



THE RELATIONSHIP OF THE WORK ENVIRONMENT, USE OF MASKS AND LENGTH OF EXPOSURE TO SMOKE WITH THE INCIDENT OF ISPA IN MELINJO EMPING CRAFTSMAN

Zaharamutia^{1*}, Meutia Zahara², Nurjannah³, Maifrizar⁴

¹Kembang Tanjong Health Center, Kembang Tanjong District, Pidie Regency, Aceh 24182

²Universitas Muhammadiyah Aceh. Jl. Muhammadiyah No.91, Batoh, Kec. Lueng Bata, Kota Banda Aceh, Aceh 23123

³Universitas Syiah Kuala, Jln. Teuku Nyak Arief Darussalam, Banda Aceh, Aceh, 23111 Indonesia

⁴Sekolah Tinggi Ilmu Kesehatan Jabal Ghafur, Jl. Lkr. Keuniree, Keuniree, Pidie, Aceh 24114, Indonesia

*zaharamutia17@gmail.com

ABSTRACT

Melinjo cracker home industry workers must pay attention to several factors that can cause ISPA incidents, such as using personal protective equipment by wearing a mask because it can protect their breathing from dust and smoke resulting from heating melinjo fruit. The purpose of this study is to determine the relationship between the work environment, mask use and the duration of smoke exposure to the incidence of ispa in emping melinjo artisans in Kembang Tanjong District, Pidie Regency in 2023. Workers must also pay attention to the length of work each day, at least taking time to rest. This type of research is descriptive-analytic using a cross-sectional design. The sample taken in this research was the entire population in the Kembang Tanjong sub-district, 435 people who were emping melinjo craftsmen in the Kembang Tanjong sub-district, Pidie Regency. Data analysis in this study was univariate, bivariate, and multivariate. The results of the research show that there are three variables that have a relationship with the incidence of ISPA in emping melinjo craftsmen, namely: Length of exposure to smoke, p-value 0.000, use of masks, p-value 0.000, working place conditions, p-value 0.035 and roof condition, p-value 0.000, while for Multivariate test of risk factors The most associated with the incidence of ISPA is the use of masks with a p-value of 0.000, length of exposure to smoke p-value of 0.000 and roof condition p-value of 0.004.

Keywords: environment; ISPA; smoke

How to cite (in APA style)

Zaharamutia, Z., Zahara, M., Nurjannah, N., & Maifrizar, M. (2024). The Relationship of the Work Environment, Use of Masks and Length of Exposure to Smoke with the Incident of ISPA in Melinjo Emping Craftsman. *Indonesian Journal of Global Health Research*, 6(5), 3121-3134. <https://doi.org/10.37287/ijghr.v6i5.4331>.

INTRODUCTION

Acute Respiratory Infection (Haris) is the most common disease suffered by children and adults in both developing and developed countries. The World Health Organization estimates the incidence of ISPA in developing countries at 0.29% (151 million people) and industrial countries at 0.05% (5 million people). ARI is caused by bacteria, viruses and rickettsia. The initial symptoms are usually a cold cough, which is then followed by rapid breathing and shortness of breath. At a more severe level, there is difficulty breathing, inability to drink, seizures, decreased consciousness and death if not treated immediately (Lantong, Asfian, & Erawan, 2017). Indonesia, as part of a developing country and with a unique geographical environment, has problems that are almost the same as other developing countries, namely the large number of morbidities due to respiratory tract disorders due to acute respiratory infections (Haris, 2021). Exposure to dust is dust particles that people inhale both outdoors and indoors (Sunuh & Subagy, 2022). Exposure to dust can disrupt the respiratory tract of people outside the home, such as dust, changes in land use, the flow of passing vehicles and

air pollution (Ananda, Safrizal, Azwar, & Reynaldi, 2021). Environmental factors that influence respiratory tract disorders are exposure to dust in the yard and environment.

Buildings that are narrow and not suitable for the number of occupants will result in reduced oxygen in the room which causes the body's immune system to decrease, thereby accelerating the emergence of respiratory tract diseases (Lantong et al., 2017). Based on the 2018 Riskesdas, the prevalence of ISPA in Indonesia is 9.3% with the highest cases being in Aceh, North Sumatra, West Sumatra, Riau, Jambi, South Sumatra, Bengkulu and Lampung. Acute respiratory tract infection (ARI) is an environmental-based disease and the general public tends to think of ARI as an ordinary cough and cold disease caused by changing seasons or cold weather, and not a serious problem (Abdillah, 2020). The risk of acute respiratory infections is relatively high, especially for workers in the industrial sector where there are risks and dangers originating from humans, work tools, machines and other materials. Data from the International Labor Organization (ILO) (2013) explains that one of the causes of death that is related to work includes cancer with 34% cases, accidents 25%, diseases of the respiratory tract 21%, cardiovascular disease 15%, and several other factors 5%. Workers who are exposed to dust are at risk of health problems and infectious and non-infectious diseases (Yunus, Raharjo, & Fitriangga, 2020).

Melinjo cracker home industry workers must pay attention to several factors that can cause ISPA incidents, such as using personal protective equipment by wearing a mask because it can protect their breathing from dust and smoke resulting from heating melinjo fruit. Workers must also pay attention to the length of work each day, at least taking time to rest (Afifah, 2019). We increasingly encounter health problems in home industries that operate in the field of producing crackers or often called *emping melinjo* in rural communities, especially in villages in Kembang Tanjong District, Pidie Regency, one of the sub-districts producing melinjo crackers with a total of 45 villages (Tanjong, 2023). However, this increase has also been offset by an increase in work-related health problems. As a result of the reciprocal relationship between humans and the environment, various health problems often occur. There are several factors that can influence the occurrence of lung disorders, namely: air pollution produced by smoke when heating melinjo fruit which will be made into chips or crackers, the size of the dust in the environment that produces melinjo crackers, the amount and duration of exposure and air humidity (Rumakat, 2020).

Workers are at risk of health problems caused by the work process, work environment and worker health behavior. Workers are not only at risk of suffering from communicable and non-communicable diseases, but workers can also suffer from occupational diseases and/or work-related illnesses (Reza, Wibowo, & Sakufa, 2022). Occupational diseases are diseases caused by work and/or the work environment, including occupational diseases (Kemenkes, 2016). Based on data from the Kembang Tanjong Community Health Center in 2021, the number of ISPA cases in children was 391 cases and for adults it was 912, in 2022 the number of ISPA cases in children was 631 cases and adults were 2,124 cases, while in 2023 the number of ISPA cases as of July for the category there were 284 children and 940 cases for adults (Tanjong, 2023).

According to the results of an initial survey conducted by researchers from Kembang Tanjong District, Pidie Regency, it was found that the people in this District work as melinjo cracker producers. The bad one. Seeing the large number of reported cases of ISPA sufferers at the Kembang Tanjong Community Health Center, Pidie Regency and there has been no research conducted on the relationship between the work environment, use of masks and exposure to

smoke and the incidence of ISPA. The purpose of this study is to determine the relationship between the work environment, mask use and the duration of smoke exposure to the incidence of ispa in emping melinjo artisans in Kembang Tanjong District, Pidie Regency in 2023.

METHOD

This research is an analytical survey, with a cross sectional approach to determine the relationship between work environment, use of masks and duration of exposure to smoke with the incidence of acute respiratory infections among emping melinjo craftsmen in Kembang Tanjong District, Pidie Regency. The location of this research will be carried out at the house of an emping melinjo craftsman in Kembang Tanjong District, Pidie Regency. The population and sample in this study were the entire community of emping melinjo craftsmen in Kembang Tanjong District, Pidie Regency, totaling 435 people. The data analysis design in this research is that the data obtained in the research is then processed and analyzed using a computer using the StataMP-64 application. Research analysis produces correct information in at least four stages, namely editing, coding, entry, tabulating. The data analysis used in the research is univariate analysis, bivariate analysis and multivariate analysis

RESULTS

Table 1
Frequency Distribution of Independent Variables in Pidie Regency in 2022

	Variabel	f	%
Disease ISPA	No	267	61,38
	Sick	168	38,62
Age	Productive	424	97,47
	Unproductive	1	2,53
Education	Tall	5	1,15
	Intermediate	244	56,09
	Basis	186	42,76
Smoking Behavior	No smoking	7	17,24
	Not every day	6	1,38
	Smoking Every Day	354	81,38
Floor Condition	Concret	1	3,45
	Soil	420	96,55
Wall Condition	Permanen	1	3,22
	Non-permanent	421	96,78
Roof Condition	Tile	6	13,79
	Non-tile	375	86,21
Workplace	No dust	1	3,91
	Dusty	418	96,09
Fuel Type	Gas	2	0,46
	Woo	433	99,54
Use of Masks	Using	7	17,93
	Does not use	357	82,07
Long Exposure to	< 8 hours/day	185	42,53
	≥ 8 hours/day	250	57,47

Table 1, several conclusions can be drawn regarding respondents who experience ARI. Of the 435 respondents, 38.62% experienced ISPA, while 61.38% were not affected. The age of respondents who were not productive only reached 2.53%, with the majority of respondents being in the productive age range at 97.47%. Secondary education is more dominant with a percentage of 56.09% compared to primary education level of 42.76%. In addition, 81.38% of respondents have family members who smoke every day, while only 17.24% do not smoke. Environmental factors such as the condition of floors made of earth reach 96.55%, while cement floors only 3.45%. Non-permanent walls also dominate with a percentage of 96.78%. Tile roofs only account for 13.79%, while non-tile roofs account for 86.21%. Dusty workplaces reached 96.09%, and wood fuel was used by 99.54% of respondents. Although only 17.93% of respondents used masks, the other 82.07% did not. Finally, exposure to smoke less than 8 hours/day was 42.53%, while exposure to more than or equal to 8 hours/day reached 57.47%. This conclusion provides a detailed picture of the factors related to the prevalence of ARI among respondents.

Table 2.

Factors Associated with the Occurrence of ISPA in Kembang Tanjong District, Pidie Regency

Variabel Independen	ISP				OR	C I 95	P-Value
	No Pain		Sick				
	f	%	f	%			
Age							
Productive	258	60,85	16	39,15			
Unproductive	9	81,82	2	18,18	0,345	0,073-1,618	0,177
Education							
Tall	3	6	2	4			
Intermediate	150	61,48	94	38,52	0,940	0,154-5,730	0,947
Basis	114	61,29	72	38,71	0,947	0,154-5,808	0,953
Family members who smoke							
No smoking	49	65,33	26	34,67			
Not every day	3	5	3	5	1,884	0,354-10,00	0,457
Smoking Every Day	215	60,73	13	39,27	1,218	0,723-2,051	0,458
Floor Condition							
Concrete	13	86,67	2	13,33			
Soil	254	60,48	16	39,52	4,248	0,946-19,06	0,059
Wall Condition							
Permanen	12	85,71	2	14,29			
Non-Permanent	255	60,57	16	39,43	3,905	0,863-17,67	0,077
Roof Condition							
Tile	52	86,67	8	13,33			
Not Permanent	215	57,33	16	42,67	4,837	2,235-10,46	0,000
Workplace Conditions							
No dust	15	88,24	2	11,76			
Dusty	252	60,29	16	39,71	4,940	1,115-21,88	0,035
Use of Masks							
Using	66	84,62	12	15,38			
Not Using	201	56,30	15	43,70	4,268	2,229-8,174	0,000
Long Exposure to Smoke							
< 8 hours/day	140	75,68	45	24,32			
≥ 8 hours/day	127	50,80	12	49,20	3,013	1,984-4,574	0,000

Table 3
Risk factors for the incidence of ISPA in Kembang Tanjong District, Pidie Regency

ISPA	OR	CI 95 %	P value
Productive Age	0,510	0,090-2,865	0,445
Who wears a mask	4,989	2.526 – 9,853	0,000
Prolonged exposure to smoke	3.495	2.243 – 5,447	0,000
Non-permanent Floor Conditions	0,803	0,129- 4,987	0,814
The condition of the wall is not permanent	1.349	0,222- 8,197	0,745
The condition of the roof that is not tile	3.941	1,549- 10,023	0,004
Dusty working conditions	3.517	0,676- 18.298	0,135

Table 3 shows the results of multivariate analysis of 7 variables, namely age, use of masks, length of exposure to smoke, floor condition, wall condition, roof condition and working place conditions, showing that the risk factor for the occurrence of ISPA that has the most influence on the incidence of ISPA is the use of masks with OR=4.989 which means that respondents who do not wear masks have a risk of 4.989 times the occurrence of ARI events with a p-Value value of 0.000, another factor that influences the incidence of ARI is the duration of exposure to smoke ≥ 8 hours/day has a risk of 3.495 times the occurrence of ARI events with a p-Value value of 0.000, another factor that influences the incidence of ISPA is the condition of the roof with OR=3.941, which means that respondents who have non-permanent roofs have a 3.941 times risk of occurrence of ISPA with a p-value of 0.004

DISCUSSION

Relationship between age and the incidence of ARI

Based on the research results, it shows that 60.85% of respondents who did not experience ARI in their productive age were compared to 81.82% of respondents who did not experience ARI in their unproductive age, while 39.15% of respondents who experienced ARI in their productive age were compared. with unproductive respondents amounting to 18.18%. The results of statistical analysis obtained a p-value of 0.177 which shows that there is no relationship between age and the incidence of ARI. The results of the odd ratio calculation obtained a value of = 0.345, which means that respondents of unproductive age were 65% able to prevent the occurrence of ISPA compared to respondents of productive age. This is not in line with research by Yunus et al. (2020) which states that there is a significant relationship between age and the incidence of ARI with a P-value of 0.001. Researchers believe that age is the calculation of age from birth to birthday. The older a person is, the more mature a person will be when thinking and working. Age is one of the predisposing factors that shape a person's attitudes and behavior (Yunus et al., 2020). Researchers assume that each individual has a different response to factors that can cause ARI in melinjo cracker workers. Therefore, an older person may or may not be at higher risk of ARI, depending on a number of individual and environmental variables. Prevention efforts, such as vaccination, health promotion, and a clean work environment, can help reduce the risk of ARI in workers of various age groups.

The relationship between education and the incidence of ARI

Based on the research results, it shows that respondents who did not experience ISPA and had a high level of education were 60% compared to respondents who experienced ISPA at 40% and respondents who did not experience ISPA had a secondary education level of 61.48% compared to respondents who experienced ISPA. with a secondary education level of 38.52%, while respondents with a primary education level who did not experience ISPA were 61.29 compared to respondents with a primary education level who experienced ISPA of 38.71%.

The results of statistical analysis obtained a p-value of 0.94 which shows that there is no relationship between secondary education and the incidence of ISPA. The results of the odds ratio calculation are 0.94, which means that respondents with a secondary education level of 6% can prevent the incidence of ARI compared to respondents with a higher education level. The results of the statistical analysis obtained a p-value of 0.953, which shows that there is no relationship between basic education and the incidence of ISPA, while the results of the odd ratio calculation were 0.947, which means that respondents with a basic education level of 5% can prevent the incidence of ISPA compared with respondents those with a high level of education.

Education can change a person's behavior, so the higher the level of education will require a person to live a healthy life and be protected from disease (Wijayanti & Indarjo, 2018). This research is not in line with Yunus et al. (2020) which shows that there is a relationship with the level of education and the incidence of ISPA with a P-value of 0.023, which means that there is a relationship between the level of education and the incidence of ISPA, the higher the education, the fewer people affected by ISPA (Yunus et al., 2020). Education is one of the factors that shape a person's attitudes and behavior because basic personal education supports people to think logically and rationally, perceive from various sides to analyze and solve a problem (SUTIANAH, PD, & PD, 2022). A person's motivation can be influenced by education. Someone with high motivation can be more serious about implementing a healthy lifestyle (Yunus et al., 2020). According to the researchers' assumption that there is no relationship between level of education and the incidence of ISPA, the higher the education, the less likely they are to suffer from ISPA. Education can influence preventive measures because education influences an individual's ability to understand information about health. This has an impact on individuals to pay more attention and be more alert in preventing disease.

The relationship between family members who smoke and the incidence of ARI

Based on the research results, it shows that respondents who do not experience ISPA and have non-smoking behavior are 65.33% compared to respondents who experience ISPA and do not have family members who smoke at 34.67%, respondents who have family members who do not smoke every day. Those who did not experience an ARI incident were 50% compared with respondents who experienced an ARI incident of 50%, while for respondents who had family members who smoked every day, those who did not experience an ARI incident were 60.73 compared to respondents who experienced an ARI incident of 39, 27%. The results of statistical analysis obtained a p-value of 0.496 which shows that there is no relationship between smoking behavior and the incidence of ARI. The results of the odds ratio calculation obtained a value = 1.093, which means that respondents who have family members who smoke have 1.093 times the risk of ARI compared to respondents who do not have family members who do not smoke. These results are in line with research by Nuryati (2018) which shows that there is no effect of smoking on the incidence of ARI with a p value of 0.684 with an OR of 1.314, indicating that there is a relationship between passive smoking and the incidence of ARI (Nuryati, 2018). People who are passive smokers will experience ARI. This is also proven from the results of data distribution in this study that respondents who are passive smokers where there are smokers in their house experience more acute respiratory infections when compared to people whose house does not have smokers. The impact of smoking not only threatens the smoker but also the people around him or passive smokers (Fitri, Ananda, Dhesa, & Abadi, 2023).

Smoking is one of the habits that is commonly found in everyday life. It is easy to find people smoking everywhere, both men and women, small children and the elderly, rich and poor. Smoking is a part of people's lives. The prevalence of smoking has decreased in many developed countries in recent years, but remains high in developing countries (Azizah, 2020). Tobacco kills 70% of victims from developing countries including Indonesia (Aprilla, Yahya, & RIRIN, 2019). The results of this study are in accordance with research by Umami (2015) which states that most families' smoking causes ISPA in toddlers in the Sempor II Health Center working area, namely 67.3% (Aprilla et al., 2019). According to researchers' assumptions, respondents who do not have a smoking habit suffer from ISPA, this is due to environmental factors that are less clean, while respondents who have a smoking habit but do not suffer from ISPA are caused by behavior that always protects against the risk of ISPA.

Relationship between floor conditions and the incidence of ARI

Based on the research results, it shows that respondents who did not experience ISPA with floors made of cement were 86.67% compared to respondents who did not experience ISPA with floors made of cement, which was 13.33%, while respondents who did not experience ISPA with conditions floors made from soil were 60.48% compared to the condition of floors made from soil that experienced ISPA at 39.52%. The results of statistical analysis obtained a p-value of 0.059 which shows that there is no relationship between floor conditions and the incidence of ISPA. The results of the odd ratio calculation obtained a value of = 4.248, which means that respondents whose floors were made of dirt had a 4.248 times risk of ARI incidents compared to respondents whose floors were made of cement. This research is not in line with previous research, which shows a significant relationship between the type of house floor and the incidence of ISPA with a P-value of 0.0001. Even though the majority of house floors meet health requirements (81.0%), the group of houses that do not meet the requirements still use dirt floors (Putri, 2019).

Floors that are not waterproof will increase the air humidity in the house due to rising water vapor from the ground. High humidity will increase the resistance and number of microorganisms in the air. A healthy house must have a waterproof floor, which can be made of marble, tiles, ceramics, or polished cement. Efforts that can be made to control include repairing floor construction, in addition to paying attention to lighting and ventilation factors (Putri, 2019). According to the researchers' assumption, there is no significant relationship between the condition of the floor and the incidence of ISPA because respondents often clean the floor when going to work and respondents understand how to prevent ISPA disease caused by unhealthy environmental conditions and meet the requirements.

The relationship between wall conditions and the incidence of ARI

Based on the research results, it shows that 85.71% of respondents who did not experience ISPA with the walls being made permanent were 85.71% compared to respondents who experienced ISPA, which was 14.29%, while respondents who did not experience ISPA with walls made of non-permanent at 60.57% in comparison with the condition of walls made of non-permanent materials experiencing ISPA of 39.43%. The results of statistical analysis obtained a p-value of 0.077 which shows that there is no relationship between wall condition and the incidence of ISPA. The results of the odd ratio calculation obtained a value of = 3.905, which means that respondents whose walls were made of non-permanent conditions had a risk of 3.905 times the incidence of ISPA compared to respondents whose walls were made of permanent conditions This research is in line with research by Nur Annisah, (2021) who stated that the results of the analysis of the relationship between walls and ISPA showed that of the 23 residential houses whose walls did not meet the requirements, 11 had

experienced ISPA and 12 had never experienced ISPA. Meanwhile, there are 21 houses There were 6 residents who had walls that met the health requirements who experienced ARI and 15 did not find ARI. The results of the chi-square test showed pvalue = 0.159 ($0.159 > 0.1$), meaning that H_a was rejected and H_o was accepted, which means there was no significant relationship. between walls and ISPA disease in the Prapat Janji Community Health Center Working Area, Buntu Pane District, Asahan Regency (NUR ANNISAH, 2021).

In contrast to the results of Siringoringo's research, (2023), the Chi-Square test results obtained p-value = 0.000 ($0.000 < 0.05$), meaning that H_o was rejected and H_a was accepted, which means there is a relationship between the walls of the house and the incidence of ISPA. And from the results of this analysis, OR = 31.667 states that someone who has house walls that do not meet the requirements will be at risk of experiencing ISPA (SIRINGORINGO, 2023). A wall is a structure that borders a building and supports other structures, as well as protecting space from the open air (Indrayuni, 2018). Walls that are not tight and not watertight can cause high room humidity, as well as dust entering the house. A house whose walls are not well constructed will be difficult to keep clean, because the surface of the walls is not permanent, smooth and uneven, causing dust and other dirt that sticks to it to be difficult to clean (Basuki). Walls that are not tight cause the entry of dirt from outside such as dust, smoke or other impurities. The walls of the house are made of bamboo or other materials that allow dust and other pollutants to enter. Control efforts that can be carried out include repairing the wall construction so that it becomes tight and watertight (Putri, 2019). According to the researcher's assumption, there is no significant relationship between the condition of the walls and the incidence of ISPA because the walls used by respondents are only limited to barriers and also have easy air circulation in and out so that dust or exposure to smoke does not settle in the room where the respondent works.

The relationship between roof conditions and the incidence of ARI

Based on the research results, it shows that 86.67% of respondents who did not experience ISPA with roofs made of tiles were 86.67% compared to respondents who experienced ISPA with 13.33% of respondents who did not experience ISPA. Non-permanent roofs were 57.33% compared to non-permanent roofs which experienced ISPA of 42.67%. The results of the statistical analysis obtained a p-value of 0.000 which shows that there is a relationship between the condition of the roof and the incidence of ISPA. The results of the odd ratio calculation obtained a value = 4.837, which means that respondents whose roofs were made of non-permanent roofs had 4.837 times the risk of ARI incidents compared to respondents whose roofs were made of permanent roof tiles. The results of this study are not in line with previous research showing the results of the Chisquare statistical test with a value of $p = 0.612$ and an α value = 0.05, which means there is no relationship between roofs and the incidence of ISPA in toddlers in the Wawonasa Health Center working area. This is because almost all of the respondent's house roofs already have roofs that meet the requirements in accordance with the components of a healthy house, namely using tiles and using ceilings that are easy to clean so as to minimize the emergence of various types of diseases (Suharno, Akili, & Boky, 2019).

According to the researchers' assumptions, the results of the analysis of the relationship between house roofs and the incidence of ISPA state that there is a significant relationship between house roofs and the incidence of ISPA. This is influenced by the majority of respondents using roofs where they work using leaves and also using asbestos. The results of the interviews stated that the majority of respondents used asbestos because it was cheap and easy to dismantle, if they later moved location.

The relationship between place of work and the incidence of ARI

Based on the research results, it shows that 88.24% of respondents who did not experience ISPA had dusty workplace conditions compared to 11.76% of respondents who did not experience ISPA, while respondents who did not experience ISPA had 11.76% of respondents who did not experience ISPA. Dusty workplace conditions were 60.29% compared to dusty workplace conditions which experienced ISPA of 39.71%. The results of statistical analysis obtained a p-value of 0.035 which shows that there is a relationship between workplace conditions and the incidence of ISPA. The results of the odd ratio calculation obtained a value of = 4.940, which means that respondents with dusty environmental conditions are 4.940 times more likely to experience ARI incidents compared to respondents who have dustless working environmental conditions. This research is in accordance with previous research which showed a significant relationship between ventilation and the incidence of ARI with a P-value of 0.04. Pathogenic bacteria that cause ISPA can be freed from room air by flowing out through adequate ventilation. Dusty environmental conditions cause bacteria to develop well (Medhyna, 2019). According to researchers' assumptions, the effects of dust on respiratory health can vary depending on the type of dust, dust composition, and other environmental factors. Respondents made efforts to reduce the risk of ISPA through dust management involving room cleanliness, good ventilation, and other preventive measures. Prevention also involves cleaning regularly, using air filters if necessary, and keeping the environment around us clean.

The relationship between fuel type and the incidence of ARI

Based on the research results, it shows that respondents who do not experience ISPA with the condition of the type of fuel used use gas by 50% and for respondents who experience ISPA by using fuel use gas by 50% while respondents who do not experience ISPA with the condition of the type of fuel that uses wood was 61.43% compared to the condition of fuel used using wood that experienced ISPA of 38.57%. The results of statistical analysis obtained a p-value of 0.743 which shows that there is no relationship between the fuel used and the incidence of ISPA. This research is different from previous research which showed that there was no effect of firewood on the incidence of ISPA with a p value of 0.217 with an OR value of 1.906, meaning that respondents who used firewood did not reduce the risk of experiencing ISPA by 1.906 times. This is because firewood is used in the roof tile home industry as the main burning material which produces smoke and is released through the chimney (Nuryati, 2018).

This research is in line with previous research with the results showing there is a relationship between the use of firewood in the roof tile burning industry and the incidence of ISPA with a p value > 0.05, an OR value of 2.206. This shows that firewood which produces smoke is very dangerous and plays a major role in causing acute respiratory infections (Jayanti, Ashar, & Aulia, 2018) The incidence of ARI is closely related to risk factors, namely home environmental conditions and behavior (Wulandhani & Purnamasari, 2019). What is meant by the condition of the house is that the kitchen is close to the family room, there is smoke in the house when cooking, the kitchen and dining room are combined and there are no ventilation holes in the kitchen (Valensia, 2023). Meanwhile, the behavioral factor is the mother's habit of bringing the child to the kitchen while cooking. These risk factors are closely related to fuel use in households with ARI sufferers. For example, the mother's habit of taking her child to the kitchen will increase the risk of acute respiratory infections in toddlers as a result of the toddler's frequent exposure to pollutants from burning in the kitchen (Sudirman, Muzayyana, Saleh, & Akbar, 2020). Researchers assume that the level of pollution produced by fuel using wood is much higher than fuel using gas. A number of studies show that exposure to indoor

pollution increases the risk of ARI incidents in respondents or people who are frequently exposed.

The relationship between mask use and the incidence of ARI

Based on the research results, it shows that 84.62% of respondents who did not experience ISPA by wearing masks while working were compared to 15.38% of respondents who did not experience ISPA, while respondents who did not experience ISPA by not wearing masks when working at 56.30% compared to respondents who did not wear masks who experienced ARI at 43.70%. The results of statistical analysis obtained a p-value of 0.000 which shows that there is a relationship between the use of masks and the incidence of ISPA. The results of the odd ratio calculation obtained a value = 4.628, which means that respondents who did not wear masks had a 4.628 times risk of ARI incidents compared to respondents who wore masks while working. Here, the use of masks for emping melinjo craftsmen is to avoid heat shock from heating emping melinjo. For craftsmen, acute respiratory infections in craftsmen are a common occurrence and are not considered a problem, workers who use masks also do not always wear masks while working. The results of this study are not in line with previous research showing that there is no influence of the use of personal protective equipment on the incidence of ARI with a p-value of 0.491 with an OR of 1.520. The use of mask personal protective equipment is related to the large amount of particulates that accumulate in the lung organs due to pollution which can reduce the ability of lung function (Nuryati, 2018). By using mask personal protective equipment you can prevent the accumulation of polluting particulates in the lung organs thereby reducing the decline in lung function (Massa et al., 2023). The use of masks by industrial workers where the air contains a lot of dust is an effort to reduce the entry of dust particles into the respiratory tract (Ainurrazaq, Hapis, & Hamdani, 2022). By wearing a mask, it is hoped that workers will protect against the possibility of respiratory problems due to exposure to air with high dust levels (Fuadi, Setiani, & Darundiati, 2021).

Using a mask as a dust filter is an effort that can protect the breath from metal powders, abrasives or other coarse powders from burnt products from heating bricks. This burn usually uses firewood and rice husks as the burning medium. In this research, it is known that using masks can make workers uncomfortable at work and can hinder work activities. So from the data it is known that more workers do not wear masks than wear masks. However, apart from that, workers who wear masks do not always wear masks while working. This will make workers more at risk of contracting work-related diseases.

The relationship between long exposure to smoke and the incidence of ARI

Based on the results of the research, it shows that the proportion of respondents who did not experience ARI with long exposure to smoke < 8 hours/day was 75.68% compared to the condition with long exposure to smoke < 8 hours/day for respondents who experienced ARI, which was 24.32. %, while respondents who did not experience ISPA with long exposure to smoke \geq 8 hours/day was 50.80% compared to conditions with long exposure to smoke \geq 8 hours/day who experienced ISPA was 49.20%. The results of statistical analysis obtained a p-value of 0.000 which shows that there is a relationship between the duration of smoke exposure and the incidence of ISPA. The results of the odds ratio calculation obtained a value of = 3.013, which means that respondents with long exposure to smoke \geq 8 hours/day are at risk of experiencing ARI events 3.013 times compared to respondents with long exposure to smoke < 8 hours/day. According to Morgan and Parkes in Ratih (2016), the time needed for someone exposed to air pollutant contaminants to develop respiratory problems is more than five years. This research is in line with research by Amalia & Ningsih (2020) which states that

there is a relationship between length of exposure and respiratory complaints among copra workers as proven by the Fishers exact test which shows a p value of 0.00. The results obtained stated that most copra workers with a working period of more than 5 years experienced complaints of respiratory problems (Amalia & Ningsih, 2020). Researchers assume that long exposure to smoke can contribute to Incidence of Acute Respiratory Infections and respiratory health problems. Smoke can contain various chemicals and particles that can harm the human respiratory tract and respiratory system. The impact of smoke exposure depends on a number of factors, including the type of smoke, amount of exposure, the presence of other risk factors, and the individual's health condition.

CONCLUSION

The results of this study generally conclude that overall it is the main factor that triggers the problem of ARI in emping melinjo craftsmen. Long exposure to smoke is a risk factor associated with the disease. ISPA, where respondents who are exposed to smoke for more than 8 hours are more at risk of experiencing ISPA than respondents who are exposed to smoke for less than 8 hours. Age is a risk factor associated with ISPA, where respondents who are of unproductive age are more at risk of experiencing ISPA compared to respondents who are of productive age , The use of masks is a risk factor associated with ISPA, where respondents who do not use masks are more at risk of experiencing ISPA than respondents who use masks. The condition of the roof is a factor associated with ISPA, where respondents who have non-permanent roofs are more at risk of experiencing ISPA. ISPA was compared to respondents who had roofs made of permanent materials. Multivariate test of the risk factors most associated with the incidence of ISPA was the use of masks with a p-value of 0.000, length of exposure to smoke p-value of 0.000 and condition of the roof p-value of 0.004

REFERENCES

- Abdillah, M. R. (2020). Faktor-Faktor Yang Berhubungan Dengan Kejadian Ispa Pada Balita di Wilayah Kerja Upt. Puskesmas Rawat Inap Berangas Kabupaten Barito Kuala Tahun 2020. Universitas Islam Kalimantan MAB,
- Afifah, F. (2019). Uji bakteriologis coliform dan escherichia coli pada air tanah bebas.
- Ainurrazaq, M., Hapis, A. A., & Hamdani, H. (2022). Faktor-faktor yang berhubungan dengan keluhan gangguan pernafasan pada pekerja batu bata di Desa Talang Belido Kecamatan Sungai Delam Kabupaten Muaro Jambi tahun 2021. *Jurnal Inovasi Penelitian*, 2(12), 3927-3932.
- Amalia, A. R., & Ningsih, N. (2020). Hubungan Lama Paparan Dan Masa Kerja Dengan Keluhan Pernapasan Pada Pekerja Kopra Di Desa Barat Lambongan. *Jurnal Kesehatan Panrita Husada*, 5(1), 32-42.
- Ananda, M. Y., Safrizal, S., Azwar, A., & Reynaldi, F. (2021). Analisis Dampak Paparan Debu Akibat Pembangunan Pltu 3 Dan 4 Nagan Raya Terhadap Kesehatan Masyarakat Di Desa Suak Puntong Kabupaten Nagan Raya. *Jurnal Mahasiswa Kesehatan Masyarakat (Jurmakemas)*, 1(2), 31-47.
- Aprilla, N., Yahya, E., & RIRIN, R. (2019). Hubungan antara perilaku merokok pada orang tua dengan kejadian ISPA pada balita di desa pulau Jambu wilayah kerja Puskesmas Kuok tahun 2019. *Jurnal Ners*, 3(1), 112-117.
- Azizah, N. N. (2020). Penerapan metode nasehat dalam memberikan bimbingan kepada anak

- pengguna rokok di Kelurahan Sipolu-polu Kecamatan Panyabungan Kabupaten Mandailing Natal. IAIN Padangsidimpuan,
- Basuki, Y. R. Dasar-Dasar Konstruksi Bangunan+ K3: Azhar Publisher.
- Fitri, N. D., Ananda, S. H., Dhesa, D. B., & Abadi, E. (2023). Kejadian ISPA dan Status Gizi Balita pada Keluarga Perokok di Desa Andabia Kecamatan Anggaberri Kabupaten Konawe. *Jurnal Gizi Ilmiah: Jurnal Ilmiah Ilmu Gizi Klinik, Kesehatan Masyarakat dan Pangan*, 10(1), 22-25.
- Fuadi, M. F., Setiani, O., & Darundiati, Y. H. (2021). Paparan Partikulat Debu Kapur dan Faktor Risiko Pekerja dengan Kejadian ISPA: Sebuah Literature Review. *Jurnal Kesehatan Lingkungan*, 11(1), 8-15.
- Haris, N. (2021). Faktor Yang Berhubungan Dengan Kejadian Infeksi Saluran Pernapasan Akut (Ispa) Pada Balita Di Wilayah Kerja Puskesmas Padongko Kabupaten Barru= Factors Related To The Incidence Of Acute Respiratory Infection (Ari) On Children Under Five Age In The Working Area Of Padongko Health Center Barru Regency. Universitas Hasanuddin,
- Indrayuni, A. (2018). Penataan Estetika Permukiman Kumuh Perkotaan Berbasis Penataan Fasad Bangunan Studi Kasus: Jalan Inspeksi Kanal, Maricaya Baru Kec. Makassar Kota Makassar. *Jurnal Linears*, 1(2), 72-77.
- Jayanti, D. I., Ashar, T., & Aulia, D. (2018). Pengaruh lingkungan rumah terhadap ISPA balita di wilayah kerja Puskesmas Tanjung Haloban Kabupaten Labuhan Batu tahun 2017. *JUMANTIK (Jurnal Ilmiah Penelitian Kesehatan)*, 3(2), 63-77.
- Kemendes, R. (2016). Peraturan Menteri Kesehatan Republik Indonesia Nomor 56 Tahun 2016 Tentang Penyelenggaraan Pelayanan Penyakit Akibat Kerja. Menteri Kesehatan, 1-35.
- Lantong, J. F., Asfian, P., & Erawan, P. E. (2017). Faktor yang berhubungan dengan kejadian ispa pada pekerja penggilingan padi di desa wononggere kecamatan polinggona kabupaten kolaka tahun 2016. Haluoleo University,
- Massa, K., Sasmito, P., Nurhayati, C., Rahmawati, E. Q., Nugraheni, W. T., Juwariyah, S., . . . Suluh, D. G. (2023). *Buku Ajar Pencegahan Dan Pengendalian Infeksi: Pt. Sonpedia Publishing Indonesia*.
- Medhyana, V. (2019). Hubungan Lingkungan Fisik Rumah Dengan Kejadian Ispa Pada Bayi. *Maternal Child Health Care*, 1(2), 82-86.
- Nur Annisah, I. (2021). Karya Tulis Ilmiah Hubungan Kondisi Fisik Rumah Dengan Kejadian Penyakit Ispa Di Wilayah Kerja Puskesmas Prapat Janji Kecamatan Buntu Pane Kabupaten Asahan Tahun 2021.
- Nuryati, E. (2018). Faktor Determinan ISPA pada Daerah Home Industri. *Jurnal Ilmiah Kesehatan*, 7(1), 27-31
- Putri, R. A. (2019). Hubungan Kondisi Rumah Dengan Kejadian Ispa Di Desa Kotagajah Kecamatan Kotagajah Kabupaten Lampung Tengah. *Ruwa Jurai: Jurnal Kesehatan*

- Lingkungan, 13(2), 75-80.
- Reza, R., Wibowo, P. A., & Sakufa, A. (2022). Hubungan Kadar Debu Total dengan Kejadian ISPA pada Pekerja Home Insudtry Batu Bata di Desa Dukuh Bendo Magetan. *JHIP- Jurnal Ilmiah Ilmu Pendidikan*, 5(8), 2942-2948.
- Rumakat, S. H. (2020). Cemaran Bakteri Berdasarkan Angka Lempeng Total Pada Ikan Asap Di Pasar Batu Merah Ambon. *IAIN Ambon*,
- Siringoringo, T. P. (2023). Hubungan Kondisi Lingkungan Fisik Rumah Dengan Kejadian Ispa Di Kelurahan Medan Tenggara Kecamatan Medan Denai Tahun 2022.
- Sudirman, S., Muzayyana, M., Saleh, S. N. H., & Akbar, H. (2020). Hubungan ventilasi rumah dan jenis bahan bakar memasak dengan kejadian ISPA pada balita di wilayah kerja Puskesmas Juntinyuat. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 3(3), 187-191.
- Suharno, I., Akili, R. H., & Boky, H. B. (2019). Hubungan Kondisi Fisik Lingkungan Rumah Dengan Kejadian Ispa Pada Balita Di Wilayah Kerja Puskesmas Wawonasa Kota Manado. *KESMAS*, 8(4).
- Sunuh, H., & Subagyo, I. (2022). Gambaran Kadar Debu Respirabel pada Pekerja Bagian Produksi di PT. Bintang Manunggal Persada Kelurahan Buluri Kota Palu. *Banua: Jurnal Kesehatan Lingkungan*, 2(1), 1-6.
- Sutianah, D. C., PD, S., & PD, M. (2022). *Belajar dan pembelajaran: Penerbit Qiara Media*.
- Tanjong, P. P. K. (2023). Profil Puskesmas Kecamatan Kembang Tanjong Kabupaten Pidie. *Data Profil Puskesmas Kecamatan Kembang Tanjong Kabupaten Pidie*, 80.
- Valensia, R. (2023). Gambaran Kondisi Rumah Balita Penderita Pneumonia Di Wilayah Kerja Rajabasa Indah Bandar Lampung Tahun 2022. *Poltekkes Tanjungkarang*,
- Wijayanti, T., & Indarjo, S. (2018). Gambaran Karakteristik Dan Pengetahuan Penderita Ispa Pada Pekerja Pabrik Di Pt Perkebunan Nusantara Ix (Persero) Kebun Batujamus/Kerjoarum Karanganyar. *Journal of Health Education*, 3(1), 58-64.
- Wulandhani, S., & Purnamasari, A. B. (2019). Analisis Faktor Risiko Kejadian Infeksi Saluran Pernapasan Akut ditinjau dari Lingkungan Fisik. *Sainsmat: Jurnal Ilmiah Ilmu Pengetahuan Alam*, 8(2), 70-81.
- Yunus, M., Raharjo, W., & Fitriangga, A. (2020). Faktor-faktor yang berhubungan dengan kejadian infeksi saluran pernapasan akut (ISPA) pada pekerja PT. X. *Jurnal Cerebellum*, 6(1), 21-30.

