TH CORRELATION BETWEEN HOME ENVIRONMENTAL HEALTH AND THE INCIDENCE OF ACUTE RESPIRATORY TRACT INFECTION (ARI) IN TODDLERS IN KESAMBEN VILLAGE, PLUMPANG

Miftahul Munir*, Sugiyono, Adibah Enggar, Eva Silviana Rahmawati
[1]Institute of Health Sciences Nahdlatul Ulama, Tuban, East Java, Indonesia
*E-mail : miftahulmunir@gmail.com

ABSTRACT

Acute Respiratory Infection (ARI) is one type of environmental-based infectious disease, an acute infection that attacks one or more parts of the respiratory tract from the nose to the alveoli, including the adnexa (sinuses, middle ear cavity, pleura). This study aims to determine the relationship between the health of the home environment and the incidence of acute respiratory infections in Kesamben Village. The research design used was correlational analytic with a cross-sectional technique. The sampling technique was simple random sampling, on 38 respondents at Posyandu Cempaka, Kersamben village. Measuring tools using questionnaires, and data analysis using the chi-square statistical test. From the results of the study, it was found that most of the respondents' home environment was healthy, namely as many as 24 (68.6%) respondents, most of the 28 (36.8%) respondents at the posyandu in Kesamben village did not. suffer from ARI. Based on the chi-square test, there is a significant relationship between the independent variable and the dependent variable, namely the health of the home environment and the incidence of ARI in Kesamben Village (approx. sig = 0.013) with a significant value of = <0.05. From the description above, it can be concluded that the health of the home environment affects the health of the home environment, so it is expected to carry out ARI in toddlers. Therefore, every community needs to maintain and maintain physical sanitation of the house and apply a clean and healthy lifestyle in daily life to reduce the risk of getting infected. diseases related to the environment, especially in toddlers.

Keywords: ARI; Home Environment; Health

1. INTRODUCTION

Environmental-based disease is a disease phenomenon that occurs in a community group, which is related, rooted or closely related to one or more environmental components in a space where the community lives or has activities for a certain period of time (Achmadi, 2012).

ARI is one type of environmental-based infectious disease. Acute Respiratory Infection (ARI) is an acute infection that attacks one or more parts of the respiratory tract from the nose to the alveoli, including the adnexa (sinuses, middle ear cavity, pleura) (MOH, 2012).

According to WHO, approximately 13 million children under five in the world die every year and most of these deaths are in developing countries, where ARI is one of the main causes of death by killing ± 4 million children under five every year (Rudianto, 2013).

In general, the risk factors for the occurrence of ARI are physical environmental factors, host factors, agent factors and social environmental factors. Factor agents are bacteria, viruses and fungi. Physical environmental factors include air pollution in the house, physical conditions of the house such as residential density, type of floor, type of wall, house lighting. While social factors include parental work, mother's education, and smoking behavior of family members (Ministry of Health, 2010).

The condition of the home environment greatly affects the health of the occupants of the house, especially toddlers because the toddler's immune system is very

susceptible to disease. Healthy house is a residential building that meets health requirements consisting of house components, sanitation facilities and behaviors, including having healthy latrines, garbage disposal sites, clean water facilities, waste water disposal facilities, good ventilation, appropriate housing density and house floors not from the ground (Profile Indonesia, 2016).

Based on research conducted by William (2015) regarding the relationship between home environmental conditions and the incidence of ARI in children under five in the work area of the Sario Manado Health Center, it shows that there is a significant relationship between residential density (p = 0.0001) in the house, the presence of pets in the house (p=0.0001) and smoking status (p=0.0001) with the incidence of ARI in children under five.

Therefore it is important for every community to maintain and maintain the physical sanitation of the house, apply a clean and healthy lifestyle in daily life to reduce the risk of getting diseases related to the environment, especially in toddlers.

Based on the description above, the incidence of ARI under five in Kesamben Village is high and the percentage of healthy homes is still below the predetermined target. This prompted the authors to conduct research on the relationship between the health of the home environment with the incidence of ARI in children under five in Kesamben Plumpang Village.

2. METHOD

The design used is an analytical research method with a case control design. Case control design is a study concerning how risk factors are studied using a retrospective approach, namely a building design that looks back from an incident related to the incidence of pain being studied. The point of this case control study is to know the disease and then trace the cause.

The population of this study were children under five in Kesamben Village, Plumpang District, Tuban Regency as many as 38 toddlers, the sample of respondents was 35 respondents from 38.

The instrument or measuring instrument used is a questionnaire. In this type of measurement, the researcher collects data formally to the subject to answer questions in writing, the subject answers freely about a number of questions or statements that are openly posed by the researcher. The health of the home environment uses a questionnaire sheet. The questionnaire with a total of 9 questions for statements of Yes (score 2), No (score 1) and the incidence of Acute Respiratory Infections also uses a questionnaire sheet with a checklit system filling in.

3. RESULT AND DISCUSSION

Table 1 Frequency Distribution of Toddler Age at Posyandu Kesamben Village

No	Age	*f*	%
1	≤ 20 Month	17	48,6
2	21-41 Month	8	22,9
3	≥42 Month	10	28,5
	Total	35	100

From table 1, it can be seen that of the 35 respondents, most of the under-fives were aged 20 months, namely 17 (48.6%) respondents and a small portion aged 21-41 months with 8 (22.9%) respondents.

Table 2 Distribution of Gender Frequency of Toddlers at Posyandu in Kesamben Village

No	Gender	*f*	%
1	Male	13	37,1
2	Female	22	62,9
	Total	35	100

From table 2 it can be seen that most of the children under five are female, namely 22 (62.9%) respondents and a small proportion are male, namely 13 (37.1%) respondent.

Table 3 Distribution of Respondents Based on House Environmental Health in Kesamben Village

No	House Environmental Health	*f*	%
1	Healthy	24	68,6
2	Unhealthy	11	31,4
	Total	35	100

From table 3 it can be seen that most of the respondent's home environment is healthy as many as 24 (68.6%) respondents, and a small proportion of respondents' unhealthy home environment is 11 (31.4%) respondents.

Table 4 Distribution of Respondents Based on ARI Incidence at Posyandu Kesamben Village

No	ARI Incidence	*f*	%
1	Suffered from ARI (+)	7	63,2
2	Not suffer from ARI (-)	28	36,8
	Total	19	100

From table 4, it can be seen that most of the 28 (36.8%) respondents at the posyandu in Kesamben villagedid not suffer from ARI and a small portion of 7 (63.2%) respondents suffered from ARI.

Table 5 Cross Table of Relationship between Home Environmental Health and ISPA Incidence in Toddlers in Kesamben Plumpang Village

No	Home Environment	ARI (-)	ARI (+)	Total
1	Healthy	24 (100%)	0 (0%)	24 (100%)
2	Unhealthy	4 (40%)	7 (70%)	11 (100%)
	Total	28 (80%)	7 (20%)	35 (100%)

Table 5, shown that all respondents with a healthy home environment do not suffer from ARI, totaling 24 (100%) respondents, while respondents suffering from ARI were found in an unhealthy home environment as many as 7 (70%) respondents.

DISCUSSION

Home Environmental Health

The house is the center of family health because the house is a place where family members gather and relate to each other. All family members and their daily habits are closely related provisions. That is why health must start at home, for that the house and its arrangements must meet health requirements (Koes Irianto, 2014). Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 1077/Menkes/Per/V/2011 concerning Guidelines for Air Sanitation in the Home Room stipulates that infants and children whose parents smoke have a greater risk of developing respiratory disorders with symptoms of shortness of breath and coughing. Cigarette smoke in the room will remain for almost 5 hours even though it is invisible. The smoke will stick to furniture, carpets, clothes and other equipment in the house. Indirectly this is what makes toddlers exposed to cigarette smoke. Toddlers are categorized as being more at risk of being adversely affected by cigarette smoke when compared to adults, because the toddler's respiratory tract is still small and the immune system is still not perfect.

Based on these results, the researcher believes that most of the respondents' family members in Kesamben Village smoke. After every meal, the family members always smoke, and one day they can spend 3-5 cigarettes. This is certainly dangerous for their own health and especially for toddlers, especially smoking can cause toddlers to have experienced acute respiratory infections (ARI). So that families need to apply clean and healthy living behavior, especially not smoking in the house, especially near toddlers. According to research conducted by Ardhin (2014) waste processing by burning greatly affects the comfort of the air in the environment. This is because the

smoke from burning garbage can cause air pollution. Based on these results, the researcher argues that most of the houses in Kesamben Village do waste processing by burning. Whereas the processing of waste by burning can pollute the air so that it is not healthy for human respiration. To minimize the incidence of ARI, waste should be disposed of at TPS or processed into fertilizer.

According to the Decree of the Minister of Health Number 829/MENKES/SK/VII/1999, the ceiling greatly affects the comfort of the air in the room. This is because the ceiling can withstand water seepage from the roof of the house in the room. The ceiling can also withstand the heat that comes from the roof of the house during the day and the cold air that exists at night. Ceilings should be easy to clean and not prone to accidents.

Based on these results, the researcher argues that families rarely clean the ceiling of the house. Even though the ceiling of the house (ceiling) can withstand the heat that comes from the roof of the house during the day and the cold air that exists at night. To minimize the breeding ground for disease, it needs to be cleaned regularly. And always maintain the cleanliness of the ceiling of the house itself.

The occupancy density in question is the ratio between the area of the room and the number of family members in one room. According to the decree of the minister of health number 829/MENKES/SK/VII/1999 concerning house requirements for bedrooms require a minimum of 2 people, bedrooms should not be occupied by > 2 people, except for husband and wife and children under 2 years. A narrow room will make you short of breath and easily contracted the disease by other family members. Occupancy density will increase the room temperature caused by the release of body heat which will increase the humidity due to water vapor from the breath. Buildings that are narrow and do not match the number of occupants will have an impact on the lack of oxygen in the room so that the resistance of the occupants decreases, then accelerates the onset of respiratory diseases such as ARI (Ade, 2012).

Occupancy density can affect room air quality, where the more the number of occupants, the faster the air in the room will be polluted, because CO2 in the room will increase and will reduce O2 levels in the room, and occupancy density is closely related to the number of infectious disease-causing agents. This study is in line with the results of research by Patmawati Dongky (2016) regarding the relationship between the physical environment of the house and the incidence of ARI in toddlers in Takatidung Polewali Mandar Village. The condition of residential density in the research location is mostly still inhabited by 3-5 heads of families, each consisting of 4-5 family members, occupying the same sleeping space of less than 9m2. Another research that supports is William's (2015) research on the relationship between home environmental conditions and the incidence of ARI in children under five in the Sario Public Health Center, Manado City.

The results of this study indicate that there is a relationship between residential density and the incidence of ARI in toddlers. The area of a narrow house with a large number of family members can cause the ratio of occupants to the area of the house to be unbalanced. This residential density allows bacteria and viruses to be transmitted through breathing from residents of one house to another, even to toddlers. This is supported by the results of the study where there were still some respondents with room occupancy density that did not meet the requirements.

The results showed that the room occupancy density of 8 respondents met the requirements but had experienced an ARI due to the condition of the room being poorly cared for, not

cleaned every day, so the room looked messy and could become a breeding ground for ARI disease agents. Lack of parental care to maintain the home environment, especially the room, can cause viruses or bacteria to easily attack toddlers.

ARI incident

ARI or Acute Respiratory Infection contains two elements, namely infection and upper respiratory tract. The definition of infection is the entry of germs or microorganisms into the human body and multiply, causing symptoms of disease (Gunawan, 2010).

Acute Respiratory Infection (ARI) is an infection that occurs in the upper respiratory tract which includes the mouth, nose, throat, larynx (voice box), and trachea (windpipe). Symptoms of this disease include: sore throat, runny nose (rhinorrhea), cough, runny nose, headache, red eyes, increased body temperature for 4-7 days (Mumpuni, 2016). Based on the data provided by Posyandu Cempaka, Kesamben Village, there are 38 children under five. Then calculated and obtained a sample of 35 respondents. From the results of research conducted on 35 respondents, it was found that most of the toddlers aged 20 months were 17 (48.6%) respondents. Then most of the children under five are female, namely 22 (62.9%) respondents.

Most of the 28 (36.8%) respondents at the posyandu in Kesamben village did not suffer from ARI and a small portion of 7 (63.2%) respondents had ARI. Acute Respiratory Infection (ARI) is an infection that occurs in the upper respiratory tract which includes the mouth, nose, throat, larynx (voice box), and trachea (windpipe). One of the causes of ARI is environmental conditions that do not meet the requirements (Wahyono, 2008).

The results showed that the incidence of ARI in toddlers was still quite a lot. This situation is due to the condition of the home environment that most of them do not meet the requirements. For example, there are still family members who smoke, processing household waste by burning, rooms occupied by > 2 people, poor lighting and ceilings that are rarely cleaned.

With the condition of the house that does not meet the requirements as mentioned above, so that as a result of the poor housing conditions, the incidence of ARI among children under five in Kesamben village is still quite high.

Analysis Home Environment Health And ARI Incidence

The results of this study indicate that the healthier the environment home, the lower the incidence of ARI in children under five. This study is in line with Sofia's (2017) research on environmental risk factors with the incidence of ARI in children under five in the work area of the Want Jaya Health Center, Aceh Besar. The results of the study there is a relationship between smoking habits with the incidence of ARI in toddlers. The number of smokers will be proportional to the number of people with health problems. Cigarette smoke will increase the risk of toddlers getting an ARI attack.

Cigarette smoke is not only a direct cause of ARI incidence in toddlers, but also an indirect factor, one of which can weaken a toddler's immune system. Another research that supports is William (2015) regarding the relationship between home environmental conditions and the incidence of ARI in toddlers. The results of the study showed that there was a significant relationship between smoking families and the incidence of ARI in children under five. Cigarette smoke from active smokers is not a direct cause of the incidence of ARI in children under five, but is an indirect factor, one of which can cause lung disease which will weaken the toddler's immune system.

This was supported when the researchers distributed questionnaires

to respondents regarding family members who smoked. A small number of family members who do not smoke. This can be seen from the results of the analysis in the case group as many as 7 respondents (23.3%) did not smoke and in the control group as many as 9 respondents (30.0%) smoked.

The results showed as many as 7 respondents (23.3%) did not smoke but had experienced ARI due to family members who had not yet implemented the clean and healthy lifestyle. Even though the family does not smoke, the condition of home hygiene and sanitation is still not good. So that it can be a breeding ground for disease seeds. A dirty home environment will support disease agents to live.

9 (30.0%) family members smoked but never suffered from ARI, this is because family members usually smoke outside the home. By smoking outside the house and staying away from toddlers will reduce toddlers getting ARI.

From the results of the study, most of the respondents' family members in Kesamben Village smoked. So many people with ARI under five. Therefore, it is expected that respondents do not smoke in the house and do not smoke around toddlers.

4. CONCLUSION

The correlation between the independent variable and the dependent variable, namely the health of the home environment with the incidence of ARI in children under five in Kesamben Village, Plumpang District.

5. REFERENCES

Achmadi.UF 2012.Basics of Environmentally Based Diseases. Jakarta: Rajawali Press

Ardianasari, Eiyta. 2016. Smart Book for Preventing and Treating Infant & Child Diseases. Jakarta: Bestari

Agency for Health Research and Development. 2013. Basic Health Research 2013. Jakarta: Indonesian Ministry of Health

Cahyono, Tri. 2017. Air Health. Yogyakarta: ANDI

Chandra, Budiman. 2009. Preventive Medicine and Immunity. Jakarta: EGC Medical Books

Cindi Astuti. 2017. Relationship between family behavior and the incidence of ISPA in toddlers in Cijati Village, Cimanggu District, Cilacap Regency. Muhammadiyah University Purwokerto

Republic of Indonesia Ministry of Health. 1999. RI Minister of Health Decree No. 829 of 1999 concerning Housing Health Requirements. Jakarta

Moh, Toyib. 2016. List of Development Levels for Pulung Merdiko Village and Subdistrict. Pulung Merdiko Village

Fitriawati D. 2013. The relationship between the severity of ISPA in toddlers aged 0-5 years and parents' perception of child vulnerability at the Porong Community Health Center, Sidoarjo Regency (thesis). Faculty of Medicine, Brawijaya University

Gunawan. 2010. Prevention and Overcoming. Semarang: Central Java Provincial Health Office

Heryanto Eko. 2016. Relationship between immunization status, nutritional status and exclusive breastfeeding with the incidence of acute respiratory infections in children under five at the Sekar Jaya Uptd Health Center, Ogan Kom Ering Ulu Regency. Al-Ma'arif Baturaja Stickers

Irianto, Koes. 2014. Public Health Science. Bandung: Alphabeta

Julia, et al. 2017. The Relationship between Physical Conditions of the House and Parental Habits with the Incidence of ISPA in Toddlers in the Working Area of the Traji Health Center, Temanggung Regency, Pekalongan University

Ministry of Health of the Republic of Indonesia. Ponorogo District Health Service Profile 2016.

Jakarta
Ministry of Health of the Republic of Indonesia. RISKESDAS 2013. Jakarta: Health Research and Development Agency
Minister of Health Decree Number 829/MENKES/SK/VII/1999 concerning Housing Requirements
Khrisna, A. 2013. Recognizing Your Complaints. Jakarta: Medical Information
Liawati, Eulis. 2015. Descriptive Statistics Lecture Module. Bhakti Husada Mulia Madiun Stickers
Marimbi, Hanum. 2010. Growth and Development, Nutritional Status & Basic Immunization in Toddlers. Yogyakarta: Nuha Medika
Marten et al. 2017. The relationship between physical condition of the house and family income level with the incidence of ISPA in toddlers in Marinsouw and Pulisan villages, North Minahasa Regency. Sam Ratulangi University
Mubarak, Wahit Iqbal, Chayatin, Nurul. 2009. Public Health Science: Theory and Application. Jakarta. Salemba Medika
Mundiatun and Daryanto. 2018. Environmental Sanitation (Environmental Education). Yogyakarta: Gava Media
Patmawati D and Kadrianti. 2016. Risk Factors for the Physical Environment of Homes with the Incidence of ISPA for Toddlers in Polewali Mandar Village. Al Asyariah Mandar University
Regulation of the Minister of Health of the Republic of Indonesia Number 1077/Menkes/Per/V/2011 concerning Guidelines for Cleaning Air in Home Spaces
Ponorogo District Health Service. Pulung Health Center Profile 2017. Ponorogo: Ponorogo District Health Service
Rosjidi, CH. 2015. Guide to Preparing Research Proposals and Reports for Health Students
Ronny and Dedi MS. 2015. Temperature, Humidity and Lighting as Risk Factors for the Incidence of ISPA in Toddlers in Balaesang District, Donggala Regency. Palu Health Polytechnic
Safrizal, SA. 2017. The relationship between ventilation, walls and roofs with the incidence of ISPA in toddlers in Blang Muko. Teuku Umar University
Saryono. 2011. Health Research Methodology. Jogjakarta: Cendikia Partners
Sofia. 2017. Environmental Risk Factors with the Occurrence of ISPA in Toddlers in
Working Area of the Want Jaya Public Health Center, Aceh Besar Regency, Health Polytechnic, Ministry of Health, Aceh
Indonesian National Standards. Measurement of Lighting Intensity in the Workplace SNI 16-7062-2004. Jakarta: National Standardization Body (BSN)
Tri, Badar, and Kusuma. 2016. Risk Factors for ISPA in Toddlers in the Sukoharjo Community Health Center Working Area. muhammadiyah Surakarta university
Untari, Ida. 2017. 7 Main Pillars of Public Health Science. Yogyakarta: Publication Theme
Yasril and Heru. 2009. Sampling Techniques for Health Research. Yogyakarta: Graha Ilmu
Wantania JM, Naning R, Wahani A. 2012. Acute respiratory infections. In: IDAI children's respirology textbook. Jakarta: EGC
Widjaja, Anton. 2003. Handling ISPA in Children in Small Hospitals in Developing Countries. Jakarta: EGC Medicine
William Winardi. 2015. The relationship between home environmental conditions and the incidence of acute respiratory infections in children under five in the work area of the Sario Health Center, Sario District, Manado City. Sam Ratulang University