IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e- ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 7, Issue 3 Ver. VII (May-June .2018), PP 21-24
www.iosrjournals.org

Relationship between Unhealthy Homes with the Incidence of Acute Respiratory Infections (Ari)

Astri Atti[1], Dominirsep O. Dodo[2], And Sintha L. Purimahua[3]
[1]*Faculty of Science dan Technology, University of Nusa Cendana*
[2,3]*Faculty of Public HealthUniversity of Nusa Cendana*
Corresponding Author: Astri Atti

Abstract: *A healthy home is essential because the unhealthy one can disrupt the health of the residents and increase the risk of various diseases. The primary determinant of ARI vulnerability is the high percentage of unhealthy home. Thus home hygiene is a risk factor for ARI in toddlers. This study aims to observe the relationship between the unhealthy homes and the incidence of ARI in infants and toddlers. Given the positive correlation (0.621) and significant relationship (p-value 0.002) between the unhealthy home and ARI incidence, it can be interpreted that the incidence of ARI will increase by increasing number of unhealthy home.*

Keywords: *unhealthy home, acute respiratory infections(ARI)*

Date of Submission: 25-05-2018 Date of acceptance: 09-06-2018

I. Introduction

Home is a vital shelter for everyone's life. Healthy and livable home do not have to be a big and luxurious, but a simple home can also be a healthy and decent home. Healthy homes should meet physiological needs, meet psychological needs, prevent disease transmission, prevent accidents and fires (Ministry of Health RI 1999). The results of segmentation analysis of CHAID indicate that head of household who have homes with not livable qualities are those who have primary school down and live in rural areas (Atti and Dominirsep, 2018)

Community support is required in the toilet hygiene management at home to create a home that complies with the standards of a healthy home, so that will improve the health status of the community (Studyanto,2018). Based on Bloom's theory of the healthy-pain concept, four components determine the health of an individual, among them is the environmental aspect (Notoatmodjo S., 2007). The main component that becomes the parameters of decent shelter is health. A healthyhome is a place for shelter and rest and also a medium of family development that grows life physically, mentally, and socially, so that all family members can work productively (Kemenkes RI, 2014). The condition of a healthy home is essential, because the unhealthy home causes the health of its inhabitants disturbed. Indirectly an unhealthy home can increase the risk of occupants infected with various diseases (Gustiet al., 2016).

Priority areas in the management of ARI casesconsist of ten regencies, the primary determinants of ARI vulnerability are the high percentage of unhealthy home and the percentage of households who do not live clean and healthy (PHBS). Thus, home hygiene is a risk factor for the incidence of ARI in children under five (Atti and Shinta, 2014).

An acute respiratory infection (ARI) is the leading cause of morbidity and mortality in children worldwide. The 6-23 months age group is the most vulnerable age group to have ARI (FillatreA.aet al., 2018; Wantania, 2008; Wright, C.Y et al.2018). Mortality rates are also very high in infants, children, and older adults, especially in countries with low and middle income per capita (WHO, 2004).

ARI is caused by viruses or bacteria. Pneumonia is an acute infection affecting lung tissue (alveoli). The disease begins with feveraccompanied by one or more symptoms: a sore throat or pain during swallowing, runny nose, dry cough or phlegm. Based on data from WHO and the Ministry of Health of the Republic of Indonesia in 2008, pneumonia which is one type of ARI is the cause of the most deaths of children under five in the world and also in Indonesia (Nasution et al., 2009). Nearly four million people die from ARI each year, 98% of them are caused by lower respiratory tract infections. Similarly, ARI is one of the leading causes of consultation or hospitalization in health care facilities, especially in the care of children (Berman S., 1991).

One effort to reduce the under-five mortality rate is to reduce the mortality rate of children under five due to pneumonia which is the main cause of death in infants in the world (Ministry of Health RI, 2010). Based on the results of Riskesdas 2007, Nusa Tenggara Timur (NTT) is a province that has the highest prevalence of ARI. In this ARI program, estimated from the number of children under five, there will be 10% of patients with

ARI in toddlers. The Regency Health Care Profile Report of NTT Province shows that the coverage of ARI findings and treatment of children under five years experienced fluctuation from 2011 to 2015. In 2011, there were 7.048 cases, in 2012 it increased to 8,554 cases. It means that only (19.2%) of the target reached. Subsequently, in 2013, it increased to 45,928 cases (26.42%), in 2014 decreased by about 50% to 3,714 (13%), while in 2015 to 3,757 (6.03%) (BPS, 2015).

In the NTT Province, ARI is the most common disease infecting the infants and toddlers for several years. Description of the number of cases of 10 most diseases in 2015 is presented in Table 1 below:

Tabel 1. The Pattern of 10 Most diseases in Puskesmas in outpatient care of Nusa Tenggara Timur Province, 2015

No	The Type of Disease	The Number of Visits	%
1	ARI	359.315	44.51
2	Acute rheumatoid arthritis	28.387	3.52
3	Acute Gastritis	53.676	6.65
4	Allergic Skin Disease	29.746	3.68
5	Myalgia	102.267	12.67
6	Diarhea	98.918	12.25
7	High blood pressure disease	39.344	4.87
8	Skin infection disease	28.751	3.56
9	Intestinal infections	30.795	3.81
10	Clinical malaria	36.128	4.48
TOTAL		807.327	100,00

Source: Regency Health Profile of 2015

Inadequate ventilation can endanger the health, especially the respiratory tract health. Inadequate ventilation can increase exposure to smoke. Also, moisture is also strongly associated with ventilation. Humid homes allow rats, cockroaches, respiratory viruses, and fungi to breed all of which can play a role in the pathogenesis of respiratory diseases. Humidity, temperature, and fungi are associated with respiratory and asthma symptoms, although potential confounding factors such as social class, cigarette smoke,and occupant density have been controlled (Krieger and Higgins, 2002).

II. Materials and Method

The data used were obtained from BPS collection in the form of data of Health Profile of NTT in 2015 concerning the number of ARI cases in infants and number of unhealthy homes in each regency/municipality in NTT Province. Data were analyzed using bivariate analysis method that is a correlation analysis to see the relation between the unhealthy home and the ARI cases incidence variable. The correlation value is between -1 to +1 ($-1 \leq r \leq +1$).

Conclusion about the correlation is based on the size of the correlation (r) according to Sarwono (2006), namely:
r = 0, There is no correlation between the two variables
$0 < r < 0.25$, Correlation is very weak
$0.25 \leq r < 0.5$, The correlation is quite strong
$0.5 \leq r < 0.75$, Strong correlation
0.75 r <0.99, The correlation is very strong
r = 1, Perfect correlation

Besides based on correlation value, the conclusion can also be based on the significance value of the hypothesis stating that (Sarwono, 2006):
H_0 = No relationship (correlation) between two variables
H_1 = There is a correlation between two variables

The decisions are made based on the probability of using criteria: If the probability is> 0.05 (or the value of predefined α), then H_0 is accepted. If the probability is ≤ 0.05, then $H_0$is rejected. It means there is a significant relationship between the two variables.

III. Result and Analysis

3.1 Correlations: Unhealthy Home, ARI

Pearson correlation of unhealthy home and ARI = 0.621P-Value = 0.002

From the analysis result, the correlation of Pearson between the variable of unhealthy home and ARI incidence is 0.621 which can be categorized as there is a strong positive correlation between the two variables. Also, the significance test showed a result of 0.002 which means the relationship of both variables is significant. Given the positive correlation and significant relationship between unhealthy home and ARI

incidence, it can be interpreted that the incidence of ARI will increase along with the increasing number of unhealthy home.

The results of this study are supported by several earlier studies such as Sulistyowati (2010) who found that toddlers who live in the unhealthyhome have 6.8 times greater risk for pneumonia than toddlers who live in the healthyhome. The magnitude of risk for ARI incidence in under-fives who occupy home with ineligible ventilation is 2.789 times greater than in children under five who occupy well-ventilated homes (Anomet al., 2006).

Home hygiene is one of the factors that affect the health of its inhabitants, especially in children under five (Keman, 2005). Multiple logistic regression statistic testsshow there is the influence of home hygiene to ARI incidence in children under five. The risk ofARI incidence in children under five who occupy an unclean home is 10,264 times bigger than children under five who occupy clean home (Anomet al., 2006). The results of this study in tune with the results of research conducted by Budiningsih (1991) and Kartasasmita (1993).

Several studies have been conducted to look at factors affecting the high prevalence of ARI including The Department of Health of Republic of Indonesia's research in 2002. The study showed that risk factors related to the prevalence of ARI were the smoke pollutant from factories and the homelocated in flood-prone areas (Muluki, 2003).

Air pollution in the home usually comes from kitchen smoke, cigarette smoke, and mosquito repellent smoke. These three air pollutants when in the home can be a risk factor for ARI incidence in children under five (Prasastiet al.,2005). Children exposed to cigarette smoke increased the risk of developing pneumonia more than threefold (Gutierrez-Ramirez et al., 2009).

IV. Conclusion

Given the positive correlation (0.621) and significant relationship (p-value 0.002) between unhealthy home and ARI incidence, it can be interpreted that the incidence of ARI will increase with increasing number of unhealthy home.

V. Recommendation

It is suggested to the government concerned, in this case, the Health Office, to provide socialization to the public about the need to maintain the cleanliness of the home and the surrounding environment.

VI. Acknowledgment

Thanks to the Faculty of Science and Engineering University of Nusa Cendana and the Ministry of Research and Technology of the Republic of Indonesia for the grant of this research.

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