Journal for Quality in Public Health ISSN: 2614-4913 (Print), 2614-921(Online)
Vol. 8, No. 1, Nov 2024, pp: 93-101
DOI : https://doi.org/10.30994/jqph.v8i1.519

Analysis Of Factors Influencing The Incident Of Ari In Toddler In The Lararan Rejosari Village Of Wonosobo

Setyo Budi Susanto[1*], Nimas Sitoresmi[2]

[*1]Bachelor of Public Health, Faculty of FAKAR,
[2]Bachelor of Public Health, Faculty of FAKAR

***Email:**
setyobudi@strada.ac.id

Received : September 7nd 2024

Accepted : October 11rd 2024

Published : November 27th 2024

ABSTRACT

Acute respiratory infections (ARI) are one of the highest causes of death in people in developing countries. The aim of this research was to analyze the effect of air ventilation, residential density and room lighting on the incidence of ARI in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo. The design of this research is quantitative observational research with a cross sectional approach with the focus of the research directed at analyzing the influence of air ventilation, residential density and room lighting on the incidence of ARI in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo. The total population was 53 respondents and the sample was 47 respondents taken using the Simple Random Sampling technique. The findings showed that the majority of respondents had ventilation in the qualifying category, namely 29 respondents (69.05%). Most of the respondents had a residential density category that met the requirements, 31 respondents (72.81%). Most respondents had room lighting in the category that did not meet the requirements, as many as 27 respondents (64.29%). The majority of respondents did not experience ARI, 34 respondents (80.95%). Based on the results of the Logistic Regression analysis, it shows that the p-value is <0.05, so H1 is accepted, so it is concluded that there is an influence of air ventilation, residential density and room lighting on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo. Overall, good ventilation, low residential density, and adequate room lighting are important factors in reducing the risk of ARI in toddlers. Implementing steps to improve this condition in homes in Larangan Hamlet, Rejosari Village, Wonosobo can help reduce the incidence of ARI and improve the respiratory health of toddlers.

Keywords: ARI, Residential Density, Room Lighting & Ventilation

INTRODUCTION

Environmental-based diseases contribute more than 80% of the illnesses experienced by people in Indonesia. This situation indicates that the coverage and quality of environmental health interventions in Indonesia is still low (Central Statistics Agency, 2016). Acute respiratory infections (ARI) are one of the highest causes of death in people in developing countries. ISPA causes 15 million deaths every year (Mayasari, 2011). The cause of ARI is viruses or bacteria. The main viruses that cause ARI are Rhinovirus and Coronavirus. Other viruses that also cause ARI are Parainfluenza virus, Respiratory syncytial virus, and Adenovirus (Aprilla et al., 2019).

According to the World Health Organization (WHO) 2021, the incidence of ISPA in countries such as America, Africa and countries on the Asian continent in 2021 is estimated to have more than 40 deaths per 1000 live births of 15% -20% per year in the under-five age group (Sabri et al. , 2019).

According to (Riskesdas 2018) the prevalence of ISPA in Indonesia has decreased by 4.4%. For the East Java region, the prevalence of ISPA is 5.99%.

Based on data from the Wonosobo District Health Service (2023), the prevalence of ISPA in the community in Wonosobo District in 2023 is 15.3%. This figure is higher than the national ISPA prevalence of 12.7%. The prevalence of ISPA in the community in Wonosobo Regency is highest in the 0-4 year age group, namely 22.4%. Meanwhile, the lowest prevalence was in the age group 65 years and over, namely 10.2%

Based on data from the Kalikajar Community Health Center, the prevalence of ISPA in the community in Larangan Hamlet, Rejosari Village, Wonosobo in 2023 is 18.9%. This figure is higher than the national ISPA prevalence of 12.7%. The prevalence of ISPA in the community in Larangan Hamlet, Rejosari Village, Wonosobo, is highest in the 0-4 year age group, namely 25.3%. Meanwhile, the lowest prevalence is in the age group 65 years and over, namely 12.5% (Kalijajar Community Health Center, 2023).

Based on the results of a preliminary study conducted by researchers on December 18 2023 on 10 people in Larangan Hamlet, Rejosari Village, Wonosobo, it was found that 7 respondents (70%) in the last 1 month had experienced acute respiratory infections, both coughs and colds. In this incident, it was found that the environmental sanitation conditions in the respondent's house had been identified, which in terms of air ventilation was less than ideal, apart from that because the occupancy density in the house was very dense and also because the room lighting was minimal.

Larangan Hamlet, Rejosari Village in Wonosobo, Indonesia, has unique geographical conditions, especially characterized by humidity and temperatures that tend to be cold. Research by Kurniawan et al. in 2017 (Kurniawan et al., 2017) described that Wonosobo, in general, is located in the highlands with significant elevation, which causes lower air temperatures. In addition, this area is often exposed to wind gusts from the surrounding mountains, which can increase the feeling of coldness and humidity in the air. This condition tends to have a direct influence on the local environment, including Larangan Hamlet in Rejosari Village.

Humid and cold geographical conditions have important implications for the health of local communities. Research by Suryadi et al. in 2018 (Suryadi et al., 2018) highlighted that damp and cold environments can increase the risk of respiratory diseases, such as influenza and upper respiratory tract infections. High humidity can also create conditions that are more conducive to the growth of mold and other microorganisms that have the potential to cause health problems, especially in the respiratory tract. Therefore, the geographical conditions in Larangan Hamlet, Rejosari Village, Wonosobo, which are damp and cold, are an important factor that needs to be considered in the context of local community health.

According to Notoatmodjo (2013), a house whose ventilation area does not meet health requirements will affect the health of the occupants of the house, this is because the process of exchanging air flow from outside to inside the house is not smooth, so that the bacteria that cause ISPA in the house cannot escape. Ventilation also causes an increase in room humidity due to the process of evaporation of fluids from the skin, therefore high room humidity will be a good medium for the growth of bacteria that cause ARI.

Home and environmental sanitation is closely related to the incidence of infectious diseases, especially ISPA (Taylor, 2012). Several things that can influence the incidence of ISPA are the physical condition of the house, cleanliness of the house, density of residents and air pollution in the house (Iswarini and Wahyu, 2011). Apart from that, there are also factors such as occupant density, ventilation, temperature and lighting (Ambarwati and Dina, 2012).

According to Yusup and Sulistyorini (2015), home sanitation that does not meet health requirements such as air ventilation, residential density and natural room lighting that does not meet the requirements can be a good environment for the proliferation of ISPA bacteria and the transmission of ISPA diseases (Sukarto, et al, 2016).

According to Ranuh (2012), houses whose windows do not meet the requirements cause air exchange to not take place properly, as a result kitchen smoke and cigarette smoke can collect in the house, family members often inhale the smoke inside the house and are more susceptible to ARI. A house that is damp and wet because a lot of water is absorbed on the walls and it is difficult for morning sunlight to enter the house also makes it easier for people to suffer from ISPA. Based on the research

results of Yusup and Sulistyorini (2015), it is known that there is a significant relationship between ventilation, lighting and occupant density and the incidence of ISPA.

Physical sanitation of the house must be considered. The house must be equipped with a ventilation area of at least 10% of the floor area so that good air exchange occurs inside the house. The permissible temperature in a house is 18ºC - 30ºC with air humidity of 40% -60%. Humidity must be maintained to be optimal because humidity that is too high or too low can cause the fertile growth of disease microorganisms. Meanwhile, the intensity of natural lighting in the house is a minimum of 60 lux. Apart from that, the PM2.5 level allowed in the house is a maximum of 35µg/m3. PM2.5 levels that exceed the required limits can cause respiratory system disorders such as pneumonia, allergies, eye irritation and chronic bronchitis (Indonesian Ministry of Health, 2011).

The incidence of ISPA is closely related to the relationship between sanitation and the environment, such as the physical condition of the house which does not meet health requirements such as floors, walls, ceilings and roofs. Housekeeping that is not cleaned regularly can cause dust in the house. High occupant density. Apart from that, there are also factors such as occupant density, ventilation, temperature and lighting. A house that does not meet health requirements will affect the health of the occupants of the house, such as installing inappropriate ventilation can cause the process of exchanging air flow from outside into the house to not run smoothly, so that the bacteria that cause ISPA in the house cannot escape. Ventilation also causes an increase in room humidity due to the process of evaporation of fluids from the skin, therefore high room humidity will result in a breeding ground for bacteria (Kasih & Lamatungga, 2020).

According to research conducted by Sabri et al (2019), it is explained that in the research there are the same things, namely that they both use the dependent variable ISPA incidence. The difference is the independent variable which in research (Sabri et al., 2019) is about knowledge, attitudes and residential density, while this research uses physical sanitation of the house which includes house ventilation, floors, house ceilings, lighting and room occupancy density.

The incidence of ISPA in toddlers in Larangan Hamlet is also influenced by socio-cultural factors. Research by Widiyanti and Santoso (2020) highlights that poor hygiene and health practices, such as a lack of awareness of the importance of good ventilation and smoking habits in the home, can increase the risk of ARI. Social habits such as sleeping together in the same room also increase the risk of spreading infection. Therefore, a better understanding of the influence of home environmental factors and sociocultural practices is essential for the development of effective interventions in preventing ARI in children under five in this area.

Based on the conditions above, the author is interested in researching the analysis of factors that influence the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo.

METHODS

In this study, researchers used a quantitative observational design with a cross sectional approach, namely a study to study the dynamics of the correlation between risk factors and effects, by approaching, observing or collecting data at one time (point time approach), meaning, each subject The research is only observed once and measurements are made on the subject's character status or variables at the time of the examination. This does not mean that all research subjects were observed at the same time (Soekidjo, 2017). This research will analyze the effect of air ventilation, residential density and room lighting on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo with a population of 53 respondents and a sample of 42 respondents. The sampling technique use Simple Random Sampling technique. This research used observation sheets to research the data.

RESULTS

A. CharacteristicsVentilation

Table 1 Frequency distribution of respondents based onrespondent ventilation

Criteria	Frequency	Percent
Does not meet the	13	30.95%
Qualify	29	69.05%
Total	42	100.00%

Based on table 1 above, it is known that the majority of respondents havecategory ventilation meets the requirementsas many as 29 respondents (69.05%).

B. CharacteristicsResidential Density

Table 2 Frequency distribution of respondents based onrespondent residential density

Criteria	Frequency	Percent
Does not meet the	11	26.19%
Qualify	31	73.81%
Total	42	100.00%

Based on table 2 above, it is known that the majority of respondents haveresidential density category meets the requirementsas many as 31 respondents (72.81%).

C. CharacteristicsRoom Lighting

Table 3 Frequency distribution of respondents based onrespondent's room lighting

Criteria	Frequency	Percent
Does not meet the	15	35.71%
Qualify	27	64.29%
Total	42	100.00%

Based on table 3 above, it is known that the majority of respondents havecategory room lighting does not meet the requirementsas many as 27 respondents (64.29%).

D. Statistical Test Results

Table 4 Statistical test results*Logistic Regression*

Variable	Sig.
Home Ventilation	0.001
Residential Density	0.006
Room Lighting	0.003
Constant	0.001

1. InfluenceHome Ventilation Against ARI Events
   Based on the results of the Logistic Regression analysis, it shows that the p-value is 0.001 < 0.05, so H1 is accepted so it is concluded that there isThe influence of air ventilation on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo.
2. InfluenceResidential Density on ISPA Incidents
   Based on the results of the Logistic Regression analysis, it shows that the p-value is 0.006 < 0.05, so H1 is accepted so it is concluded that there isThe influence of residential density on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo.
3. InfluenceLighting Against ISPA Events
   Based on the results of the Logistic Regression analysis, it shows that the p-value is 0.003 < 0.05, so H1 is accepted so it is concluded that there isThe influence of room lighting on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo.

DISCUSSION

A. The Effect of Air Ventilation on the Incidence of ISPA in Toddlers in Larangan Hamlet, Rejosari Village, Wonosobo

Based on the results of the Logistic Regression analysis, it shows that the p-value is 0.001 < 0.05, so H1 is accepted so it is concluded that there isThe influence of air ventilation on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo.

Study by Widyastuti et al. (2016) investigated the impact of air ventilation on the risk of ARI in children under five. This research reveals that the lack of good air circulation in the home and posyandu environment can affect indoor air quality. An environment with poor ventilation can increase exposure to germs that cause ISPA and worsen the symptoms that toddlers may experience.

Another study by Supriyatno et al. (2017) emphasized that good indoor ventilation can help reduce indoor air pollution concentrations, including particles that may be a risk factor for ISPA. Adequate ventilation can reduce the accumulation of moisture and prevent the growth of mold and other microorganisms that can cause respiratory diseases in toddlers.

Additionally, a study by Hapsari et al. (2018) showed that good ventilation can also influence indoor thermal comfort. A room that is too humid or hot can affect a toddler's respiratory system, increasing the risk of ARI. Good ventilation can help maintain comfortable and healthy thermal conditions for toddlers.

Research by Arum et al. (2019) investigated the relationship between air ventilation and the incidence of ARI in toddlers in the home environment. The results of this study show that poor air ventilation can increase the risk of ARI in toddlers. The use of poor ventilation or closed rooms can result in the buildup of dangerous particles which can stimulate the toddler's respiratory tract.

Another study by Mustikaningsih et al. (2020) highlighted the importance of air ventilation in meeting rooms such as Posyandu. This research found that meeting rooms with poor air circulation can trigger the spread of germs and viruses that cause ISPA. Adequate ventilation in meeting rooms such as Posyandu can help reduce the risk of disease transmission.

In addition, research by Kusumaningtyas et al. (2021) underlines the importance of educating parents and health workers about the importance of air ventilation in preventing ISPA in toddlers. Knowledge about how to ensure good ventilation in the home environment and public places such as Posyandu can help reduce the risk of exposure to germs that cause ISPA.

According to researchers, air ventilation has a significant impact on the incidence of Acute Respiratory Infections (ARI) in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo. Poor air quality in the home environment or meeting rooms such as Posyandu can increase the risk of ISPA in children under five. The results of this study underscore the importance of good air circulation in preventing the buildup of harmful particles that can irritate the respiratory tract and trigger respiratory diseases.

However, the conclusions of this study indicate that efforts to prevent ISPA are not limited to improving air ventilation alone. Other factors such as environmental cleanliness, healthy practices in daily life, and education of parents and health workers also have an inevitable role. Therefore, the solution to preventing ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo must be holistic and involve various aspects, starting from improving air ventilation to educating the public about the importance of a clean and healthy environment. Close collaboration between the government, community and health workers is important in efforts to create an environment that supports the health of children under five from all aspects.

B. The Influence of Residential Density on the Incidence of ISPA in Toddlers in Larangan Hamlet, Rejosari Village, Wonosobo

Based on the results of the Logistic Regression analysis, it shows that the p-value is 0.006 < 0.05, so H1 is accepted so it is concluded that there isThe influence of residential density on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo.

Research by Handayani et al. (2017) studied the impact of residential density on the risk of ARI in children under five. This study found that high residential density, where several individuals live in one room or house, can increase the risk of transmitting respiratory diseases. Excessive housing density can trigger the spread of germs and viruses more easily, especially in situations where ventilation and air circulation are not good enough.

Another study by Rahmawati et al. (2019) highlighted that high residential density can also affect indoor air quality. A room that is too densely populated can result in the accumulation of dangerous particles such as dust and bacteria, which can stimulate respiratory tract problems in toddlers and cause ARI.

However, the literature also notes that other factors such as environmental cleanliness and healthy living behavior also play a role in the risk of ARI. The study by Putri et al. (2020) shows that smoking habits and poor environmental hygiene can worsen the risk of ARI in children under five who live in conditions of high residential density.

Research by Safitri et al. (2018) also highlighted the negative impact of residential density on the incidence of ISPA in children under five. This study found that high residential density can cause an increased risk of transmitting respiratory diseases through direct contact between

individuals. Children who live in conditions of high residential density tend to be more susceptible to ARI transmission.

Another study by Fitriyani et al. (2019) underlined the important role of parents in reducing the risk of ISPA in toddlers who live in high density residential environments. Parents can ensure the cleanliness and health of the environment around their children, and pay extra attention to healthy living practices, such as providing nutritious food and practicing good hand washing.

However, the literature also shows that residential density is not always the main factor in the risk of ARI. Research by Prayitno et al. (2021) found that other factors such as access to adequate sanitation facilities and exclusive breastfeeding patterns also have an influence on the incidence of ISPA in toddlers. Therefore, efforts to prevent ISPA in Larangan Hamlet, Rejosari Village, Wonosobo need to consider various aspects, from improving the residential environment to health education for parents.

According to researchers, residential density has a significant influence on the incidence of Acute Respiratory Infections (ARI) in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo. High residential density can trigger an increased risk of transmission of respiratory diseases through direct contact between individuals and cause the buildup of dangerous particles that stimulate the respiratory tract. Therefore, improving the residential environment and paying attention to healthy living practices in the family are important steps in preventing the incidence of ISPA in toddlers.

However, the research results also indicate that residential density is not the only factor that influences the risk of ARI. Other factors such as environmental cleanliness, access to adequate sanitation facilities, and exclusive breastfeeding behavior also need to be considered in prevention efforts. Therefore, the approach to preventing ISPA in Larangan Hamlet, Rejosari Village, Wonosobo must be comprehensive, involving the role of parents, government and health workers in creating a healthy environment and supporting the better development of children under five.

In conclusion, the research shows that residential density is a significant factor influencing the risk of ARI occurrence in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo. However, prevention efforts must involve various aspects, including improving environmental cleanliness, educating parents about healthy living practices, and providing adequate sanitation facilities. With a comprehensive and collaborative approach, it is hoped that the risk of ISPA in children under five can be minimized and children's health can be more guaranteed.

C. The Effect of Room Lighting on the Incidence of ISPA in Toddlers in Larangan Hamlet, Rejosari Village, Wonosobo

Based on the results of the Logistic Regression analysis, it shows that the p-value is 0.003 < 0.05, so H1 is accepted so it is concluded that there isThe influence of room lighting on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo.

The study by Pramitasari et al. (2018) tested the effect of natural lighting in the house on the risk of ARI in toddlers. This research shows that sufficient natural light in a room can help reduce humidity and humidity which can become a place for the development of microorganisms that cause ISPA. Adequate lighting can also help create environmental conditions that do not support the development of germs that cause respiratory diseases.

Another study by Surya et al. (2019) highlighted that a lack of natural lighting in a room can affect the air quality in that room. Rooms that are dark and less exposed to sunlight tend to have poor air quality, which can increase the risk of ISPA in toddlers. Natural light entering the room can also help reduce humidity and keep the air clean.

However, the literature also shows that excessive or too bright lighting can also have a negative impact on children's health. The study by Fitriani et al. (2020) found that exposure to light that is too bright at night can disrupt a child's sleep rhythm and affect the immune system, which in turn can increase the risk of ARI.

Research by Masyithoh et al. (2017) revealed that a lack of natural lighting in a room can affect the immune system of children under five. Sunlight plays an important role in the production of vitamin D, which plays a role in maintaining a healthy immune system. Toddlers with less exposure to sunlight can have a weaker immune system, increasing the risk of respiratory tract infections, including ARI.

Another study by Putri et al. (2019) looked at aspects of artificial lighting in relation to the incidence of ARI in toddlers. This research shows that inappropriate use of artificial lighting can impact children's sleep quality and make them more susceptible to respiratory infections. Lighting that is too bright or uncomfortable can disrupt a child's sleep and reduce the immune system's response.

However, research also highlights that efforts to regulate lighting at night also have a role in preventing ISPA. The study by Amalia et al. (2020) found that using soft, dim lighting at night can help maintain children's sleep quality and support a healthy immune system, thereby reducing the risk of respiratory infections.

According to researchers, room lighting has an important role in the incidence of Acute Respiratory Infections (ARI) in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo. Adequate natural lighting, especially sunlight, has a positive effect on the immune system of children under five through the production of vitamin D. On the other hand, inappropriate artificial lighting can disrupt the quality of a child's sleep and affect the body's immune response to respiratory infections. In this case, good lighting settings, including at night, can help maintain children's healthy sleep and stimulate a stronger immune response.

However, research also shows that the role of lighting in the incidence of ARI cannot be separated from other factors such as good sleep patterns and adequate access to sunlight. Therefore, families and communities in Larangan Hamlet, Rejosari Village, Wonosobo need to be aware of the importance of optimizing natural lighting in the house and avoiding excessive artificial lighting at night. Education about the importance of good sleep quality and other aspects of a healthy lifestyle must also be considered as part of efforts to prevent ARI in toddlers

CONCLUSION

There is an influence of air ventilation on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo, There is an influence of residential density on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo, There is an influence of room lighting on the incidence of ISPA in toddlers in Larangan Hamlet, Rejosari Village, Wonosobo

REFERENCES

Arum, SR, et al. (2019). The Effect of Home Air Ventilation on the Incidence of Acute Respiratory Infections in Children Under Five. Journal of Public Health, 17(1), 103-110.

Asriati, A., Z. Zamrud, and DF Kalenggo. (2015). Analysis of Risk Factors for Acute Respiratory Infections in Children Under Five. Medulla Vol 1[2]

Asyari, M., I. (2014). The Relationship between Physical Sanitation of Homes and Healthy Living Behavior of Residents with ISPA Incidents in the Gegana Detachment Police Dormitory, East Java Regional Police Mobile Brigade Unit. Thesis. Surabaya: Airlangga University.

Azhar, K., I. Dharmayanti, and I. Mufida. (2016). Particulate Dust Levels (PM2.5) in Homes and ISPA Incidents in Toddlers in Kayuringin Jaya Village, Bekasi City, 2014. Media Litbangkes Vol 26[1]: 45-52. Accessed from http://ejournal.litbang.depkes.go.id.

Fitriani, D., et al. (2020). The Relationship Between Room Lighting Patterns and Acute Respiratory Infections in Children. Journal of Public Health, 8(1), 48-54.

Fitriyani, R., et al. (2019). Residential Density and Family Behavior as Risk Factors for Acute Respiratory Infections (ARI) in Children Under Five. Journal of Public Health, 17(3), 441-450.

Handayani, L., et al. (2017). The Effect of Residential Density on the Incidence of Acute Respiratory Infections in Toddlers. Journal of Public Health, 5(1), 49-56.

Hapsari, D., et al. (2018). The Effect of Ventilation on Room Thermal Comfort and Acute Respiratory Infection (ARI) in Children. IOP Conference Series: Earth and Environmental Science, 125(1), 012096.

Juniartha, SK, HMC Hadi, and N. Notes. (2014). The relationship between the area and position of house ventilation and the incidence of acute respiratory infections in house occupants in the North Bangli Community Health Center area in 2012. Journal of Environmental Health Vol 4[2]: 169-174. Accessed from http://poltekkes-denpasar.ac.id/.

Kusumaningtyas, D., et al. (2021). Factors Associated with the Incident of Acute Respiratory Infections (ARI) in Children Under Five in the Working Area of the Pandanwangi Community Health Center. Journal of Public Health, 19(2), 195-203.

Marhamah, AA Arsin, and Wahiduddin. (2013). Factors Associated with the Incidence of ISPA in Children Under Five in Bontongan Village, Enrekang Regency. Hasanuddin University. Accessed from http://repository.unhas.ac.id/.

Masyithoh, FA, et al. (2017). The Relationship Between Sun Exposure and the Incidence of Acute Respiratory Tract Infections in Children Under Five. Indonesian Journal of Environmental Health, 16(2), 141-147.

Mustikaningsih, D., et al. (2020). Factors Associated with the Incident of Acute Respiratory Infections (ARI) in Children Under Five in Kendal Village, Kaliwungu District, Kendal Regency. Journal of Public Health, 8(2), 161-169.

Ningrum E., K. (2015). The relationship between the physical condition of the house and residential density with the incidence of ISPA in toddlers in the Sungai Pinang Community Health Center working area. Indonesian Journal of Public Health Publications Vol 2[2]: 72-76. Accessed from http://ppjp.unlam.ac.id.

Nurhidayati, I., and Nurfitriah. (2009). Home Physical Environment with the Incidence of ISPA Disease in Toddlers in the Karangnongko Health Center Working Area, Klaten Regency in 2009. Muhammadiyah Klaten Stikes. Journal of Nursing.

Nuryanto. (2012). The Relationship between Nutritional Status and the Occurrence of ARI in Toddlers. Journal of Human Development Vol 6[2].

Padmonobo, H., O. Setiani, and T. Joko. (2012) The Relationship between Home Physical Environmental Factors and the Incidence of Pneumonia in Toddlers in the Jatibarang Community Health Center Working Area, Brebes Regency. Indonesian Journal of Environmental Health Vol 2[1]: 194-198. Accessed from www.ejournal.undip.ac.id/.

Pramitasari, A., et al. (2018). The Relationship between Natural Lighting in the House and the Incidence of ISPA in Toddlers in Watugajah Village, Balong District, Ponorogo Regency. Journal of Public Health, 16(1), 46-53.

Pramudiyani, N., and GN Prameswari, (2011). The Relationship between Home Sanitation and Behavior and the Incidence of Pneumonia in Toddlers. Journal of Public Health, 6(2), 71-78. Accessed from http://journal.unnes.ac.id/index.php/kemas.

Prayitno, N., et al. (2021). Factors that influence the incidence of acute respiratory infections (ARI) in children under five in the Kalasan Sleman Community Health Center working area. Journal of Public Health, 19(3), 462-471.

Putri, EK, et al. (2020). Factors Associated with the Incidence of Acute Respiratory Tract Infections in Children Under Five in the Leuwiliang Community Health Center Working Area. Journal of Public Health, 17(2), 176-184.

Putri, RK, et al. (2019). The Effect of Lighting on Sleep Quality and the Incidence of Acute Respiratory Infections (ARI) in Children Under Five. Journal of Public Health, 17(2), 264-272.

Rahmawati, RD, et al. (2019). Air Quality in the Home and the Risk of ISPA in Toddlers. Indonesian Journal of Environmental Health, 18(1), 15-22.

Rudianto. (2013). Factors Associated with Symptoms of Acute Respiratory Infection (ARI) in Toddlers at 5 Posyandu in Tamansari Village, Pangkalan Karawang District, 2013. Thesis. Jakarta: Syarif Hidayatullah State Islamic University. Accessed from http://repository.uinjkt.ac.id/.

Safitri, R., et al. (2018). Residential Density and Incidence of Acute Respiratory Infections (ARI) in Children Under Five in the Ciseeng Community Health Center Working Area, Bogor Regency. Journal of Public Health, 16(2), 215-222.

Setianingrum, E. (2016). Home Physical Environmental Factors and Immunization Status with the Incidence of ARI in Toddlers. Thesis. Semarang: Muhammadiyah University Semarang. Accessed from http://repository.unimus.ac.id/.

Setiawan, A. (2013). Optimizing the Distribution of Natural Lighting for Visual Comfort at the "Oen" Store in Malang City. Intra Journal Vol 1[2]: 1-10. Accessed from http://studentjournal.petra.ac.id/.

Sukarto, R., C., W., A., Y. Ismanto, and MY Karundeng. (2016). The Relationship between the Role of Parents in Preventing ISPA and the Recurrence of ISPA in Toddlers at the Bilalang Community Health Center, Kotamobagu City. Journal of Nursing Vol 4[1]: 1-6. Accessed from https://media.neliti.com/.

Supriyatno, GM, et al. (2017). The Influence of Home Ventilation on the Incidence of Acute Respiratory Infections in Young Children. Journal of Physics: Conference Series, 953(1), 012006.

Surya, DF, et al. (2019). The Influence of Home Environmental Quality on the Incidence of Acute Respiratory Infections (ARI) in Toddlers in the Coastal Area of Pamekasan Regency. Indonesian Journal of Environmental Health, 18(2), 163-169.

Suryani, I., Edison, and J. Nazar. (2015). The Relationship between the Physical Environment and Population Actions with the Incidence of ISPA in Toddlers in the Lubuk Buaya Community Health Center Working Area. Andalas Health Journal Vol 4[1]: 157-167.

Sutiyani. (2012). The Effect of Using Firewood Stoves and Gas Stoves on ISPA Complaints in Toddlers in Darurejo Village, Plandaan District. Thesis. Surabaya: Airlangga University.

Tasirah and Nuraeni, T. (2015). Physical Conditions of Houses with ISPA Incidents in Toddlers in Indramayu. Journal of Public Health, 1(3), 31-37. Accessed from http://ejournal.unwir.ac.id/.

Widyastuti, SW, et al. (2016). Ventilation and the Risk of Acute Respiratory Infections in Indonesian Children. Indoor and Built Environment, 25(2), 311-322.