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## RESEARCH ARTICLE

URL of this article: <http://heanoti.com/index.php/hn/article/view/hn20419>

# Study of Family Behavior that At Risk For Pneumonia in Under Five Children in Mempawah District

Ayu Diana Meilantika<sup>1(CA)</sup>, Suharyo Hadisaputro<sup>2</sup>, Maria Mexitalia<sup>3</sup>, Mateus Sakundarno<sup>4</sup>, Kamilah Budhi Rahardjani<sup>5</sup>

<sup>1(CA)</sup>Postgraduate School of Epidemiology, Diponegoro University, Indonesia; [dianaayu929@gmail.com](mailto:dianaayu929@gmail.com)  
(Corresponding Author)

<sup>2</sup>Postgraduate School of Epidemiology, Diponegoro University, Indonesia

<sup>3</sup>Dr. Kariadi Hospital Semarang, Indonesia

<sup>4</sup>Postgraduate School of Epidemiology, Diponegoro University, Indonesia

<sup>5</sup> Dr. Kariadi Hospital Semarang, Indonesia

## ABSTRACT

Pneumonia is respiratory infection disease which effects lungs and there are many cases on under five children. Prevalence period of pneumonia case in Mempawah district the fourth highest of 3.6% of other districts. The purpose of this study was to prove family behavior that are risk of pneumonia in under five children in Mempawah district. This study used case control design. Subject of the study was 100 respondents which consisted of 50 cases and 50 controls meeting the criteria of inclusion. This research use consecutive sampling techniques. Data analysis uses logistic regression. Data were analysed by logistic regression method. Result of analysis shows that history of not exclusive breastfeeding (OR=11.391; 95%CI: 3.087-42.028), habits of not opening room windows (OR= 9.528; 95%CI: 2.699-33.640), existence of pets (OR= 7.871; 95%CI: 2.381-26.019) dwelling density (OR=6.623; 95%CI=1.770-24.785) are proven as risk factors of pneumonia in under five children. Family behaviors as history of not exclusive breastfeeding, habits of not opening room windows, existence of pets, and dwelling density are proven as risk factors of pneumonia in under five children.

**Keywords:** Family behavior, Pneumonia, Under five children

## INTRODUCTION

Pneumonia is a form of acute respiratory infection that affects the lungs. Pneumonia or lung inflammation also occurs on children under the age of five<sup>(1)</sup>. The symptoms of pneumonia are cough, hard breathing, sore throat, cold, sore ear and fever<sup>(2)</sup>. The cause of pneumonia on children under five years old is mostly triggered by microorganisms such as virus or bacteria<sup>(3)</sup>.

The case of the primary mortality cause on children under five years old because of pneumonia in the world reaches 16%. The problems of pneumonia in the society with high mortality reaches 1.8 millions or approximately 90%<sup>(4)</sup>. The case of pneumonia in Indonesia becomes the third mortality cause on children under five years old as much as 9.4%. The number of the mortality of children under five years old and children reaches 40 and 9 mortality each per 1000 birth<sup>(5,6)</sup>. The mortality number of children under five years old in West Kalimantan Province is 37 per 1000 births. This number is below the national average of mortality number of children under five years old which is 40 per 1000 births<sup>(7)</sup>. Mempawah District places the second highest rank of pneumonia case which number of case is 848 cases (36.3%) after the city of Pontianak with 986 cases (17.6%)<sup>(8)</sup>. Pneumonia prevalence period in Mempawah District places the Fourth highest position, which is 3.6%<sup>(9)</sup>.

Sugihartono & Nurjazuli reported that under five children who consume breast milk without any additional food at less than six months have the risk of pneumonia (OR= 8.958; 95%CI: 2.843-28.232)<sup>(10)</sup>. Anwar and Dharmayanti study in Indonesia showed that under five children who live in a windowless-room house have the risk of suffering from pneumonia (OR= 1.17; 95%CI: 1.04-1.31)<sup>(11)</sup>. Mahalestari reported that under five children who live in densely populated area have the risk of suffering from pneumonia (OR= 4.38; 95%CI: 1.16-18.22)<sup>(12)</sup>.

Research study of family behavior on the case of pneumonia in under five children in Mempawah District is rarely conducted, therefore, a research is needed to know and to prove risk factor on the pneumonia case in under five children, in order to give proper prevention and countermeasures.

## METHODS

This case control study was conducted in Mempawah District, West Kalimantan, Indonesia from August to October 2017. The case used consecutive sampling technique, and the control used simple random sampling technique.

Subjects in this study was 100 respondents which consisted of 50 cases and 50 controls meet the criteria of inclusion. Respondents in this study were mothers of childrens who were agreed to participate in the study.

Respiratory frequency measurement for pneumonia in under five children uses ARI (Acute Respiratory Infection) Timer measurement tool. Respiratory frequency for the age of 2 months  $<1$  year respiratory rate  $\geq 50$ x/minute and the age of 1-5 years old  $\geq 40$ x/minute<sup>(13)</sup>. Measurement of nutritional status uses scale and refer to World Health Organization (WHO) standard, categorize for severe malnutrition the value of *z-score*  $< -3SD$ , underweight between  $-3SD$  until  $<-2SD$ , and normal between  $-2SD$  until  $2SD$ <sup>(14)</sup>.

Measurement of dwelling density and ventilation wide used roll meter. Data collection is also used by an interview using questionnaires. The validity and realibility of the questionnaires have been tested beforehand.

Data analysis uses Statistics program of IBM SPSS version 16 including univariate, bivariate, and multivariate analysis on the significant rate of *p* value  $\leq 0.05$ . Univariate analysis to describe frequency distribution of research subjects uses frequency distribution table. Bivariate analysis used for analyzing the relation of independent and dependent variable uses chi-square test. Multivariate analysis is used to select independent variable which will be inputted in logistic regression multivariate analysis.

This study was conducted after obtaining approval from the ethichal commission on Medical Faculty of Diponegoro University - Dr. Kariadi General Hopsital in Semarang, with Number 487/EC/FK-RSDK/2017.

## RESULTS

The characteristics of respondents gender in the group of case and control are mainly men (58%) and (54%). The distribution of children under five years old which is mainly in the group of case and control aged 1-5 years old is (76%) and (92%).

Table 1. Respondents Characteristics on Gender and Age of Under Five Children

Respondents Characteristics	Case		Control	
	n	(%)	N	(%)
Gender				
- Man	29	58.0	27	54.0
- Woman	21	42.0	23	46.0
Age of Children under five years old				
- 2 months-11 month	12	24.0	4	8.0
- 1-5 years old	38	76.0	46	92.0

Table 2. Bivariat Analysis Study Variable of Pneumonia Case at Under Five Children

Variables	Case		Control		OR	95%CI	p
	n	%	n	%			
History of exclusive breastfeeding							
- No	28	56.0	10	20.0	5.091	2.091-12.396	0.000
- Yes	22	44.0	40	80.0			
Dwelling density							
- Dense ( $<8m^2$ )	42	84.0	28	56.0	4.125	1.611-10.559	0.002
- Not dense ( $\geq 8m^2$ )	8	16.0	22	44.0			
Type of house floor							
- Not fill requirements	40	80.0	24	48.0	4.333	1.784-10.528	0.001
- Fill requirements	10	20.0	26	52.0			
Type of house wall							
- Not fill requirements	18	36.0	10	20.0	2.250	0.913-5.545	0.075*
- Fill requirements	32	64.0	40	80.0			
Habits of opening room window							
- No	31	62.0	9	18.0	7.433	2.962-18.653	0.000
- Yes	19	38.0	41	82.0			
Existence of pets							
- There is	37	74.0	14	28.0	7.319	3.025-17.705	0.000
- There is no	13	26.0	36	72.0			
Air pollution							
- Exposed	27	54.0	12	24.0	3.717	1.581-8.738	0.002
- Not exposed	23	46.0	38	76.0			

Table 2 showed variable which is proven as risk factor of pneumonia under five children and is included in multivariate analysis candidate is history of exclusive breastfeeding (OR = 5.091; 95%CI: 2.091-12.396), dwelling density (OR= 4.125; 95%CI: 1.611-10.559), type of house floor (OR= 4.333; 95%CI: 1.784-10.528), habits on opening room windows (OR= 7.433; 95%CI: 2.962-18.653), existence of pets (OR= 7.319; 95%CI:

3.025-17.705), air pollution (OR= 5.091; 95%CI: 2.091-12.396). Whereas variables which has no risk of pneumonia under five children are nutritional status, type of house wall, history of Vitamin A giving, ventilation wide and tradition of swidden agriculture which p value >0.05.

Table 3 showed variable which is proven as risk factor of pneumonia infection under five children which multiple logistic regression model is history of not exclusive breastfeeding (OR= 11.391; 95%CI: 3.087-42.028), habits of not opening room windows (OR= 9.528; 95%CI: 2.699-33.640), existence of pets (OR= 7.871; 95%CI: 2.381-26.019) and dwelling density (OR= 6.623; 95%CI: 1.770-24.785).

Table 3. Multiple Logistic Regression of Significant Variables of Pnuemonia

No.	Variables	OR	95% CI	p
1.	History of not exclusive breastfeeding	11.391	3.087-42.028	0.000
2.	Habits of not opening room windows	9.528	2.699-33640	0.000
3.	Existence of pets	7.871	2.381-26.019	0.001
4.	Dwelling Density	6.623	1.770-24.785	0.005
	Constanta	-4.227		

## DISCUSSION

The result of this study about family behavior study of pneumonia in under five children in Mempawah District show that the history of not getting exclusive breastfeeding, the habits of not opening room windows, the existence of pets, and dwelling density have been proven as risk factors of pneumonia.

This result shows that under five children who do not get exclusive breastfeeding have risks as many as 11.391 times to suffer from pneumonia compared to those who get exclusive breastfeeding. This study is in accordance with study conducted by Inayati ceria, which explains that under five children with not exclusive breastfeeding have the risk of suffering from pneumonia of 3.13 times compared to those who are given exclusive breastfeeding<sup>(15)</sup>. Exclusive breast milk contains antibody, nutrition, and hormone formation needed by children to survive and to grow up. Children who get exclusive breastfeeding can keep away from infection and rarely suffer from dangerous diseases<sup>(16)</sup>. Family behavior in giving supports on breastfeeding and counseling are very important to mothers in the practice of breastfeeding to children because breast milk has protection value towards infection of respiratory system as pneumonia<sup>(17)</sup>.

Family behavior which rarely or never opens room windows in the morning has effects on under five children who are inside the room. Under five children who are inside a room which window is never or rarely opened every morning by the member of the family have the risk as many as 9.528 times to suffer from pneumonia compared to those who are inside the room which window is opened by the member of the family in the morning. This research is in accordance with the study of Sartika, Setiani and Endah which explains that respondents who do not have the habit of opening windows in the morning until afternoon have the risk of 3.618 times bigger in getting infected by pneumonia compared to those who open windows in the morning until afternoon<sup>(18)</sup>. Opening windows in the morning and afternoon is very important for air circulation. Room windows are useless if they are always closed. Windows which are always closed will cause rooms to be stuffy and humid so it triggers microorganisms causing pneumonia proliferate<sup>(19)</sup>.

The result of this study shows that under five children whose house has pets has the risk of 7.871 times to suffer from pneumonia compared to those whose house does not have pets. This study in accordance with the research of Winardi, Umboh, and Rattu which explains that under five children whose house has pets have the risk chance of 7.091 times to suffer from pneumonia compared to those whose house does not have any pets<sup>(20)</sup>. Furred pets like dogs, cats, birds, and other mammal animals can become the source of allergens. The main cause is protein allergens found in animals' fur<sup>(21)</sup>. Family behavior which has pets mainly does not care about the hygiene of the pets, such as bathing the pets, so it makes it easy for the pets to transmit microorganisms to people who have contacts with them.

The result of this study shows that under five children who live in a dense dwelling have the risk as many as 6.623 times to suffer from pneumonia compared to those who live in the non dense dwellings. This study in accordance with the research of Zairinayati, Udiyono, and Hanani which explains that under five children who live in the house which density rate does not meet the requirements has the risk of pneumonia 4.591 times bigger than those who live in the house which density rate meets the requirements<sup>(22)</sup>. Dense dwelling makes it easy for a disease infection. The size of the small house with too many inhabitants and also the small number of rooms will enlarge the possibility of disease infection through direct contact and droplet<sup>(23)</sup>.

Seven be found variables has no risk of study family behavior toward pneumonia are nutritional status, type of house wall, type of floor, Vitamin A giving, ventilation wide, air pollution and tradition of swidden agriculture.

## CONCLUSION

Family behaviors that are a risks of pneumonia in under five children in this study are history of not exclusive breastfeeding, habits of not opening room windows, existence of pets, and dwelling density. The government strategy to reduce the incidence of pneumonia in under five children make in actions such as promotive, preventive at people have a children, along with partnerships, across programs and sectors in order to reduce the incidence of pneumonia.

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