

The Influence of Traditional House on Acute Respiratory Infection in Toddler in Sabu Raijua District

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Abstract – East Nusa Tenggara Province is the provision of the highest Acute Respiratory Infection in Indonesia. One of the things that affect the incidence of Acute Respiratory Infection is the condition of the unhealthy residence. The purpose of this research is to analyze the influence of Sabu traditional house to the occurrence of Acute Respiratory Infection of Toddlers. This research method was an analytic observational with cross-sectional approach of study. Data analysis using ordinal regression test with degree of significance 5%. The respondents were 144 housewives who had a toddler living in a traditional house and an ordinary house. Data collection used questionnaires and observation sheets. Ventilation measured using rollers meters. Temperature measured using a thermohygrometer. Lighting measured using lux meter. Humidity measured using hygrometer. The result of this research is temperature variable has an effect on Acute Respiratory Infection in toddlers ($p = 0,002$). There should be a counseling about the terms of healthy homes, signs and symptoms and prevention of Acute Respiratory Infection disease in toddlers that living in traditional homes or ordinary homes.

Key words: Acute Respiratory Infection, House Condition, Toddler

1. INTRODUCTION

Acute Respiratory Infection is an upper or lower respiratory tract disease, usually contagious, which can lead to a wide spectrum of diseases ranging from asymptomatic or mild to severe and fatal illnesses, depending on the cause pathogen, environmental factors, and host factors^[1] Upper Acute Respiratory Infection is commonly caused by viruses, whereas lower Acute Respiratory Infection can be caused by bacteria, viruses and mycoplasma. Lower Acute Respiratory Infection caused by bacteria generally have severe clinical manifestations causing some problems in their treatment^[2].

Factors that influence the degree of health in a row are environmental conditions, behavior, health services and heredity. One of the environmental components that contribute to the spread of disease is the home. The house can be interpreted as a shelter and a place to rest, thereby cultivating a perfect life both physically, spiritually, and socially^[3].

Every human needs a place to live called a house. The house serves as a place to let go of tired, where to hang out and foster a sense of

kinship among family members, shelter and store valuables, and the house is also a status symbol of social^[4]. Unhealthy living conditions can be one of the triggers of Acute Respiratory Infection. Houses that can be said to meet the health requirements must meet three aspects of lighting, air quality and humidity and indoor humidity^[5].

Toddlers are children who have been above the age of one year or more popular with the understanding of the age of children under five years^[6]. Toddler period is an important period in the process of human development. Toddler period is an important period in the process of human development. Growth and growth in that period became the determinant of success of child growth and development in the next period

The number of Acute Respiratory Infection cases in the last 3 months (January-March) in 2017 were 7,332 cases with the number of cases of Acute Respiratory Infection in infants as many as 21,168 cases of the total number of all under-fives in Sabu Raijua District 7,221 people^[7]. This study aims to determine the influence of traditional houses (wide ventilation, natural

lighting, temperature, and humidity) with Acute Respiratory Infection in toddlers.

2. RESEARCH METHOD

The type of research is observational analytic. Observational research type is data obtained through observation, interview, filling questionnaires and measurements to the respondents without being treated. Ventilation measured using rollers meters. Temperature measured using a thermohygrometer. Lighting measured using lux meter. Humidity measured using hygrometer. This study is analytic because the resulting data are presented in cross-sectional and then analyzed by using statistical test using ordinal regression test with degree of significance 5%.

Determination of the sample using the concept of inclusion and taken randomly using simple random sampling technique. The sample of this research is 57 toddler live in traditional house and 57 toddlers live in ordinary house.

3. RESULT

Table 1. Acute Respiratory Infection

ARI in Toddlers	Traditional House	Ordinary House	TOTAL
Severe	0	2	2
Chronic	27	31	58
Acute	22	16	38
Healthy	8	8	16
TOTAL	57	57	114

Based on table 1 shows that there are 58 toddlers that in chronic Acute Respiratory Infection conditions and only 16 toddlers that healthy. There are 27 toddlers with chronic Acute Respiratory Infection that live in traditional house and 31 toddlers with chronic Acute Respiratory Infection that live in ordinary house.

Table 2. Regression result between Traditional House variable with ISPA

Variable	<i>p</i>
Wide ventilation	0,158
Natural lighting	0,197
Temperature	0,002
Humidity	0,664

Based on table 2 shows temperature variable has an effect on Acute Respiratory Infection in toddlers ($p = 0,002$).

4. DISCUSSION

Sabu Island in the Provinces of East Nusa Tenggara Indonesia has a savanna climate with an intense amount of heat and very low rainfall. It affects the life on the island. Society must be able to adapt to these conditions, with natural vegetation that suits the natural environment. This climate is very suitable for the growth of palm-type plants. The most widely grown type is the Lontar tree. Community life in the environment is required to be able to adjust the physical building to the physical environment^[8].

Ammu Rahi Hawu is one of the traditional buildings of Sabu society, often referred to as Ammu Hawu or Sabu house. Lontar is used as the main ingredient for the structure of Ammu Hawu traditional house. House with typology like inverted boat serves as a residence. The shape of the stage house with a height of approximately 1.5 m from the face of the ground. Lontar Wood (*Borassus flabellifer*) is primarily used as structural poles that stand on the rocks. Ammu Hawu traditional house is made based on knowledge from generation to generation^[9].



Figure 1. Sabu Traditional House

Ventilation in the house serves as air circulation or air exchange within the house. Poor ventilation will cause respiratory health problems for residents. Regulation related to ventilation condition is the regulation of the Minister of Health of Indonesia number 1077 year 2011 that the minimum ventilation area 10% from the floor area.^[10] Ventilation is the process of turning fresh air into and removing the dirty air from a closed room naturally or artificially.

Good ventilation can free up air from pathogenic bacteria because in the presence of ventilation, air exchanges continuously. Unfavorable ventilation can endanger the health of the respiratory tract especially. Poor ventilation can increase exposure to smoke^[11].

The venting of the ventilation becomes an important factor in order for the incoming wind to

flow smoothly, the placement of good ventilation is by putting in a cross (cross ventilation). This condition facilitates the flow of air to exchange, one part becomes the place of entry of the opposite air into the outlet and vice versa. Height of ventilation holes facing each other should not be the same height so that airflow can flow across the entire space^[12].

A healthy home must have sufficient entrance of light. Natural lighting is obtained by the entry of sunlight, in addition useful for lighting this light also reduces the humidity of the room, and kill germs that cause certain diseases, such as killing bacteria^[13]. The window as the light entrance should be 15% to 20% of the floor area. Good lighting is between 60-120 lux. Sunlight is very important, because it can kill pathogenic bacteria in the house, such as bacteria that cause Acute Respiratory Infection. Therefore, a healthy home must have sufficient entrance of light.

Indoor air temperature is influenced by radiation energy from the sun, convection heat transfer, solar radiation intensity, wind speed and direction, and environmental temperature are seen in general. Buildings are established to protect residents from outside climatic conditions of the building with a safe and comfortable inner environment. It is necessary to design a building capable of responding to the external and inner climate conditions as well as the comfort requirements of the building occupants. Research result about temperature variable is it has an effect on Acute Respiratory Infection in toddlers.

Thermal comfort level for Indonesians wearing regular daily clothing, the optimal comfortable upper limit is 28°C and the relative humidity is 70% or 25.8°C effective temperature, and the lower limit is 24°C with 80% relative air humidity or 22.8°C effective temperature^[14].

The ideal indoor room temperature is between 18-20°C and the temperature influenced by outside air temperature, outside air movement and indoor air humidity^[15]. Homes with unsuitable temperatures are associated with low health status and increased use of health services^[11].

Temperature is closely related to humidity. Humidity is very influential on the state of comfort in people who are in the house and also greatly affect the growth of pathogenic microbes that are like a humid place and not dry. Humidity can occur, as water rises from the ground then seeps into walls and leaking through the roof, high humidity can cause the floor and walls are always wet. A house that has high air humidity allows for rats, cockroaches and fungi all of which have a

major role in the pathogenesis of respiratory diseases^[16].

However, based on the results of the study is no relationship between moisture with Acute Respiratory Infection in toddlers. This is in accordance with research conducted by Lestari^[17], that there is no relationship between the moisture on Acute Respiratory Infection in toddlers in Semarang, because the humidity outside the home is not necessarily the same as the humidity in the house. Humidity in the house is influenced by several factors such as the area of the air vents inside the house.

5. CONCLUSION

Severe Acute Respiratory Infection in toddlers in traditional Sabu homes are smaller than ordinary houses. The number of chronic Acute Respiratory Infection in toddlers who lives in traditional houses is higher than toddlers who lives in ordinary houses. There are no relationship between wide ventilation, natural lighting and humidity with Acute Respiratory Infection in toddlers. Temperature variable has an effect on Acute Respiratory Infection in toddlers.

6. SUGGESTION

Community should do the maintenance of the home environment by keeping the house clean by cleaning the house regularly, arranging the exchange of air within the house, to keep sunlight into the house and maintain the cleanliness of the environment outside the home. Public Health Officer should socialize about the terms of healthy homes and motivate people to improve the home environment so that minimize the risk of Acute Respiratory Infection in children under five. Encourage and nurture the community to maintain the health of the home environment and counseling about symptoms and prevention of Acute Respiratory Infection disease in toddlers that living in traditional homes or ordinary homes.

REFERENCE

- [1] WHO. (2007). Pencegahan dan Pengendalian Infeksi Saluran Pernapasan Akut (ISPA) yang Cenderung menjadi Pandemi di Fasilitas Pelayanan Kesehatan. Pedoman Interim WHO. Geneva: WHO.
- [2] Kusnopranto, Haryoto, (2000). Kesehatan Lingkungan. Fakultas Kesehatan Masyarakat Universitas Indonesia, Jakarta..
- [3] Notoatmodjo, S. (2002). Pendidikan dan Perilaku Kesehatan. Jakarta: Rhineka Cipta.

- [4] Mukono, H.J. (2008). Pencemaran Udara dan Pengaruhnya terhadap Gangguan Saluran Pernafasan. Surabaya: Airlangga University Press.
- [5] Kementerian Pemukiman dan Prasarana Wilayah. (2002). Keputusan Menteri Pemukiman dan Prasarana Wilayah Nomor: 403/KPTS/ M/2002 tentang Pedoman Teknis Pembangunan Rumah Sederhana Sehat (Rs Sehat).
- [6] Muaris, H. (2006). Lauk Bergizi untuk Anak Balita. Jakarta: Gramedia Pustaka Utama
- [7] Dinas Kesehatan Kabupaten Sabu Raijua. (2017). Laporan Sistem Informasi Kesehatan Daerah Kabupaten Sabu Raijua
- [8] Kapilawi, Y.D., Antarksa, Agung Nugroho. (2015). Lokalitas Struktur Konstruksi Rumah Tradisional Sabu di Kampung Adat Namata, NTT. Jurnal RUAS, Volume 13 No. 2, Desember 2015. ISSN 1693-3702
- [9] Suwantara, I K., Rusli. (2013). Penelitian Eksperimental Geser-Friksi Sambungan Tiang Kayu Lontar (*Borassus flabellifer*) dengan Batu pada Rumah Tradisional Ammu Hawu (NTT). Jurnal Teknik Sipil. Vol. 20 No. 2 Agustus 2013. ISSN 0853-2982
- [10] Kementerian Kesehatan Republik Indonesia, 2011. Permenkes RI Nomor 1077/Menkes/Per/V/2011 tentang Pedoman Penyehatan Udara dalam Ruang Rumah.
- [11] Krieger. James. Donna L Higgins. (2002). Housing and Health : Time Again for Public Health Action. American Journal of Public Health: May, Vol 92, No 5. p 758-768.x
- [12] Ranuh, I. G. N. (1997). Masalah ISPA dan Kelangsungan Hidup Anak. Surabaya:Continuing Education Ilmu Kesehatan Anak
- [13] Azwar, Azrul. (1990). Pengantar Ilmu Kesehatan Lingkungan . Jakarta: PT. Bina Rupa Aksara
- [14] Lippsmeier. (1980). Bangunan Tropis. Jakarta: Erlangga
- [15] Mukono, H.J. (2000). Prinsip Dasar Kesehatan Lingkungan. Surabaya: Airlangga University Press.
- [16] Oktaviani, Ayu. (2009). Hubungan Antara Sanitasi Fisik Rumah dengan Kejadian Infeksi Saluran Pernafasan Atas (ISPA) pada Balita di Desa Cepogo Boyolali. Universitas Muhammadiyah Surakarta.
- [17] Lestari, R. (2018). Perbandingan Kejadian ISPA pada Balita di Daerah Perbukitan dan Wilayah Pesisir Kota Semarang Ditinjau dari Komponen Iklim Tahun 2012-2016. Jurnal Kesehatan Masyarakat volume 6.