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by Citra Anggun Kinanthi

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Determinants of Acute Respiratory Infections Among Child Under Five Years in Surabaya

Citra Anggun Kinanthi[1(CA)], Hari Basuki Notobroto[2], Santi Martini[3]

[1(CA)]Faculty of Public Health, Airlangga University, Indonesia; citra.anggun.k@gmail.com (Corresponding Author)
[2]Faculty of Public Health, Airlangga University, Indonesia; haribasuki_nb@yahoo.com
[3]Faculty of Public Health, Airlangga University, Indonesia; santi-m@fkm.unair.ac.id

ABSTRACT

Acute respiratory infection (ARI) are leading causes of mortality and morbidity in children under the age of five in developing countries. The incidence and prevalence of ARI are a great burden in low and middle-income countries in comparison to high income ARI. The main objective of the study was to identify determinants of acute respiratory infections among child under five years in Surabaya. This is a case-control study conducted in Public Health Center (Puskesmas) in Surabaya. Data were collected by interviewing community with 1: 1 sample that consists of 66 sample of the case and 66 sample of control. Result: 34.1% was age group <24 months, 14.4% was low birth weight, 57.6% was without exclusive breastfeeding, 22.7% was not measles immunization. The determinant of acute respiratory infections among child under five years was exclusive breastfeeding which the significant showed consecutively p=0.582 (OR=4.163). The Community education programs should focus on addressing specific issues to identify the respiratory illness, simple case management, proper immunization practices, breastfeeding of infants.

Keywords: Child under five years, Acute respiratory infections, Determinants

INTRODUCTION

Background

Child under five years is age groups that are prone to illness. Pneumonia, diarrhea, and malaria are the leading causes of under-five death globally[1]. In developing countries, 60% of cases of pneumonia are caused by bacteria and in developed countries generally caused by viruses.

Pneumonia is an acute infection affecting lung tissue (alveoli), and has symptoms of a cough, shortness of breath, rhonchi and infiltrates in X-rays. In people with pneumonia is often characterized by rapid breathing, this is because a person suffering from pneumonia decreased lung function. Rapid breathing is the body's reaction to avoid hypoxia because the lung's ability to thrive has diminished[2]. Severe pneumonia can have an impact on death. Death often occurs because patients come for treatment in severe/advanced condition, malnutrition and often accompanied by other diseases[3].

The risk factors for pneumonia are classified into definite risk factors, namely malnutrition, low birth weight (LBW), not exclusive breastfeeding, immunization status, indoor air pollution, occupancy density. The risk of almost certain risk factors (parents of smoking, cigarette deficiency), zinc deficiency, mother's experience in parenting and comorbidities (diarrhea and asthma). Possible risk factors include maternal education, humidity, cold air, altitude, vitamin A deficiency, birth help and outdoor air pollution[4],[5].

Purpose

The purpose of this study was to identify determinants of acute respiratory infections among child under five years in Surabaya.

METHODS

This research described analytic survey research with the case-control design. The study conducted in July to August 2017. The population of of this study was all children under five year in the work area of Tambakrejo, Sememi, and Pakis Health Center of Surabaya which stated positively pneumonia by health officer and recorded in the data of health center from January to June 2017. The sample consisted of case samples and control samples. Size of control sample : case sample = 1:1. A total of 132 samples taken proportionally at each health center. The sampling method used simple random sampling.

Data collection instrument was a questionnaire. The data had been processed step by step used frequency distribution based on the characteristics being studied from all research variables. Bivariate analysis used to know the correlation between two variables, independent variable, and dependent variable. The statistic test was the Chi-Square test. The correlation and significance were also assessed by looking at the value of p with the Confidence Interval of 95% and Odds Ratio (OR) generated to know the closeness of the correlation shared by the variables being studied.

RESULTS

The result of this study showed age group was 34.1% was age group <24 months, 14.4% was low birth weight, 57.6% was without exclusive breastfeeding, 22.7% was not measles immunization.

Table 1. Distribution of Exclusive breastfeeding in Surabaya

Exclusive breastfeeding	Frequency	Percentage
Non Exclusive breastfeeding	76	57.6
Exclusive breastfeeding	56	42.4
Total	132	100.00

Distribution of ARI occurrence of pneumonia according to age variable of the child under five years, Low Birth Weight, and exclusive breastfeeding status.

Based on the result of chi-square test of correlation between age group with pneumonia of child under five years, p-value (0.582) was not significant. OR = 1.224 with reliability 95% confidence level (CI = 0.595 - 2.518), so OR was not meaningful. This indicates that age group was not a risk factor for ARI of pneumonia of child under five years.

Exclusive breastfeeding	ARI Status				p-value	OR
	Pneumonia		Non pneumonia			
	n	%	n	%		
Non Exclusive breastfeeding	49	74.2	27	40.9	0.000	4.163
Exclusive breastfeeding	17	25.8	39	59.1		
Total	66	100	66	100		

Based on the chi-square test of correlation between exclusive breastfeeding of children under five with pneumonia, p-value (0.000) was significant. OR = 4.163 with reliability 95% confidence level (CI = 1.901 – 18.754). The risk of children under-five who are not exclusively breastfed at 4.163 times greater risk of pneumonia than the children who get exclusive breastfeeding. This shows exclusive breastfeeding is a risk factor for ARI pneumonia in children under five.

DISCUSSION

The result of this research can be concluded that there is no influence between age group and the incidence of ARI with pneumonia in children. The results of this study are in line with research conducted by Tambunan (2014) which states there is no effect of age children under five with the incidence of pneumonia in infants[6]. Anwar research (2014) using Riskesdas 2013 data states the age of children under five does not affect the incidence of pneumonia[7]. Children under five have a body defense mechanism that is still low compared to adults, so prone to infection. Children aged less than 2 years are more susceptible to pneumonia than children aged over 2 years, this is because children under the age of 2 years do not yet have perfect immunity[2].

There was no relationship between LBW with the incidence of ARI pneumonia in infants. This can be because most of the toddlers in the study location there is no history of LBW. These results are supported by research conducted by Tambunan (2014) which states there is no significant relationship between LBW and the incidence of pneumonia ISPA in infants[6].

Babies born with LBW will have a risk of death, malnutrition, growth disorders and developmental disorders of children. LBW infants increase the risk of infection and are susceptible to complications. Respiratory system disorders are one of the problems that often occur due to LBW[2].

A significant relationship between exclusive breastfeeding and the incidence of ARD pneumonia in infants. Breast milk or breast milk is an ideal food for babies because it meets the health requirements. Breast milk contains colostrum rich in antibodies. High protein content in breast milk can increase endurance and kill germs in high quantities. Exclusive breastfeeding can reduce the risk of death in infants. Breast milk columns are generated on the first day until the third day. The fourth to the tenth day contains immunoglobulins, proteins, and lactose, but contains more fat and calories. Breast milk contains food substances and also contains absorbent substances in the form of enzymes that will not interfere with enzymes in the intestine[2]. This research is in line with research conducted by Tambunan (2014). The study resulted in a significant association between exclusive breastfeeding of ARI incidence of pneumonia in infants[6]. Infants who receive exclusive breastfeeding will decrease the risk of infectious and digestive morbidity of the respiratory tract. If environmental hygiene is not good, the various anti-infective substances contained in breast milk can protect the baby from the infection.

CONCLUSION

The determinant of acute respiratory infections among child under five years was exclusive breastfeeding. The community education programs should focus on addressing specific issues to identify the respiratory illness, simple case management, proper immunization practices, breastfeeding of infants.

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