



## Research Article

# Pneumonia degree correlation in children with clean and healthy behavior (CHB)

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### Abstract

Pneumonia is an acute infection that affects the lung with symptoms of cough, shortness of breath, grunting, cyanosis, rhonchi, and infiltrates in thorax imaging. Based on The Integrated Management of Sick Children in handling Acute Respiratory Tract Infection program, pneumonia is classified as severe pneumonia, pneumonia and not pneumonia. One of the risk factors of pneumonia is the low level of Clean and Healthy Behavior (CHB). The purpose of this study was to determine the degree of pneumonia in children with clean and healthy behavior (CHB). The analytic observational study with cross-sectional method. The sample was conducted children under five years old diagnosed with pneumonia in the Children's Ward of Rachma Husada Hospital Bantul with due regard to inclusion and exclusion criteria. Sampling was carried out using consecutive techniques. The data was retrieved using secondary data (medical records) and observing CHB with questionnaire. The data was analyzed using fisher's exact test. From 32 samples in this study, the majority of samples suffered from severe pneumonia (81.3%) and the most CHB indicators were the Intermediate category (50%). The result of bivariate analysis shows there was a correlation between the degree of pneumonia in children and the family's CHB ( $p=0.01$ ). There was a correlation between the degree of pneumonia in children and the clean and healthy behavior (CHB).



## INTRODUCTION

Pneumonia is the leading cause of death in children under five years old. World Health Organization (WHO) estimates that the incidence of pneumonia in children under five years old in developing countries is 0.29 episodes per child each year or 151.8 million cases of pneumonia each year, of which 8.7% or 13.1 million cases include severe pneumonia and need to be hospitalized. There are 15 countries with predictions of new cases and the highest incidence of pneumonia in children under five years old, covering 74% or 115.3 million cases out of 156 million cases worldwide. More than half are focused in 6 countries, namely India, China, Pakistan, Bangladesh, Indonesia, and Nigeria, where up to 44% of the population of children under five years old in the world (Rudan, Boschi-Pinto, Biloglav, Mulholland, & Campbell, 2008). The results of the 2013 Basic Health Research (Riskesdas), based on the age group of the population, the highest prevalence of pneumonia is 1-4 years of age (Kementrian Kesehatan RI, 2018).

Pneumonia is an acute infection of the lung tissue with symptoms of fever, coughing, rapid breathing, wheezing (grunting), nasal lobe breathing, retraction, cyanosis, soft wet crackles loud on auscultation, and infiltrates on lung X-rays. Following Integrated Management of Sick Children in the prevention of acute respiratory infections (ARI), pneumonia is classified as severe pneumonia, pneumonia and not pneumonia (Eka Cahyani & Anggrainingsih, 2016; WHO, 2014).

Clean and healthy behavior (CHB) is the main capital for the eradication of ARI, which can be assessed by indicators of household members behaving clean and healthy life. CHB classification is based on accumulated scores, namely, (1) primary category, (2) intermediate

category, (3) *puinama* category, (4) independent category. One of the risk factors for pneumonia in children is low CHB (Kementrian Kesehatan RI, 2011; Sulistyowati, 2010).

The purpose of this study was to determine the degree of pneumonia in children under five years old with clean and healthy behavior (CHB).

## METHODS

The study was conducted at the Rachma Husada Hospital in Bantul in July to August 2019. This type of research is analytic observational with a cross-sectional approach. Based on the calculation of the sample, 32 samples of children under five years old who met the inclusion and exclusion criteria were needed. Inclusion criteria include: (1) diagnosed pneumonia as assessed by history taking and supporting examination (chest radiograph), (2) having a KMS book, (3) being less than five years old. Exclusion criteria include: (1) having other diseases (asthma, bronchitis), (2) not being willing to be a respondent

Data obtained from medical records and observations using a questionnaire. The questionnaire was filled in by the respondent's parents, and the researcher directly observed the respondent's home environment. The questionnaire was taken from a guide to clean and healthy life behavior (CHB). The study was conducted after obtaining a research permit and Ethical Clearance from the medical research ethics committee at the Muhammadiyah Semarang University and after obtaining the respondent's approval to take part in the study. Data is processed using the SPSS21.0 for Windows program. Data analysis was using the *chi-square test* and *Fisher's exact*.



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### RESULTS

This research was conducted from July to August 2019 in 32 children under five years old who had fulfilled the inclusion criteria. The data was taken from the medical records at The Rachma Husada Hospital Bantul and then the children's parents filled out a questionnaire related to CHB.

Based on Table 1, the results show that the majority of the age of respondents in this study between the ages of 2 to 4 years with each number is 10 respondents with a percentage of 31.2%. In the sex indicator, it was found that 19 children had male sex (59.4%) and 13 children had female sex (40.6%).

Table 2 shows the degree of pneumonia in the majority of samples was severe pneumonia (81.3%).

From table 3, the indicators for families who are at risk of pneumonia are the study samples, the majority of which do not provide exclusive breastfeeding, do not wash hands with soap, do not use healthy latrines, do not eradicate mosquito larvae, do not eat fruits and vegetables every day, and smoke in the house. Table 4 shows that the category of CHB in the largest sample is the Intermediate category (50.0%),

**Table 1.** Characteristics of Respondents

No	Indicators	Frequency	(%)	
1	Age	1 y.o	1	3,1
		2 y.o	10	31,2
		3 y.o	10	31,2
		4 y.o	10	31,2
		5 y.o	1	3,1
2	Sex	Male	19	59,4
		Female	13	40,6

**Table 2.** Distribution of degree of pneumonia in children under five years old

No	Pneumonia	Frequency	(%)
1	Pneumonia	6	18,8
2	Severe Pneumonia	26	81,3



**Table 3.** Characteristics of CHB indicators (Kementerian Kesehatan RI, 2011)

No	Indicators	samples (N=32)			
		Yes	%	No	%
1	Labor is assisted by medical personnel	32	100	0	0,0
2	Give exclusive breastfeeding	14	43,8	18	56,3
3	Weigh every month	18	56,3	14	43,8
4	Use clean water	16	50,0	16	50,0
5	Washing hand	14	43,8	18	56,3
6	Use a healthy latrine	10	31,3	22	68,8
7	Eradicate mosquito larvae	6	18,8	26	81,3
8	Eat vegetables and fruit every day	11	34,4	21	65,5
9	Physical activity	16	50,0	16	50,0
10	Smoking in the house	25	78,1	7	21,9

**Table 4.** Frequency Distribution of CHB categories

CHB	Frequency	(%)
Primary	1	3,1
Intermediate	16	50,0
Purnama	12	37,5
Independent	3	9,4
Totals	32	100.0

**Table 5.** Relationship of the degree of pneumonia with CHB

CHB	Pneumonia				Totals	P
	Pneumonia		Severe Pneumonia			
	N	%	N	%		
Primary	0	0,0	1	100	1	100
Intermediate	0	0,0	16	100	16	100
Purnama	4	33,3	8	66,7	12	100
Independent	2	66,7	1	33,3	3	100

Based on table 5, the obtained CHB sample in the Primary and Intermediate categories all suffered from severe pneumonia. In the Purnama category, samples 66.7% suffered from severe pneumonia. Whereas in CHB 66.7% of the Independent category sample suffered from pneumonia. Statistical test results showed that there was a significant relationship between the degree of pneumonia with CHB ( $p = 0.01$ ).

## DISCUSSION

The results of this research, it was found that the degree of pneumonia in children under five years old was significantly related to CHB ( $p: 0.01$ ). This finding is in line with Sugihatono's research ( $p: 0.015$ ; OR: 3.121 CI95%: 1.225 - 7.957) and Domili ( $p: 0.05$ ), which states that CHB is a risk factor for several diseases including pneumonia. Children who live in environments with low CHB are more susceptible to pneumonia. It is caused by imperfect immunity and a relatively narrow respiratory tract (Rachmawati, 2013; Zairinayati, Ari Udiyono, 2013).

This study found that the majority of samples suffered from severe pneumonia (81.3%). These results are in line with Idris Handriana's study which states that a low CHB has a greater

proportion of pneumonia with retraction. This is due to the lack of exclusive breastfeeding in infants and respiratory air exposed to cigarette smoke. In the study, it was found that  $p$  value = 0.016, which means there is a relationship between CHB and the incidence of pneumonia in infants (Idris, 2018). While in this research, the cause of pneumonia was not only the lack of exclusive breastfeeding and breathing air exposed to cigarette smoke but the lack (56.3%) of maintaining cleanliness like washing hands before eating and after defecating. In addition, due to only half the study sample conducted physical activity (50.0%).

The results of this study the majority of the sample included in the Intermediate category (50.0%). The Associate category is included in the category of CHB that is lacking, so the risk of a toddler suffering from pneumonia is quite large. This is in line with Ratna Sulistyawati's research which states that toddlers who live with a low CHB have a 3.24 times greater risk of suffering from pneumonia than those who live with a good CHB with statistical test results showing there is a significant relationship between maternal CHB with the incidence of pneumonia ( $p: 0,0$ ; OR: 3,24) (Rachmawati, 2013; Sulistyowati, 2010).





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In this study it was found that the majority of sample family members were smokers (78.1%). This study is in line with the research of Dinda Rachma Anggraini, who found that there was a relationship between the presence of smokers and the incidence of pneumonia in infants. Children who live in one house with smokers have a risk 3.4 times greater than children who do not live in one house with smokers. Cigarette smoke is a pollutant in the living space and will increase the risk of illness from toxic materials in infants and will cause respiratory problems, especially increasing the risk of acute respiratory infections and lung disorders (Anggiani, 2016).

Other CHB factors, such as eradication of mosquito larvae around the house, were not carried out by the majority of the study sample (81.3%). An environment that does not make efforts to eradicate mosquito larvae will trigger the arrival of mosquitoes where mosquitoes are a source of disease and host of infectious diseases. Also, the use of clean water for daily activities such as bathing, cooking, and drinking water is only carried out by half of the study sample, so that it can cause bacteria to grow (Anggiani, 2016).

In this study, the majority of mothers did not provide exclusive breastfeeding (56.3%) due to a lack of knowledge about the benefits of exclusive breastfeeding. In addition, some mothers are not diligent in bringing their children to the *posyandu* to weigh their bodies so that mothers do not know that their children are experiencing poor or even poor nutrition. One of the factors that influence the emergence of pneumonia and the severity of the disease is the children's immune system. The immune system can be influenced by several things including: nutritional status, immunization status, exclusive breastfeeding and the age of the child. The poor nutritional

status will increase the susceptibility and severity of pneumonia infection. Exclusive breastfeeding can prevent pneumonia due to bacteria and viruses. While in this study the majority (65.5%) of the sample did not consume fruits and vegetables every day so that it could cause low nutritional status (Ningsih & Jonyanis, 2014).

In this study, the results were obtained that all research samples were assisted by the birth of medical staff. This is in line with Ratna Sulistyawati's research which states that all study samples were born by medical personnel (Rachmawati, 2013). Provisions for delivery must be assisted by medical personnel in accordance with government policies in the program of maintaining maternal health and reducing maternal mortality (Ningsih & Jonyanis, 2014). Labor that is not helped by medical personnel, there will likely be a large infection because the tools used to help deliver labor are not sterile, making it easier for bacteria to grow.

In this study, the majority of the study sample (68.8%) did not use healthy latrines. This is in line with Sulistyowati's research which states that not using healthy latrines can cause infections in children (Idris, 2018; Sulistyowati, 2010). This is due to the large number of bacteria that arise in latrines so that hygiene must always be considered.

## CONCLUSION

This research found that the highest degree of pneumonia in children under five years old was severe pneumonia, while the classification of the majority of CHB was the Intermediate category. There is a significant relationship between the degree of pneumonia in children and CHB.



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