI in toddlers with a significant value of 0.002, out of the three variable factors that The most influential with the symptoms of ARI in toddlers is the smoking behavior of family members with an OR value = 13.239.

SUGGESTION

For Health Offices and Health Centers

Efforts to reduce the risk of ARI in toddlers should begin with counseling and educating parents about the importance of maintaining a clean home environment. Parents should be made aware of the need for proper ventilation, as recommended by the Ministry of Health (2011), which suggests that ventilation areas should be more than 10% of the house's floor area. Families must also be socialized about the harmful effects of cigarette smoke, especially on toddlers, as it significantly increases the risk of ARI.

Additionally, parents need to be educated to recognize the early symptoms of ARI, such as fever, cough, phlegm, and rapid breathing, so they can promptly seek medical attention. Immunization plays a vital role in prevention, and parents should be encouraged to ensure their children receive essential vaccines, such as DPT, HiB, and pneumonia vaccines, which help reduce the risk of respiratory infections.

Routine health checks and screenings for ARI are also crucial, particularly during the transitional seasons when the risk is higher. Early screening of toddlers showing initial symptoms of ARI enables timely and effective treatment. To support a healthy home environment, programs promoting adequate ventilation, reducing indoor air pollution, and maintaining cleanliness should be implemented. Community involvement in health programs is essential to foster a pollution-free environment and reduce exposure to cigarette smoke, especially in areas with toddlers.

For respondents

To create a healthy environment, it is essential to ensure that homes are well-ventilated and free from dust, smoke, and other pollutants. Transitioning away from the use of firewood as a cooking fuel at home can significantly reduce the risk of respiratory diseases. Excess humidity should also be minimized, as it encourages the growth of mold and bacteria that can trigger acute respiratory infections (ARI). Keeping the house dry and clean, particularly in damp areas like bathrooms, is crucial. Additionally, cigarette smoke should be avoided entirely, particularly near children, mothers, and the elderly, as it is a major cause of ARI. Efforts should also be made to limit exposure to air pollution from burning waste and vehicle emissions. Strengthening the body's immunity is equally important and can be achieved through a balanced diet, regular exercise, and adequate rest. Finally, opening windows and doors during the day allows sunlight to enter and promotes good air circulation, creating a healthier living space.

REFERENCES

Almira, R. U. (2017). Hubungan Status Gizi Dengan Kejadian Infeksi Saluran Pernafasan Akut (Ispa) Pada Balita Di Wilayah Kerja Puskesmas Siantan Hilir. ProNers, 3(1).

Arifah, N., Sunarno, J. M., & Suseno, B. (2023). GAMBARAN FAKTOR RISIKO LINGKUNGAN FISIK RUMAH PADA KEJADIAN ISPA BALITA DI WILAYAH KERJA UPTD PUSKESMAS BANJARNEGARA 2 TAHUN 2023. Scientific Journal of Medsains, 9(1), 43–48.

Arikunto, S. (1998). Pendekatan Penelitian. Jakarta: Rineka Cipta.

Budhyanti, W., Lisnaini, L., & Chandra, M. (2021). Penanganan Infeksi Saluran Pernafasan Atas (ISPA) Pada Anak. UKI Press, Anggota IKAPI.

Fandeli, C. (2021). Pembangunan kota hijau. Ugm Press.

Garmini, R., & Purwana, R. (2020a). Polusi udara dalam rumah terhadap infeksi saluran pernafasan akut pada balita di tpa sukawinatan palembang. Jurnal Kesehatan Lingkungan Indonesia, 19(1), 1.

Garmini, R., & Purwana, R. (2020b). Polusi udara dalam rumah terhadap infeksi saluran pernafasan akut pada balita di tpa sukawinatan palembang. Jurnal Kesehatan Lingkungan Indonesia, 19(1), 1.

Gobel, F. F., Mahlia, A., Luthfian, R. Y., Sukwika, T., Purwaningrum, S. D., Mawli, R. E., Anggraeni, P. D., Krisdianto, K., Nurfianti, N., & Agustin, N. C. (2023). Kesehatan dan Lingkungan.

Istifaiyah, A., Adriansyah, A. A., & Handayani, D. (2019). Hubungan Ventilasi dengan Kejadian Penyakit Ispa pada Santri di Pondok Pesantren Amanatul Ummah Surabaya. Jikesma: Jurnal Ilmu Kesehatan Masyarakat, 15(2), 81–87.

Keman, S. (2022). Dasar Kesehatan Lingkungan. Airlangga University Press.

Mariza, A., & Trisnawati, T. (2018). Faktor-faktor yang Berhubungan dengan Terjadinya Ispa Pada Bayi (1-12 Bulan) Di Wilayah Kerja Puskesmas Rajabasa Indah Bandar Lampung Tahun 2013. JKM (Jurnal Kebidanan Malahayati), 1(2).

Mokoginta, D., Arsin, A., & Sidik, D. (2013). Faktor risiko kejadian pnemonia pada anak balita di wilayah kerja puskesmas Sudiang kota Makassar. Fakultas Kesehatan Masyarakat Universitas Hassanudin.

Nurjazuli, N. (2022). FAKTOR-FAKTOR LINGKUNGAN RUMAH YANG BERHUBUNGAN DENGAN KEJADIAN PNEUMONIA PADA BALITA: SEBUAH KAJIAN SISTEMATIS. Sanitasi: Jurnal Kesehatan Lingkungan, 15(1), 20–28.

Praseteya, H. D., Zuhriyah, A., & Basith, A. (2022). Evaluasi pemberian antibiotik untuk mengobati Infeksi Saluran Pernapasan Akut (ISPA) pada anak di Puskesmas Dander.

FASKES: Jurnal Farmasi, Kesehatan, Dan Sains, 1(1), 7–12.

Purwanza, S. W. (2022). Metodologi penelitian kuantitatif, kualitatif dan kombinasi. Cv. Media Sains Indonesia.

Saidal Siburian, M. M., & Mar, M. (2020). Pencemaran Udara dan Emisi Gas Rumah Kaca. Kreasi Cendekia Pustaka.

Sarma, G., Ahmed, M. M., Ahmed, M., Das, U. B., & Borah, M. (2024). A STUDY OF COMMON MORBIDITIES AMONG THE 0–5-YEAR CHILDREN WITH SPECIAL REFERENCE TO ACUTE RESPIRATORY TRACT INFECTION. Int J Acad Med Pharm, 6(6), 98–103.

Seda, S. S., Trihandini, B., & Permana, L. I. (2021). Hubungan perilaku merokok orang terdekat dengan kejadian ISPA pada balita yang berobat di Puskesmas Cempaka Banjarmasin. Jurnal Keperawatan Suaka Insan (Jksi), 6(2), 105–111.

Setyoningrum, R. A., & Mustiko, H. (2020). Risk factors of very severe pneumonia incidence in children. Jurnal Respirologi Indonesia, 40(4), 243–250.

Wihardjo, R. S. D., & Rahmayanti, H. (2021). Pendidikan Lingkungan Hidup. Penerbit Nem.

Zolanda, A., Raharjo, M., & Setiani, O. (2021). Faktor risiko kejadian infeksi saluran pernafasan akut pada balita di Indonesia. Link, 17(1), 73–80.