E-ISSN : 2963-4946
Vol. 1 No. 10 July 2023
Asian Journal of Social and Humanities
https://ajosh.org/

Factors Associated with Pneumonia Incidence in Toddlers in the Pediatric Ward of RSUD Kudungga Kutai Timur

Fitri Ratnasari [1], Sutrisno [2], Nilam Noorma [3]
[1,2,3] Poltekkes Kaltim, Indonesia
Email: fitri.rns@gmail.com

* Correspondence: fitri.rns@gmail.com

KEYWORDS
Pneumonia, Nutritional Status, Immunization Status, Smoking History

ABSTRACT
Pneumonia is one of the infectious diseases that attacks the lower respiratory tract, which is characterized by coughing, and shortness of breath. Risk factors that increase the morbidity and mortality of pneumonia are divided into two major groups, namely intrinsic factors and extrinsic factors. Intrinsic factors include age, gender, nutritional status, low birth weight, immunization status, breastfeeding, and vitamin A administration. Extrinsic factors include residential density, ventilation, air pollution, humidity, cigarette smoke, family income and maternal factors, both education, mother's age, and mother's knowledge. The aim of the study was to determine the factors associated with the incidence of pneumonia in toddlers in the Children's Room of Kudungga Hospital, East Kutai. This study uses a correlation research design with a cross-sectional research design. The sample in this study was 57 people. The results of statistical tests using the chi-square test obtained p-value = 0.000 (knowledge), p-value = 0.001 (immunization status), p-value = 0.000 (nutritional status) and p-value = 0.000 (smoking history). There is a relationship between knowledge, immunization status, nutritional status and family history of smoking with the incidence of pneumonia in toddlers in the Children's Room of Kudungga Hospital, East Kutai.

Introduction

Pneumonia is an acute inflammation of lung tissue precisely in the alveoli caused by several microorganisms such as viruses, bacteria, fungi, pneumonia can cause mild to severe symptoms, inflammation of the lungs causes the alveoli to fill with fluid or pus causing sufferers to find it difficult to breathe (Ministry of Health RI, 2018)

The incidence of pneumonia is quite high. Based on data by (WHO, 2018), pneumonia cases killed 740,190 children under 5 years old in 2019, which is about 22% of deaths that occur in children aged 1 to 5 years, WHO states pneumonia as the highest cause of death in toddlers exceeding other diseases such as measles, malaria and AIDS. Many pneumonia cases occur in developing countries such as Southeast Asia, WHO said Indonesia was ranked 8th in the world out of 15 countries that have infant and child mortality rates caused by pneumonia (WHO, 2018).

The prevalence of pneumonia in toddlers based on data (Ministry of Health RI, 2018), in Indonesia in 2018 increased to 2.1% compared to 2013, with the highest cases experienced by children aged 12 to 23 months. Data on the prevalence of pneumonia in the elderly reached 15.5%, while pneumonia sufferers of all ages in East Kalimantan reached 2.0% (Ministry of Health, 2020).

Based on data on the discovery of pneumonia cases under five (0-59 months) by gender, Regency / City, and East Kalimantan Provincial Health Center in 2019, the number of visits by toddlers with cough or difficulty breathing was 144,768 toddlers and 10,466 toddlers with pneumonia. East Kutai ranks fourth most after Paser Regency, West Kutai, Kutai Kartanegara, which is 1,725 people (Ministry of Health of the Republic of Indonesia, 2018)

Risk factors that increase the morbidity and mortality of pneumonia are divided into two major groups, namely intrinsic factors and extrinsic factors. Intrinsic factors include age, sex, nutritional status, low birth weight, immunization status, breastfeeding, and vitamin A. Extrinsic factors include density of the area of residence, type of house, ventilation, air pollution, humidity, use of insect repellent, cigarette smoke, family income and maternal factors both education, maternal age, and maternal knowledge (Modification of Siregar's theory, 2020).

The results of the study (Rahayu, 2020) stated that the results showed a percentage of literature that was in line with theory, for the variable relationship of house residents who had smoking habits with pneumonia in toddlers as much as 80%, factory pollutants with the incidence of pneumonia 60% and the relationship between smoking habits of house residents with pneumonia in toddlers living in factory areas 20% with P -value 0.029 and OR = 2.94

In pneumonia, there can be several complications such as dehydration, bacteremia (sepsis), lung abscess, pleural effusion, and difficulty breathing (Modification of Khasanah's theory, 2017). According to research (Sari &; Gustin, 2017) explained that of 106 patients suffering from pneumonia, there were 73.3% complaining of coughing, as many as 24.8% complaining of excess sputum, 74% experiencing shortness of breath, and as many as 86.7% experiencing ronkhi, the results of the study explained the symptoms that occur due to airway clearance by exudate.

Based on preliminary studies that have been conducted, the incidence of pneumonia in toddlers treated in the children's room at Kudungga Hospital has increased in 2021, namely there were 284 toddlers with pneumonia compared to the previous year there were 170 pneumonia toddlers. Therefore, efforts are needed to prevent and overcome it. One way that can be done is to find out the characteristics that are factors that cause pneumonia in toddlers.

This study aims to find out more about the incidence of pneumonia in toddlers, by conducting a study entitled "Factors related to the incidence of Pneumony in toddlers in the Children's Room of Kudungga East Kutai Hospital".

Research Methods

The type of research used in this study is quantitative research that is analytical with a *cross-sectional approach.* This study also serves to identify whether there is a relationship between influencing factors and the incidence of pneumonia in toddlers in the children's room of Kudungga Hospital. Therefore, researchers also use the type of correlation analytics or relationships to determine the relationship between the variables seen with the value of the correlation coefficient.

This research was conducted at Kudungga East Kutai Hospital. In this study, the object to be studied is a child patient with fever, cough, runny nose who was treated in the Children's Room of Kudungga Hospital with a population of 67 children. The data collection method is carried out by observing the treated pediatric patients. Then a brief interview was conducted with parents and provided an Inform Consent Consent Sheet to be a respondent. then given a Knowledge questionnaire. The data obtained in this study will be analyzed using SPSS.

In this study, a bivariate analysis will be carried out, namely the relationship between influencing factors and the incidence of pneumonia in toddlers in the children's room of Kudungga Hospital. The test to be used in this study uses the *Chi Square* test with a meaning limit *of a* = 0.05.

Results and Discussions

Univariate Analysis

Characteristics of Respondents

Table 4.1
Characteristics of respondents based on toddler age, knowledge of mothers under five, immunization status, nutritional status, and family smoking history in the children's room of Kudungga Sangatta Hospital

No	Characteristic	Frequency	Presented
1.	**Age**		
	0-12 month	4	7,0
	13-24 month	32	56,1
	25-36 month	8	14,0
	37-48 month	7	12,3
	49-60 month	6	10,5
2.	**Knowledge**		
	Good	30	52,6
	Less	27	47,4
3.	**Immunization Status**		
	Complete	28	49,1
	Incomplete	29	50,9
4.	**Nutritional Status**		
	Good Nutrition	29	50,9
	Undernutrition + Bad	28	49,1
5.	**Smoking History**		
	No	24	42,1
	Yes	33	57,9

In Table 4.1 frequency distribution data shows that the characteristics of

respondents based on the age of most toddlers 13-24 months as many as 32 people (56.1%). The characteristics of respondents with good knowledge were 30 people (52.6%) compared to respondents with less knowledge which was 27 people (47.4%). The characteristics of respondents with incomplete immunization status were more, namely 29 toddlers (50.9%) compared to respondents with complete immunization status of 28 toddlers (49.1%).

The characteristics of respondents with good nutritional status were 29 toddlers (50.9%) compared to respondents with poor and poor nutritional status of 28 toddlers (49.1%). The characteristics of respondents stated that there was a greater history of smoking family members of 33 respondents (57.9%), compared to those with no history of smoking family members of 24 respondents (42.1%).

Bivariate Analysis

Table 4.2
Knowledge Relationship with Pneumonia Occurrence at Kudungga Sangatta Hospital in 2023

Knowledge	Incidence of pneumonia		Total	P-Value	OR
	Not	Pneumonia			
	N	N	N		
Good	21	9	30	0,000	10,267
Less	5	22	27		
Total	**26**	**31**	**57**		

Based on table 4.2, it was found that from 57 respondents, most of the respondents with good knowledge were 30 respondents (52.6%) of which 21 toddler respondents (36.8%) did not have pneumonia and 9 toddler respondents (15.8%) were with pneumonia. The results of statistical analysis using the *chi-square* test show that the value of *p-value* = 0.000 with *an odds ratio* value (OR=10.267)

Table 4.3
The Relationship Between Immunization Status and Pneumonia Occurrence at Kudungga Sangatta Hospital in 2023

Immunization Status	Incidence of pneumonia		Total	P-Value	OR
	Not	Pneumonia			
	N	N	N		
Complete	19	9	28	0,001	6,635
Incomplete	7	22	29		
Total	**26**	**31**	**57**		

Based on table 4.8, it was found that from 57 respondents, more respondents with incomplete immunization status were 29 respondents (50.9%) of which 22 respondents (38.6%) had pneumonia and 7 respondents (12.3%) were not pneumonia. The results of statistical analysis using the *chi-square* test show that the value of *p-value* = 0.001 with *an odds ratio* value (OR=6.635).

Table 4.3

The Relationship between Nutritional Status and Pneumonia at Kudungga Sangatta Hospital in 2023

Nutritional Status	Incidence of pneumonia		Total	P-Value	OR
	Not	Pneumonia			
	N	N	N		
Good Nutrition	21	8	29		
Under+Poor Nutrition	5	23	28	0,000	12,075
Total	**26**	**31**	**57**		

Based on table 4.3, it was found that from 57 respondents, more respondents with good nutritional status were 29 respondents (50.9%) of which 21 respondents (36.8%) had no pneumonia and 8 respondents (14.0%) had pneumonia. The results of statistical analysis using *the chi-square* test show that the value of *p-value* = 0.000 with *an odds ratio* value (OR=12.075).

Table 4.4
The Relationship Between Family History of Smoking and Pneumonia at Kudungga Sangatta Hospital in 2023

Family History of Smoking	Incidence of pneumonia		Total	P-Value	OR
	Not	Pneumonia			
	N	N	N		
No	18	6	24	0,000	9,375
Yes	8	25	33		
Total	**26**	**31**	**57**		

Based on table 4.10, it was found that out of 57 respondents, more respondents did not have a family history of smoking, namely 33 respondents (57.9%). The results of statistical analysis using the *chi-square* test show that *the p-value* = 0.000 with *an odds ratio* value (OR=9.375).

Knowledge Relationship with Pneumonia Incidence at Kudungga Sangatta Hospital in 2023

The results showed that of the 57 respondents, most of the respondents with good knowledge were 30 respondents (52.6%) of which 21 toddler respondents (36.8%) did not have pneumonia and 9 toddler respondents (15.8%) were with pneumonia. The results of statistical analysis using *the chi-square test showed* that the value of p-value = *0.000 (H0 rejected) which means that there is a relationship between maternal knowledge and the incidence of pneumonia in toddlers at Kudungga Sangatta Hospital* with an odds ratio value *(OR=10.267) which means that mothers with less knowledge, 10.267 times more at risk of toddlers developing pneumonia.*

The results of this study are in line with research conducted by Fitrianti (2018) that the results of Chi-Square analysis show a relationship between maternal knowledge and the incidence of pneumonia in toddlers (p-value = 0.003< alpha 0.05). In line with Jumiati's (2017) research with statistical test results, a p value of 0.010 (p < 0.005) was obtained, which means that Ho was rejected, meaning that there is a meaningful relationship between knowledge and the incidence of pneumonia in toddlers at the

Kramatwatu Health Center in 2017.

Based on the results of the study showed that most respondents had good knowledge about pneumonia, but some still had low knowledge about pneumonia. The cause of low knowledge can be caused by the high ignorance of respondents to the advanced consequences caused by pneumonia in toddlers if not immediately addressed.

This is in accordance with the theory, that the level of knowledge of mothers plays a major role in the incidence of pneumonia in toddlers. This is related to the behavior of mothers in providing adequate and nutritious food to their children and the behavior of mothers in help, treatment, treatment, and prevention of pneumonia (Fitrianti, 2018).

According to research conducted by Rahim, stating good knowledge to mothers about the prevention of pneumonia in children can make the mother's behavior better in preventing or treating children. According to researchers, the higher the knowledge and education of the mother, the better the mother's ability to receive information related to pneumonia. While mothers who do not have enough knowledge about pneumonia, will underestimate and even do not support efforts to prevent pneumonia, this has an impact on the high morbidity and death rate of pneumonia in toddlers. So that respondents with high knowledge, their understanding will be better about pneumonia compared to respondents who have low knowledge (Fitrianti, 2018).

Researchers assume that mothers who have a better level of knowledge about pneumonia will be less likely to take preventive measures to protect their children from infection, and will know the early symptoms and know when to seek medical care for their child, thus reducing the risk of disease severity

The Relationship Between Immunization Status and the Incidence of Pneumonia at Kudungga Sangatta Hospital in 2023

The results showed that of the 57 respondents, most of the respondents with good knowledge were 30 respondents (52.6%) of which 21 toddler respondents (36.8%) did not have pneumonia and 9 toddler respondents (15.8%) were with pneumonia. The results of statistical analysis using *the chi-square test showed* that the value of p-value = *0.000 (H0 rejected) which means that there is a relationship between maternal knowledge and the incidence of pneumonia in toddlers at Kudungga Sangatta Hospital* with an odds ratio value *(OR=10.267) which means that mothers with less knowledge, 10.267 times more at risk of toddlers developing pneumonia.*

The results of this study are in line with research conducted by Fitrianti (2018) that the results of Chi-Square analysis show a relationship between maternal knowledge and the incidence of pneumonia in toddlers (p-value = 0.003< alpha 0.05). In line with Jumiati's (2017) research with statistical test results, a p value of 0.010 (p < 0.005) was obtained, which means that Ho was rejected, meaning that there is a meaningful relationship between knowledge and the incidence of pneumonia in toddlers at the Kramatwatu Health Center in 2017.

Based on the results of the study showed that most respondents had good knowledge about pneumonia, but some still had low knowledge about pneumonia. The cause of low knowledge can be caused by the high ignorance of respondents to the advanced consequences caused by pneumonia in toddlers if not immediately addressed.

This is in accordance with the theory, that the level of knowledge of mothers plays a major role in the incidence of pneumonia in toddlers. This is related to the behavior of mothers in providing adequate and nutritious food to their children and the behavior of mothers in help, treatment, treatment, and prevention of pneumonia (Fitrianti, 2018).

According to research conducted by Rahim, stating good knowledge to mothers about the prevention of pneumonia in children can make the mother's behavior better in preventing or treating children. According to researchers, the higher the knowledge and education of the mother, the better the mother's ability to receive information related to pneumonia. While mothers who do not have enough knowledge about pneumonia, will underestimate and even do not support efforts to prevent pneumonia, this has an impact on the high morbidity and death rate of pneumonia in toddlers. So that respondents with high knowledge, their understanding will be better about pneumonia compared to respondents who have low knowledge (Fitrianti, 2018).

Researchers assume that mothers who have a better level of knowledge about pneumonia will be less likely to take preventive measures to protect their children from infection, and will know the early symptoms and know when to seek medical care for their child, thus reducing the risk of disease severity.

The Relationship between Nutritional Status and the Incidence of Pneumonia at Kudungga Sangatta Hospital in 2023

The results showed that of the 57 respondents, there were more respondents with good nutritional status, namely 29 respondents (50.9%) of which 21 respondents (36.8%) did not have pneumonia and 8 respondents (14.0%) were pneumonia.

The results of statistical analysis using *the chi-square* test showed that the p-value *= 0.000 (<0.05) which means that there is a relationship between nutritional status and the incidence of pneumonia at Kudungga Sangatta Hospital with* an odds ratio value *(OR=12.075).*

The results of this study are in line with research conducted by Nurnajiah (2016) with a study result of p < 0.05 showing a significant relationship between nutritional status and toddlers with pneumonia. The conclusion of this study is that there is a significant relationship between nutritional status and the degree of pneumonia in toddlers in hospitals. Dr. M. Djamil Padang. Most toddlers with severe pneumonia have poor and poor nutritional status.

Another study conducted by Amru (2020) that the results of the statistical test used were chi-square obtained p-value = 0.000. This shows that there is a relationship between nutritional status and the incidence of pneumonia in toddlers at the Baloi Permai Health Center in Batam City. Mothers who have toddlers should be able to pay attention to their nutritional status because nutritional status is one of the causes of pneumonia.

One of the risk factors for pneumonia in toddlers can be assessed from the nutritional status of toddlers. The risk of pneumonia is greater t in toddlers with malnutrition and malnutrition A measure of a person's body condition that can be seen and assessed the food consumed and various uses of nutrients in the body is known as nutritional status (Maramis, 2016). Many factors can cause pneumonia, one of which is nutrition, but if toddler nutrition is good, the environment is not supportive (exposed to cigarette smoke) not getting exclusive breastfeeding can also make toddlers vulnerable to Pnemonia (Indri Kurnia Dewi, and Nanik Setiyawati, Dwiana Estiwidani, 2018).

Nutritional status can affect the formation of antibodies and pulmonary defenses. This is what makes nutritional status a cause of pneumonia in toddlers (Wong, 2016). Nutritional status in toddlers affects the resilience of the toddler's body (Roesli Utami, 2013). The body's immune reaction and ability to defend itself will decrease if nutrition is poor. (Siti Husaidah, Desi Ernita Amru, 2020). The development of a child in the future is greatly influenced by his age in infancy. If the child under five is susceptible to the

disease can result in death. Most of the causes of death are due to diseases such as: pneumonia (ARI), diarrhea, malaria, measles, and malnutrition (Ahyani, Dwi AstutiNur, 2018).

For mothers who have toddlers, it is expected to be more active and careful in finding information about the right food and of course can meet the nutritional status of toddlers without waiting for counseling from health workers about good nutritional status. In addition, mothers are expected to pay attention to food intake for toddlers. So that the nutritional status of toddlers becomes good and can prevent the occurrence of infectious diseases in toddlers, especially pneumonia. Mothers should also know and recognize one of the causes of pneumonia is lack / poor nutritional status in toddlers. Thus, mothers who have toddlers, especially toddlers with pneumonia can immediately improve the nutritional status of their toddlers so that pneumonia is immediately resolved with the formation of a better immune system.

Researchers assume that toddlers with poor nutritional status, especially protein, vitamin, and mineral deficiencies, will have a weakened immune system, making them susceptible to infections such as pneumonia. Poor nutritional status can also affect lung growth and development in toddlers whose poorly developed lungs increase the risk of pneumonia.

The Relationship Between Family History of Smoking and the Incidence of Pneumonia at Kudungga Sangatta Hospital in 2023

The results showed that of the 57 respondents, more respondents did not have a family history of smoking, namely 33 respondents (57.9%). The results of statistical analysis using the *chi-square* test show that the value of *p-value* = 0.000 with *an odds ratio* value (OR=9.375).

This result is in line with Sasti (2018) that a significant relationship between cigarette smoke exposure and pneumonia in toddlers with a p value = 0.001. Wardani (2022) also stated in his research that almost all respondents who had families with smoking habits as many as 146 respondents experienced pneumonia (99.3%). The results of the *Chi-Square* test obtained a p-value of 0.001, which means there is a significant relationship between family smoking behavior and the incidence of pneumonia in toddlers. The higher the smoking behavior carried out by the family, the higher the incidence of pneumonia experienced by toddlers, and vice versa if the family's smoking habits can be reduced or can stop smoking, the incidence of pneumonia decreases.

The presence of family members in the house who have smoking habits can increase the risk of suffering from respiratory problems. Air pollution at home occurs due to cigarette smoke, can disrupt the respiratory tract and trigger pneumonia toddlers. Tracing the number of cigarettes commonly smoked by families of toddlers was carried out in this study. The number of cigarettes smoked indicates the amount of nicotine attached to the pulmonary membrane and mucous lining of the larynx. The presence of nicotine attached to the lung membranes facilitates pneumonia infection. Cigarette smoke comes from households, including pollution materials in the room or residence of toddlers. Continuous exposure will have an impact on the onset of respiratory disorders (Alnur, 2017).

Research recommends several efforts to overcome pneumonia in toddlers such as health promotion in households about the dangers of family smoking, need supervision of family members with smoking habits so as not to smoke in the house, especially in families with toddlers.

Researchers assume that toddlers who live with family members of smokers have a higher risk of pneumonia. Cigarette smoke contains harmful substances that can damage the immune system that can trigger inflammation in the respiratory tract, which makes children more susceptible to infections such as pneumonia, and also long-term exposure to cigarette smoke, can damage the structure and function of the lungs which ultimately increases the risk of pneumonia.

Conclusion

Based on the results of research on factors related to the incidence of Pneumony in toddlers in the Children's Room of Kudungga East Kutai Hospital, it can be concluded that there is a relationship between factors such as knowledge, immunization status, nutritional status, and smoking history with the incidence of pneumonia in toddlers in the children's room of Kudungga Hospital.

The results of this study are expected to provide insight, especially for the nursing field regarding the factors that cause pneumonia so that it can provide health information for patients and families by providing health education and can be used as information and input material as a reference and initial data in conducting better further research by adding more variables.

References

Kemenkes. (2020). *Profil Kesehatan Indonesia*.

Kemenkes RI. (2018). *Riset Kesehatan Dasar*.

Khasanah, F. N. (2017). *Asuhan Keperawatan Pada Pneumonia Di Ruang Kanthil Rumah Sakit Umum Daerah Banyumas*. Universitas Muhammadiyah Purwokerto.

Rahayu, D. (2020). Literature Review: Hubungan Kebiasaan Merokok Penghuni Rumah Dengan Kejadian Pneumonia Pada Balita Yang Tinggal Di Daerah Pabrik. *Homeostasis*, *4*, 643–648.

Sari, Y. P., & Gustin, R. K. (2017). *Faktor Risiko Kejadian Pneumonia Pada Balita Di Wilayah Kerja Puskesmas Rao Kabupaten Pasaman Tahun 2017 Risk Factors Pneumonia Occurrence In The Work Area Of Puskesmas Rao Pasaman Regency Year 2017*. *9*(2), 149–161.

Siregar, D. (2020). Faktor–Faktor Yang Berhubungan Dengan Kejadian Pneumonia Pada Balita Di Rumah Sakit Umum Daerah (RSUD) Kota Padangsidimpuan Tahun 2020. *JURNAL ILMIAH KOHESI*, *4*(2 SE-Articles).

WHO. (2018). *Global Nutrition Targets 2025: Low birth weight policy brief*.