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Sulaiman Samad

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RELATIONSHIP ANALYSIS OF PHYSICAL ENVIRONMENTAL HEALTH CONDITIONS WITH THE EVENT OF UPPER RESPIRATORY TRACT INFECTION (URI) MAROS DISTRICT

Fitriani Kahar[1], Gufran Darma Dirawan[2], Sulaiman Samad[3], Nurul Qomariyah[4], Devi Etivia Purlinda[5]

[1,4,5] Lecturer of Educational Science of Politeknik Kesehatan Kemenkes Semarang
[2] Professor of Environmental Science of Universitas Negeri Makassar
[3] Lecturer of Educational Science of Universitas Negeri Makassar
Email: [1]fitrianikahar888@gmail.com

ABSTRACT

Upper Respiratory Tract Infection (URI) is an acute respiratory disease with a variety of symptoms (syndromes). Research shows that the risk factors for URI in infants are the lack of exclusive breastfeeding, poor nutrition, LBW indoor air pollution, population density and lack of measles immunization (The Ministry of Health of Indonesia, Director General of Disease Control and Environmental Health, 2012). As one of the causes of indoor air pollution, smoking is also one of the factors that influence the incidence of URI in children. This study was conducted to determine the relationship between the physical health conditions of the home environment and the incidence of URI in children aged 1-15 years at the Tompobulu Health Centre, Maros Regency. This research uses quantitative methods with cross-sectional study design. The study was conducted to see the health conditions of the physical environment of the house with the incidence of URI in children aged 1-15 years at the Tompobulu Public Health Center, Maros Regency. This study used quantitative methods with a cross sectional study design. The number of samples was 50 respondents and provided *Informed Concent* to respondents. Respondents were parents of children suspected of having URI. The results showed that there was a relationship between ventilation (p = 0.003), families who smoked (p = 0.006), house cleanliness (p = 0.027), while found vURIables that did not have a relationship between floor types (p = 0.088), clean water facilities (p = 0.524), latrine ownership (p = 0.684), with URI occurrence in children aged 1-15 years at the Tompobulu Health Centre, Maros Regency. It is recommended for people in Tompobulu Sub-District of Maros Regency to implement a clean and healthy lifestyle, maintain cleanliness of the house and the surrounding environment, not throw garbage anywhere, and expect residents to be able to stop smoking, not smoking near children and not smoking in the house in an effort prevention of URI. The participation of Tompobulu Health Centre health workers is pursued to educate the public to prevent the number of people suffering from URI. To the Government to be able to put the improvement of environmental sanitation facilities as a priority in health development efforts and make comprehensive policies in realizing healthy homes in the community, because healthy homes are inseparable from the availability of related infrastructure and facilities, such as clean water supply, sanitation, garbage disposal and latrines, and the availability of social services.

Keywords
Environmental Health Conditions, Physical Home, Upper Respiratory Tract Infection

INTRODUCTION

Health development is one of the efforts of national development to achieve awareness and ability to live a healthy life for the whole community in order to achieve optimal health status in Law of Republic of Indonesia No. 19 of 2003. One of the biggest challenges in achieving this is the incidence of acute respiratory infections (URI). URI is a significant cause of illness and death due to infectious diseases in the world, especially in infants. It is because URI can be transmitted quickly and often has a significant impact on public health. WHO records that around four million people die each year due to URI and URI is a significant cause of mortality in children under five in the world (WHO, 2007).

Acute Respiratory Infections are also a problem in developed and developing countries. According to a report from the International Vaccine Access CenterAt The Johns Hopkins University Bloomberg School Of Public Health in November 2010, pneumonia is the leading killer of children under the age of five in the world. Pneumonia is the number one cause of death in India, number two in Nigeria and number eight in Indonesia. More than 2 (two) million children under five from 9 (nine) million deaths under five in the world die every year due to pneumonia, or the same as 4 (four) children under five die every minute.

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URI is an acute respiratory disease with symptoms characterized by a runny nose, cough, fever, hoarseness, and mucus and mucus that lasts up to 14 days (Ministry of Health RI, 2007). This disease generally occurs in children and toddlers, but even adults who have a maximum level of immunity can be infected with URI (Kawakami, 2000). URI is a disease that is quite common in children under 5 years, about 50% cases of disease that occur in children. 30% of children aged 5-12 years suffer from URI. In general, this disease affects the upper respiratory tract and lower respiratory tract. The mortality rate in developing countries is as much as 20% with 1/3-1/2 being deaths that occur in children under five (Wantania, 2010).

The house is one part of the environment is very influential in the occurrence of a disease. The home environment holds a significant contribution to the incidence of URI. As a risk factor for URI, indoor air pollution is strongly influenced by the home environment. Indoor air quality is greatly influenced by several factors such as ceiling, ventilation, occupancy density, and humidity (Regulation of the Minister of Health RI No.1077 Tahun 2011).

A right house is a building for shelter and rest as well as a means of family coaching that fosters healthy living physically, mentally and socially, so that all family members can work productively. Therefore, the existence of healthy, safe, harmonious and orderly housing is essential so that the function and use of the house can be adequately fulfilled. Factors that can affect the incidence of URI disease are the environmental conditions of the house with components including the physical conditions of the house such as temperature, temperature, floor ventilation, walls, ceilings, roof lighting, and use of windows (Notoatmodjo, 2010).

A house without windows or having windows that are not opened will prevent polluted air from escaping. Air pollution is thought to often appear as carbon monoxide (CO), which in large quantities can be the cause of respiratory problems (Ministry of Health RI, 2012). In addition, the use of bad walls will also have a negative impact on the health of the occupants. The walls of the house must be made of strong materials that are waterproof and fire resistant such as masonry. Walls made of bamboo or wood are quite good because they are resistant to all weather, but if the construction is not good it can cause disease (Achmadi, 2008).

There is a term URI due to pollution in URI disease. URI caused by air pollution factors, namely cigarette smoke, household combustion smoke, transportation and industrial exhaust gases, as well as forest fires and others (Rudan et all, 2008). The impact of smoking is not only threatening the smoker but also passive smokers, namely the people who are around the smoker. The results of the report from the Environmental Protection Agency (EPA) in 2008 recorded that no less than 300,000 children aged 1-5 years suffered from bronchitis and pneumonia because they inhaled cigarette smoke exhaled by people around them, especially their father and mother. The population that is often exposed to cigarette smoke is toddlers and children because they breathe air more often than adults. Children also have weak organs which make it easier for health problems to occur so that if they are exposed to food it will cause problems with organ development that are not in accordance with what they should be (Ministry of Health RI, 2009).

Exposure to cigarette smoke in active smokers, passive smokers and non-smokers can cause various health problems, including URI and respiratory problems in infants. It is because 60 toxic substances contained in cigarette smoke are known to be carcinogens. There is no safe level of exposure to cigarette smoke exposure (WHO, 2011).

One of the age groups who are also exposed to cigarette smoke, toddlers are also often called passive smokers (second-hand smoker). Second-hand smoke is a combination of cigarette smoke produced from burning cigarettes and cigarette smoke that comes out of the respiration of active smokers. According to WHO, second-hand smoke is more dangerous because it contains thousands of chemicals and at least 250 of them are known as carcinogenic and toxic substances and are very influential on the health and development of infants (WHO, 2007).

Research shows that risk factors for URI in infants are the lack of breastfeeding, poor nutrition, indoor air pollution, LBW, population density, and lack of measles immunization (Minister of Health of Republic of Indonesia, Director General of Disease Control and Environmental Health, 2012). As one of the causes of indoor air pollution, smoking is also one of the factors that influence URI in infants (Ismaya, 2007).

The results of the research by Nindya and Sulistiorini (2005) which compared the relationship between physical house sanitation and URI in three areas, namely Tual Maluku Village, Sidomulyo Sidoarjo Village, and Penjaringan Sari Rungkut Surabaya, which showed that ventilation is the dominant house sanitation that affects the incidence. URI. Likewise, research by Otaviani et al (2010) in South Sumatra showed that there was a relationship between community behavior such as family knowledge about URI to the incidence of URI disease. Related to this, the same result was also mentioned by Yuslinda (2017) who stated that there was a significant relationship between the physical condition of the house and the incidence of URI with a $p = 0.016$.

Until now, URI is still a global health problem. It can be seen from the high morbidity and mortality rate due to URI. Death due to URI in infants reaches 12.4 million in infants aged 0-4 years every year around the world, where two-thirds are babies, namely 0-1 years age group and as much as 80.3% of these deaths occur in developing countries

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(WHO, 2007). Referring to the results of an international conference on URI in Canberra, Australia in 1997 which found that four million infants and toddlers die each year due to URI in developing countries (Mas'udatul Isnaini, Reni Zulfitri, Misrawati, 2012).

In Indonesia, the number of children under five with URI in 2007 was around 477,429 children registered from 31 provinces in Indonesia. It shows that 21.52% of the total number of children under five registered in Indonesia in 2007 suffered from URI. In South Sulawesi, 82,262 people were suffering from URI and 14,265 infants suffering from URI in 2014 (South Sulawesi Health Profile, 2014).

Ministry of Health of Indonesia (2012), the prevalence of URI found in Indonesia was 25.5%. Every year the child mortality rate of 1-12 years due to URI reaches 10%. The characteristics of the population with the highest URI occur in the age group 1-12 years because ages 1-12 years are groups of people who are vulnerable to disease.

South Sulawesi Provincial Health Office data, in 2014 the number of URI children 1-12 years old was 7,466 people, in 2015 the number of URI children 1-12 years old was 6,289, in 2016 there were 4,984 people (South Sulawesi Health Office, 2014).

Data on the number of children aged 1-12 years Makassar City in 2014 were 10,420 people, with URI 4,250 people (40.8%), in 2015 it was 9,340 people, URI were 2,101 people (22.5%), while in 2015 it was 2016 as many as 11,150 people, 3,105 people with URI (28%) (Makassar City Health Office, 2013).

In Maros Regency, 11,959 people were suffering from URI. As one of the society health in the Maros Regency, in the Tompobulu Puskesmas, there are 1,486 children under five with URI about 56 people or about 16.1% of the number of children under five in Tompobulu District (Maros District Health Profile, 2016).

Based on the background of the description above, the problem formulation is to look at the relationship between the health condition of the physical environment of the house and the incidence of URI in children aged 1-15 years at the Tompobulu Health Centre, Maros Regency.

This study aims to determine the relationship of health conditions in the physical environment of the home with the incidence of URI in children aged 1-15 years old in the working area of Tompobulu Health Centre, Maros Regency, while the specific objectives are:

1. To know the characteristics of respondents suffering from URI in the working area of the Tompobulu Community Health Centre, Maros Regency.
2. To find out the description of the health condition of the physical environment of the homes of respondents with URI and non-URI sufferers in Tompobulu District, Maros Regency.
3. To find out the relationship between the health condition of the physical environment of the house and the incidence of URI in the working area of the Tompobulu Community Health Centre, Maros Regency.

RESEARCH METHODS

This study is an analytic study, with a cross-sectional study design that aims to determine the relationship of the health conditions of the physical environment of the house with the incidence of URI in children aged 1-15 in the working area of Tompobulu Health Centre, Maros Regency. The sampling used to interview and observation guidelines on the physical condition of the house directly.

This study used quantitative methods with a cross sectional study design. The population in this study were all children who visited the Tompobulu Community Health Centre with symptoms of URI. The number of samples in this study was 50 samples with *purposive sampling* criteria and provided *Informed Concent* to respondents. Respondents were parents of children suspected of having URI because children with the age criteria below 5 years cannot become respondents.

Primary data obtained was the direct observation in the field, interviews directly to respondents. After being collected, the data obtained then analysed by univariate analysis and bivariate analysis. Univariate analysis was performed to find out a general description of the characteristics of respondents and each variable used in the study. While bivariate analysis is used to see the relationship between the dependent variable and the independent variable using the chi-square test with CI = 95% and $\alpha = 0.05$. Next, the table is presented in the form of a frequency distribution table and a cross tab accompanied by narration.

RESULTS AND DISCUSSION

Univariate analysis

The results obtained from the characteristics of respondents and house characteristics are described in the table below:

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Table 1 Table of the frequency distribution of URI in Tompobulu Public Health Centre, Maros Regency

No	Characteristics of Respondents	Frequency	Percent (%)
1	**URI**		
	1. URI	43	86
	2. No URI	7	14
	Total	**50**	**100**
2	**Gender**		
	1. Male	23	46
	2. Female	27	54
	Total	**50**	**100**
3	**Age**		
	1. 1-5 years old	31	62
	2. 6-10 years old	15	30
	3. 11-15 years old	4	8
	Total	**50**	**100**

The table 1 above shows that the number of children suffering from URI is 43 people (86%) while the number of children who do not suffer from URI is seven people (14%). For the child sex variable, as many as 23 people (46%) are male while the female sex is 27 people (54%). For the age variable, as many as 31 people (62%) of respondents were aged between 1-5 years, and as many as 15 respondents (30%) were aged 6-10 years, and as many as four respondents (8%) were aged 11-15 years.

Bivariate analysis

Bivariate analysis was carried out to determine the relationship between the physical condition of the home environment with the incidence of URI in children aged 1-15 years. The results obtained are as follows:

Table 2 Table of the relationship between physical health conditions of the home environment with the incidence of URI in children of 1-15 years in the working area of Tompobulu Health Centre, Maros Regency

Physical Environmental Conditions of the House	Category		Total	P
Ventilation	**URI**	**No URI**		
a. Qualified	8	5	13	
b. Not Qualified	35	2	37	0,003
Total	**43**	**7**	**50**	
Kind of Floor	**URI**	**No URI**		
a. Qualified	21	1	22	
b. Not Qualified	22	6	28	0,088
Total	**43**	**7**	**50**	
The family member who smokes	**URI**	**No URI**		
a. Qualified	9	5	14	
b. Not Qualified	34	2	36	0,006
Total	**43**	**7**	**50**	
House Cleaning	**URI**	**No URI**		
a. Clear	8	4	12	
b. Not Clear	35	3	38	0,027
Total	**43**	**7**	**50**	
Water Hygiene	**URI**	**No URI**		
a. Clear	19	4	23	
b. Not Clear	24	3	27	0,524
Total	**43**	**7**	**50**	
Latrine	**URI**	**No URI**		
a. There is a healthy Latrine	22	3	25	
b. There is a not healthy Latrine	21	4	25	0,684
Total	**43**	**7**	**50**	

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In the table 2 above, it can be seen that the ventilation of the house has met the requirements of 13 houses, while those that did not meet the requirements of 37 houses. The variable type of floor as many as 22 houses that meet the requirements, then some those who do not meet the requirements of 28 houses. Regarding family members who smoke, as many as 14 houses whose family members do not smoke, while houses with family members who smoke as many as 36 houses. For the variable of house hygiene, as many as 12 houses with clean criteria, while there are 38 houses with unclean criteria. Regarding the use of clean water, 23 houses use water hygiene and 27 houses that do not use clean water. As for the existence of latrines, there are 25 houses each that have healthy latrines and do not have healthy latrines.

Figure 1 Households with children with URI disease

Figure 1 shows the condition of the house of the URI patient. It appears that the house is not healthy with the criteria for the condition of the floor from the ground, inadequate ventilation, the condition of the house is less clean, and there are family members who smoke. This is the cause of URI in children.

Figure 2. Residents' Home Pages

Figure 2 shows the condition of the yard around the population. You can see that there are still livestock in the yard of the residents' houses. Existing livestock manure will be a source of both soil and air pollution and cause a foul odor. Even the cattle stables are usually behind the house. This does not meet the health requirements.

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The relationship between ventilation and URI in children

Most house ventilation has almost the same area. Although there are differences, the difference is not significant in every ventilation.

Based on the research conducted, it was found that there was a significant relationship between ventilation and the incidence of URI in children with a p value <0.05 (p = 0.003). This study is in line with Ardianto's research (2012) which found that there is a significant relationship between the area of ventilation and the incidence of URI with a value (p = 0.001 OR = 19.892) which means that respondents with a ventilation area who do not meet the requirements will be at risk of developing URI 19,892 times compared to living with ineligible ventilation. Suryani (2015) also stated that there was a weak relationship between ventilation and the incidence of URI in children under five (p = 0.000, Cc = 0.359). The coefficient of contingency (Cc) shows the degree of association with the incidence of URI in children under five. Likewise, the results of research conducted by Oktaviani (2009)in Boyolali Regency and Yusuf and Sulistyorini (2005) in Rungkut District, Surabaya City. Rahmayatul's research (2013) and Diana's (2012) research in Lingga (2014) also found a significant relationship between ventilation of URI incidence in toddlers. The ventilation in the house has a function as a path for air circulation or air exchange in the house because it will cause respiratory health problems for the occupants. According to the Regulation of the Minister of Health of the Republic of Indonesia No. 1077 / MENKES / PER / V / 2011, stipulates that ventilation is said to meet health requirements if the area of ventilation is at least 10% of the floor area.

Good ventilation is ventilation that is placed in a cross (across) such as in the north and south of the house or the left and right sides of the house. This aims to flow the air in a cross (cross ventilation) so that the indoor air fight can occur properly and the air in the house has good quality (Ismaya dkk, 2007). Ardianto (2012) states that if the ventilation does not meet the requirements, it will pose a health risk if air pollution occurs in the room by microorganisms in the form of bacteria, fungi, viruses, and various chemical substances. In addition there are also other disorders such as reduced levels of oxygen and an increase in carbon monoxide (Howard, 2005).

Besides ventilation can also be a medium for sunlight into the room. Apart from being useful for lighting, sunlight can also reduce room humidity, repel mosquitoes, kill germs that cause certain diseases such as tuberculosis, influenza, pneumonia and others. Ventilation that meets the requirements is very important because the speed of blood flow will run well and accelerate the process of cleaning the air in the house (Ardianto, 2012).

The results of this study are also in line with Marianta's research DIM (2013), which is based on the results of research analysis using the Chi-square test, the value of p = 0.0263 which is smaller than the value ($\propto$ = 0.05), it can be seen that there is a significant relationship between house ventilation and URI in toddlers in Tanjung Mulia village, Pagar Merbau District, Deli Serdang Regency. But this result is not in line with Sinaga's (2012) study in North Jakarta which states that houses with ventilation that meet the criteria suffer more from URI (75.2%) than houses with inadequate ventilation criteria (77.7%). Likewise, Agungnisa (2019) states that the area of ventilation has no effect on the incidence of URI. This is because the measurement of the ventilation area is less specific.

Based on the theory of Notoatmojo (2003) states that home ventilation that does not comply with health requirements will affect the health conditions of the occupants. This is because the cycle of air exchange from inside and outside the house is not smooth, which causes the bacteria that cause URI in the house to not get out. This theory supports the results of this research.

It is also important to pay attention to the habit of opening windows. Suryani's research results (2015) show that there is a significant relationship with the habit of opening house windows and the incidence of URI in toddlers with a value of p = 0.001. The risk of URI incidence in children under five is higher in houses with windows that are rarely or never opened (91.7%) compared to windows that are always opened (57.1%). The window of the house acts as a ventilator, is a place for the exit and entry of air and also functions as lighting. Ventilation greatly affects air quality, but ventilation will not work if the vent in the form of a window is never opened. Non-functioning ventilation will affect the humidity and temperature in the room. Maryani (2012) states that there is a relationship between humidity and the incidence of URI. If the indoor air humidity (<40% or >70%) will cause it to look wet and will facilitate disease transmission (Elioth, 2008). Temperatures that do not meet the requirements will be a trigger factor for URI because high temperatures are factors that facilitate the occurrence of URI. The air temperature that meets the criteria is in the range 18º - 30º C. The absence of air circulation causes hot air, pathogenic microorganisms, and other pollutants in the room to not come out which ultimately has an impact on increasing the concentration of microorganisms so that residents of the house become susceptible to URI (Raj K et all, 2008); (Moeller, 2005). Suharno (2019) states that poor air quality will cause various diseases, especially respiratory diseases.

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Relationship between Floor Type and URI Occurrence in Children

The results of this study indicate that most of the houses already have a floor that meets the requirements. The majoriy of the house floor in the sample is made of cement. Moreover, a small portion is made of tiles and boards.

The results of statistical tests conducted, obtained p value > 0.05 (0.088), and it can be concluded that there is no significant relationship between kind of floor with the incidence of URI in children. It can occur because the type of flooring in the house meets the requirements.

According to Putri (2013) found that the factors that influence the incidence of URI in children are not the type of floor, but the cleanliness of the floor of the house and it depends on the level of dust on the floor of the house. Ardianto (2012) also stated that the type of floor did not affect the incidence of URI in factory workers, but the dominant factors that influenced the incidence of URI were smoking and ventilation. Yusuf (2016) states that the type of floor does not have a direct role in the process of URI transmission because URI is a disease with airbone transmitted disease.

While different results were found by Oktaviani (2009) who stated that there was a significant relationship between the floor of the house and the incidence of URI. This is because the floor made of cement and soil during the dry season will produce dust and become damp, which can lead to URI disease. Likewise, the research of Suharno (2019) and Pangemanan (2016) which states that the type of floor affects the incidence of URI.

According to the Director General of Communicable Disease Control and Environmental Health (2002), state that the floor that meets the requirements is a floor that is dry and not damp and is made of waterproof material, easy to clean and does not produce dust. Notoatmodjo (2003) states that humidity, roof walls, type of floor and occupancy density should be cleaned regularly and still maintain the cleanliness of the house conditions to prevent various respiratory diseases.

Relationship between smoking family members and URI in children

The results found that smoking activity in the two sample groups carried out in the majority of the house was not throughout the day. In this study found that people who smoke near the majority of male parents.

The results of statistical tests carried out showed a p-value <0.05 (0.006) which can be concluded that there is a significant relationship between smoking habits of close family members of children and the incidence of URI in children.

The habit of smoking close to children under five until 15 years old has a significant influence on the health and respiratory system of toddlers. It is due to the respiratory tract of toddlers who are still in the stage of development and very vulnerable. So that the closer the distance of cigarette smoke exposure to children, the more tar (tobacco residue) levels are inhaled, resulting in interference with the child's respiratory system. Moreover, as passive smokers, toddlers have a higher risk of respiratory distress than active smokers. This is consistent with research by Ardianto (2012) which states that smoking is the most dominant factor in influencing the incidence of URI. This study is also in line with research by Lingga (2014) which found that there was a relationship between smoking near toddlers and p value <0.05 (0.001). Smoking habit is one of the predisposing factors that can make it easier to contract URI disease. A family member with URI who lives in the same house as a smoker will increase the number of people with URI (Yudhastuti, 2008).

This study is also in line with the research of Mas'udatul Isnaini, Reni Zulfitri, Misrawati (2012), which is based on the results of the Chi-square statistical test with a significance level of 95% obtained PV (0.023) <α (0.05), so it can be concluded that Ho is rejected, where there is significant influence between family smoking habits at home on the incidence of URI. Suryani (2015) also states that there is a relationship between smoking habits and the incidence of URI in toddlers. with (p = 0.002, Cc = 0.302). This indicates a weak relationship. The same is true of Darwel's (2007) research results in Padang City and Trisnawati and Juwarni tahun 2012 in Purbalingga Regency. But it is not the same as Sinaga's research (2012) in North Jakarta. Furthermore, Ardianto (2012) states that smoking habits will have an influence on the incidence of URI. It is stated that the smoking habit will have a risk of URI 45.90 times higher than those who do not smoke (Ardianto, 2012). Environmental factors and smoking habits are factors that trigger the risk of URI, considering that the incidence of URI in smokers is in the high category (Yudhastuti, 2008).

The presence of cigarette smoke from families who live with children is an air pollutant in the house that will have a serious impact and can increase the risk of disease occurrences in children. The habit of family members who smoke (active smokers) in the home can have an impact on other family members who are not smokers (passive smokers). Cigarette smoke is very dangerous to the health of children especially because of the presence of toxic substances in cigarette content (Purwana, 2013). The continuous exposure to cigarette smoke will cause respiratory problems, especially will aggravate the incidence of URI. If the more cigarette smoke is inhaled by the family, the higher the impact on the emergence of URI (Ministry of Health RI, 2002). Further reinforced by Sundari (2014) which states

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that unhealthy behavior of mothers is a risk factor for the occurrence of pneumonia in toddlers such as smoking in the house or the behavior of not covering the nose and mouth when coughing.

Relationship of House Cleaning with Occurrence of URI in Children

The results of this study indicate that most homes do not meet the cleanliness requirements; the floors and walls look dusty. Then seen, some of the walls are made of boards that are not tight to allow the accumulation of dust on the walls.

The results of statistical tests carried out obtained p-value <0.05 (0.027) and it can be concluded that there is a significant relationship between house hygiene with the incidence of URI in children. It can occur in a dusty house floor condition and visible trash in the house and included as a category of houses that do not meet hygiene requirements.

Similar to this study, research conducted by Putri (2013) suggests that the things that affect URI in toddlers are wall cleanliness and wall density. Poorly packed walls can cause a build-up of dust on the walls, which often occurs on plastered houses. This research is also in line with Sulaiman (2019) who states that there is a significant relationship between home cleanliness and the incidence of URI in toddlers. The environment is one of the factors that cause disease, including the physical environment, namely the house. The house is a factor that is visible to the eye and can be assessed about their health.

Azwar said that in order to avoid the transmission of diseases and accidents in the house, a healthy house must be built in such a way as to protect its occupants from the possibility of danger and disease transmission (Hadi, 2015). A bad environment will definitely damage the balance factor of the interaction process of a disease, namely agent and host. This process runs dynamically, if one is disturbed it will affect the other and cause disease in the host (Mubarak and Chayatin, 2009). Unhealthy environmental conditions will also cause an increase in disease-causing agents in facilitating the process of disease transmission, including URI. So it can be concluded that house cleanliness is one of the factors causing URI in children.

Relationship of clean water facilities with the incidence of URI in children

The results of this study indicate that some houses have used clean and proper consumption water which can be seen from physical characteristics such as colourless, odourless and tasteless.

The results of statistical tests conducted, obtained p value> 0.05 (0.524), and it can be concluded that there is no significant relationship between clean water facilities with the incidence of URI in children. It can occur because the water used by the community is classified as clean water with the criteria of colourless, odourless and tasteless and the absence of pathogenic contamination of germs that cause pneumonia, namely *Streptococcus pneumonia* in water used by local communities. However, several laboratory tests, such as the bacteriological water test are needed to determine the quality of water consumed by the local community.

Kasnodiharjo (2013) states that the risk of being exposed to URI can also be caused by the provision of clean water. The use of water from wells and water from rain reservoirs that do not meet health requirements will be one of the factors that transmit congenital diseases, and with weak immunity conditions will facilitate the process of disease transmission including URI.

Relationship between the existence of latrines with URI in children

The results of this study indicate that some houses already have toilets that meet the requirements. People who do not have toilets at home choose to defecate in available public toilets.

The results of statistical tests conducted, obtained p value> 0.05 (0.684), and it can be concluded that there is no significant relationship between the existence of latrines with the incidence of URI in children. It can occur because the occupants of the house have defecated in its place so that it does not allow air pollution by pathogenic bacteria *Streptococcus pneumonia* that can occur due to defecation in any place. Notoatmodjo (2013) states that waste water or waste water to be discharged into rivers or seas must be made of special channels, namely waste disposal facilities because they will still be reused, so that wastewater must be managed properly to prevent disease transmission.

According to Kasnodiharjo (2013), people who do not have sewage disposal facilities including latrines and waste water disposal facilities at home will cause them to do everything on the trunk, namely a semi-permanent building built on the surface of the river which functions as defecating, bathing, disposing. garbage and washing, so that this can cause disease transmission through dirty air and in the surrounding environment so as to allow disease transmission, especially respiratory disease. Furthermore, it is stated that the type of sewage collection facilities that do not meet health criteria will cause pollution to the surrounding environment, which at the same time increases the

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risk of disease transmission to the community because human waste is on the soil surface, gradually becomes dry and after drying it will be carried away by the wind with the dust spreading everywhere.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. There is a significant relationship between the physical condition of the house (ventilation, family smoking, house cleanliness) to the incidence of URI in children aged 1-15 years in the working area of Tompobulu Health Centre, Maros Regency.
2. There is no significant relationship between the physical condition of the house (Floor Type, clean water facilities, and the presence of latrines) to the incidence of URI in children aged 1-15 years in the working area of Tompobulu Health Centre, Maros Regency.

Suggestions

1. Respondents who smoke are expected to keep the house healthy by maximizing the ventilation of the house in the form of open doors and open windows every day.
2. To the community, when building houses try to make cross ventilation on the side of the house and adjust the area of the house with ventilation area. The community is always expected to maintain the cleanliness of the house and not litter.
3. The community, stay away children by smoke and do not smoke inside the house and stop to smoke.
4. Socializing to the public to adopt a clean and healthy lifestyle. Maintain cleanliness of the house and the environment as well as pay attention and grow a healthy home.
5. To the Tompobulu Community Health Centre to hold counselling on prevention of URI.
6. To the government to be able to place the improvement of environmental sanitation facilities as a priority in health development efforts and make comprehensive policies in realizing healthy homes in the community, because healthy homes cannot be separated from the availability of related infrastructure and facilities, such as clean water supply, sanitation, garbage disposal and latrines, and the availability of social services. Increased awareness of the population about the environment and healthy behaviour will be able to form healthy households.

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