

Factors that cause the increase of pneumonia in Indonesia

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KEYWORDS

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ABSTRACT Lower respiratory tract infections are still a major problem in the health sector. According to the World Health Organization (WHO), lower respiratory tract infections are the most common cause of death in the world. Pneumonia is an inflammation of the lungs that causes pain when breathing and limited oxygen intake. Pneumonia can be spread in a number of ways, including when you cough and sneeze. The type of research used in this study is descriptive, to find out what factors are causing the increase in pneumonia in Indonesia. From the data conducted by reviewing various journals, it was found that there are 3 factors causing the increase in pneumonia in Indonesia, namely Air Pollution, Air Humidity, and Lifestyle. Various factors that can cause pneumonia are air pollution, humidity, and lifestyle

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1. INTRODUCTION

Pneumonia is an inflammation of the lungs that causes pain when breathing and limited oxygen intake. Pneumonia can be spread in various ways, including when coughing and sneezing (WHO, 2014).

Pneumonia can be caused by bacteria, viruses, and fungi. Most are caused by bacteria. Bacteria that cause pneumonia are divided into gram-positive or gram-negative organisms such as: *Streptococcus pneumoniae* (pneumococci), *Staphylococcus aureus*, *Enterococcus*, *Streptococcus piogenes*, *Pseudomonas aeruginosa*, *Klebsiellapneumoniae*, and *Haemophilus influenzae*. Pneumonia caused by fungi is rare, but it may occur in individuals with immune system problems caused by AIDS, immunosuppressive drugs or other health problems. The pathophysiology of pneumonia by fungi is similar to pneumonia caused by bacteria. Pneumonia caused by fungi is most often caused by *Histoplasma capsulatum*, *Cryptococcus neoformans*, *Candida sp.*, *Aspergillus sp.*,

The most common virus that causes pneumonia is the Respiratory Syncytial Virus (RSV). Although these viruses mostly attack the upper respiratory tract, in toddlers this disorder can trigger pneumonia (Misnadiarly, 2008).

According to Erlien (2008), pneumonia can be defined as an acute infection of lung tissue. But in general, pneumonia is better known as pneumonia. Meanwhile, risk factors that are known to increase the incidence of pneumonia include; ≤ 2 months old, male, poor nutritional status, low birth weight, not getting enough breast milk, air pollution, overcrowding, inadequate immunization, excessive blanketing of children, vitamin A deficiency, and early weaning. In addition to risk factors that increase morbidity, there are also risk factors that increase mortality due to pneumonia. The risk factors are age ≤ 2 months, low so-

cioeconomic level, poor nutritional status, low birth weight, low level of maternal education,

Unhealthy living conditions can be one of the triggers for pneumonia. A house that can be said to meet health requirements must meet three aspects, namely lighting, air conditioning and air temperature, and indoor humidity (Ministry of Settlement and Regional Infrastructure, 2013).

According to Safitri and Keman (2005), a healthy house is a building that functions as a shelter and rest so as to create a healthy life physically, mentally and socially. Another definition of a healthy home is a place to live that meets various technical health requirements so that its occupants are protected from various health problems and can achieve optimal health status. The criteria for a house to be said to be a healthy house include aspects of the minimum need for time and space, the minimum need for security and safety, as well as the need for health and comfort. Health and comfort needs also include several aspects in it, namely lighting, air conditioning, air temperature and humidity (Ministry of Settlement and Regional Infrastructure, 2013).

Ventilation is mainly related to indoor air quality. Air quality is influenced by various factors, including building materials such as asbestos, building structures such as room ventilation, chemicals in interior and furniture, air quality outside the house, density of residential homes, excessive humidity, and also dust in the house. . In addition, the air quality in the house is also influenced by the activities of its occupants. Various activities can cause pollution in the house because it can produce dust and gas. These activities or activities such as smoking, the use of cosmetic ingredients, or the use of pesticides in the house. Low air quality in the house can cause various health problems for its residents. Looking at the data that has been described previously, The authors are interested in researching the

risk factors for pneumonia. The risk factors studied were mainly related to the condition of the house, especially the air. Therefore, several variables related to the air quality in the house were selected, including the presence or absence of exposure to cigarette smoke in the house, the area of ventilation, and the density of the house's occupancy. Indoor air quality is the air in a residential building inhabited by people with different health conditions for at least one hour. Air quality in the house affects the health conditions of its inhabitants. The risk of health problems can be exacerbated by cigarette smoke, chemicals in furniture, room cleaning agents, and pollutants from outside. Indoor air pollution is said to be more dangerous because the source is close to exposed humans. In developing countries, the problem of indoor air pollution generally occurs because human activities are indoors without adequate ventilation or ventilation. WHO estimates that every year there are three million cases due to indoor air pollution and 0.2 million cases caused by outdoor pollution. Based on research conducted by the American College of Allergies estimates that 50% of diseases are caused by indoor air pollution. Meanwhile, the US EPA or United States Environmental Protection Agency states that indoor air is two to ten times more dangerous than outdoor air (Haris et al., 2012).

In developing countries, the problem of indoor air pollution generally occurs because many houses without adequate ventilation. The problem of indoor air pollution generally occurs because of human activities in the room without being supported by adequate ventilation or vents. WHO estimates that every year there are three million cases due to indoor air pollution and 0.2 million cases caused by outdoor pollution. Good indoor air quality is defined as air that is free from pollution, substances that cause irritation, discomfort or disruption to the health of the occupants.

In general, pneumonia is categorized as an infectious disease that is transmitted through the air, with the source of transmission being pneumonia sufferers who spread germs in the form of droplets into the air when coughing or sneezing. Then the germs that cause pneumonia enter the respiratory tract through the inhalation process (inhaled air) or by direct transmission, namely the droplets released by the patient when coughing, sneezing, and talking directly which are inhaled by people around the sufferer, using objects that have been contaminated. exposed to the secretions of the patient's respiratory tract (Damayanti & Ryusuke, 2017)

2. METHOD

The type of research used in this research is descriptive to find out some factors that cause the increase of pneumonia in Indonesia.

3. RESULTS AND DISCUSSION

The factors that cause pneumonia in Indonesia are caused by several consequences including:

3.1 Air pollution

The indoor air pollution we face today is very different and chemically more diverse than it was 40 years ago. Older, relatively moist construction materials have been replaced with newer, more technologically complex products (eg

polymers, high performance paints). In addition, the development of new building techniques and designs aimed at effective energy savings can result in airtight indoor spaces with inadequate ventilation (Kelly & Fussell, 2019).

Indoor air pollution consists of dust, dirt or gases in the air inside buildings such as homes or workplaces that harm us if we breathe them in. Types of air pollution include: PM (microscopic particles of dust and dirt in the air), CO, NO and SO gases. Indoor air pollution can be caused by many things including: the way the room is warmed, the way it is used for cooking, poor ventilation, humidity, the use of chemicals in cleaning products, some building materials. (British Lung Foundation, 2021). High exposure can occur in women and toddlers who spend most of their time indoors (Purushothaman et al., 2020).

The physical parameter of the house in the form of a Particulate meter measuring 10 (PM10) has the risk of increasing pneumonia cases and will be more dangerous during the summer than during the rainy season because the number will be greater. In addition, in Japan the mortality rate in pneumonia cases was significantly related to PM10 and PM2.5. Pneumonia cases were significantly associated with cigarette smoke, PM2,5 and CO. Air quality in the house and cases of acute respiratory infections were also reported in children under five years old in Canada, which was a significant relationship to the incidence of respiratory infections for every 500 ppm increase in CO2 with an OR of 2.85 (Fahimah et al., 2014).

TABLE 1. Air Quality Relationship to Pneumonia

No	Air quality	Air quality	Percentage
1	polluted	51	64.6%
2	Not polluted	28	35.4%
Total		79	100

It was found that the air pollution that was not polluted was 51 (64.6%) more than the air that was not polluted 28 (35.4%), (Putra & Wulandari, 2019).

Air pollution from smoke/gas can cause ARI, bronchitis, asthma, and lung cancer. Air pollution from particulate matter can cause paringitis, pneumonia, allergies, irritation and others. An educational approach is an action that involves the community to participate in fostering and maintaining environmental cleanliness such as not burning during the dry season. This approach is carried out and developed to foster and provide information to the community by motivating and raising public awareness to participate in preserving the environment.(Raharjo et al., 2021)

3.2 Air humidity

Good air quality in the house is a predisposing factor for pneumonia, so the government regulates the room quality standard values listed in the Minister of Health Regulation No. 1077 of 2011.4. In the Regulation of the Minister of Health it is explained that the value of room air quality standards is based on chemical, physical and biological parameters. Chemical parameters consist of SO2, NO2, CO, CO2, Pb, asbestos, formaldehyde, volatile organic compounds and environmental tobacco smoke. Physical parameters are temperature, lighting, humidity, ventilation rate, PM10 and PM2.5, while biological parameters are

fungi, pathogenic bacteria and germ numbers (Fahimah et al., 2014).

The risk factor associated with the incidence of pneumonia in children under five is the ventilation area of the house. Every house must have a good ventilation system. Otherwise, dirty air will continue to circulate in the room so that it will have a very negative impact on the breathing of each occupant. The ventilation system in every house must have windows that can be opened and closed, and air holes. Opening the window is useful for pushing out the air in the room and entering clean air from outside. Poorly ventilated houses can be a means of spreading infection with germs that cause pneumonia in toddlers. Therefore, it is necessary to improve ventilation and healthy environmental sanitation as a preventive effort against the incidence of pneumonia, as well as to practice a clean and healthy lifestyle (Raharjo et al., 2021)

According to Safitri and Keman (2005), a healthy house is a building that functions as a shelter and rest so as to create a healthy life physically, mentally and socially. Another definition of a healthy home is a place to live that meets various technical health requirements so that its occupants are protected from various health problems and can achieve optimal health status, (Raharjo et al., 2021).

The criteria for a healthy house include aspects of the minimum need for time and space, the minimum need for security and safety, as well as the need for health and comfort. Health and comfort needs also include several aspects in it, namely lighting, air conditioning, air temperature and humidity (Mahalastri, 2020)

Ventilation is one method to regulate temperature humidity, this is the same as regulating room air temperature. Factors that cause viruses to reproduce are temperature, humidity, type of virus, sunlight, and the presence of organic material around the place of life. Therefore, opening the window is an action that must be taken to prevent the presence of viruses. It is recommended, to open window in the morning so that the air in the room can exchange with fresh air and sunlight that enters the house can kill the virus, (Fahimah et al., 2014).

3.3 lifestyle

In addition to air pollution and humidity, lifestyle is also one of the factors that causes pneumonia.

Human activities such as cigarette smoke, burning garbage, smoke due to household activities and so on are some of the factors that can cause air pollution. In addition, ambient air pollution does not only have an impact on outdoor conditions, but also affects indoor air conditions. This is evidenced by a study which states that air spreads through a wide range of motion, which can flow through any gap. (3) In addition, according to the CDC-NIOSH (National Institute of Occupational Safety and Health) in Mechanical Engineers' 2014 explained that 10% of indoor pollution comes from outdoor or ambient air contamination, (Society, 2018).

Indoor air pollution, especially at home, is very dangerous because people generally spend more time doing activities indoors. Therefore, the house is considered as a microenvironment associated with the risk of air pollution. Indoor air quality is influenced by various factors: building materials, building structures, upholstery materials for furniture and interiors, residential density, outdoor air quality, radiation from Radon (Rd), formaldehyde, dust, and exces-

sive humidity. In addition, air quality is also influenced by activities in the home such as the use of energy that is not environmentally friendly; use of relatively inexpensive energy sources such as coal and biomass (wood, dry manure from livestock, agricultural residues); smoking behavior in the house; pesticide use; use of cleaning chemicals; and cosmetics. These chemicals can release pollutants that can stay in the house for a long period of time, (Fahimah et al., 2014).

4. CONCLUSIONS

The characteristics of fishermen's poverty in the rural coastal area in Pasar Palik village (as sample villages), which are seen from the level of depth and severity, are fairly high. This condition is caused by seven factors (three economic factors and four social factors), namely (A) Three economic factors, consisting of 1) The quality of the marketing system, 2) The quality of marine fisheries facilities capital, and 3) The quality of fishermen's capability based on experience; (B) Four social factors, consist of 1) The quality of cooperation, 2) The role of cooperative institutions (marine cooperative), 3) The role of government (department of marine and fisheries), and 4) The role of higher education institutions (faculty or department) related to marine and fishery sciences. Quantitatively, from the three analysed economic factors (with the discriminant method), two factors were significant, while the one other factor was not significant. The model that can be built as a solution for reducing poverty in rural fishermen's communities is the Integrated/Mutually Beneficial Marketing System Model.

5. ACKNOWLEDGEMENTS

Various factors associated with pneumonia include air pollution, humidity, and lifestyle. It is recommended to maintain the quality of the air in order to prevent pneumonia.

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