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ASSOCIATION OF COMMUNITY BEHAVIOR AND CONDITION OF THE HOME EXPOSED TO VOLCANIC ASH WITH THE ACUTE RESPIRATORY INFECTION (ARI) AMONG VILLAGERS IN PERBAJI

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ABSTRACT

Background: Volcanic dust from the eruption of Mount Sinabung causes the air condition to be bad and also disturbs the health of the surrounding population. This causes the occurrence of Acute Respiratory Infection (ARI), as well as various other diseases such as cough, runny nose, sneezing, sore throat. The purpose of this study is to determine the relationship between citizen behavior and the condition of the house exposed to volcanic ash with the incidence of ARI (Acute Respiratory Infection) to the residents of Karo Regency Perbaji Village in 2017.

Methods: This research is a cross-sectional study involved the head of family who is domiciled and has a permanent population of 209 households in the village of Perbaji, Tiganderket District, Karo Regency, with a total sample of 68 families. Data analysis used in this research is univariate and bivariate analysis with Chi Square test.

Results: The result shows that based on Chi Square test, there is a significant correlation between residents' behavior exposed to volcanic ash with the incidence of ARI (p value = 0.000). It is noted also a significant correlation between the house condition exposed to volcanic ash and the ARI occurrence (p value = 0.000).

Conclusion: The results suggested that the villagers of Perbaji Village to use masks if they are outdoors in the event of an eruption. For the poor housing conditions, it is expected that the residents will improve their houses, such as covering the holes that can be penetrated by volcanic ash using plastic or paper. It is needed to pay attention to the condition of Perbaji village residents who are exposed to volcanic ash by distributing masks, and giving free treatment.

Keywords: ARI, Behavior, Home Condition

INTRODUCTION

One of the volcano located in Tanah Karo, North Sumatra was Mount Sinabung has an altitude of 2,460 meters. In the year 2013, mount Sinabung erupts so that residents in some villages had to be evacuated, and this has occurred to date. At the beginning of 2014, mount Sinabung began steady and residents from different villages were repatriated. However, the condition of the air became bad and health in the population of the village. This led to the transmission of ARI (Acute Respiratory Infection[1]. Problems that occur in volcanic ash can attack the respiratory system, irritation of the eyes, and skin diseases. The volcano issued volcanic ash giving rise to a variety of ailments such as coughs, colds, sneezing, sore throat. These diseases are often reported by health officials after the volcano issued volcanic ash [2].

Presurvey results while conducted in the village of Perbaji Sub-district Tiganderket location between Mount Sinabung is just 4 km to the village of Perbaji. The village of Perbaji has been categorized as Red Zone because of the cold lava flows and volcanic ash from mount Sinabung had entered the village of Perbaji. With a number Head of families as much as 209 the head of family, and obtained the number of visits in Perbaji village of Helpers since health centers last November through February 2016/2017, as many as 120 people has Acute Respiratory. The behavior of the citizens that are found rarely use a mask when exposed to volcanic ash and little regard for the health of yourself. The condition of the homes on the family's citizen almost entirely damage volcanic ash can cause corrosion on zinc, and cleanliness of the home environment is becoming worse.

METHOD

This study was observational study with Cross Sectional design. Research conducted in Perbaji Village Subdistric Tiganderket Karo Regency. The research began on March to July 2017. The population of this research is the head of the family which was domiciled and has remained as much as 209 families. Samples size was 68 respondents and used simple random sampling to select the participants until the calculated sample size was attained.

The primary data in this research is directly retrieved from the respondent through interviews using by questionnaire. Secondary data, about the number of the families and the diseases such as respiratory diseases was taken from The Perbaji Village Chief and from Puskesmas Perbaji [3]

Data were analysed using SPSS software. In which variables with p-value less than 0.25 in the bivariate analysis were included in a backward stepwise logistic regression procedure. and presented using tables. Ethical clearance obtained from ethical committee in University Sari Mutiara and respondent obtained the informed consent.

RESULTS

Description Of The Location

Perbaji village is a village located in Tiganderket, Karo Regency, North Sumatra Province. The village of Perbaji still has the traditional house with House made from wood either from the floor, walls, and windows. Layout of Perbaji Village is 4 Km from Mount Sinabung, village Perbaji has been set to be Red Zone Area that is already vulnerable to the eruption of Mount Sinabung. Health infrastructure in the village of Perbaji i.e. Poskesdes. The eruption impact of Mount Sinabung i.e. villagers suffered health problems, psychological or psychiatric disorders, heavy losses of the livelihood damage of villagers home both from the roof to the floor.

Table 1. Frequency Distribution of Respondents According to Age, Education, and Marital Status In the Village of Perbaji Karo Regency in 2017

| No | Variable | Frequency (F) | Percent (%) |
|----|------------------------------|---------------|-------------|
| 1 | 27-36 | 9 | 13.2 |
| | 37-46 | 16 | 23.5 |
| | 47-56 | 22 | 32.4 |
| | 57-66 | 11 | 16.2 |
| | 67-76 | 4 | 5.9 |
| | 77-86 | 5 | 7.4 |
| | 88-96 | 1 | 1.5 |
| | Total | 68 | 100 |
| 2 | Education | | |
| | Not graduated primary School | 4 | 5.9 |
| | Primary School | 20 | 29.4 |
| | Junior High School | 22 | 32.4 |



| No | Variable | Frequency (F) | Percent (%) |
|----|---------------------|---------------|-------------|
| | Senior High School | 17 | 25.0 |
| | Bachelor Degree | 5 | 7.4 |
| | Total | 68 | 100 |
| 3 | Marital Status | | |
| | Married | 45 | 66.2 |
| | Not Married (widow) | 23 | 33.8 |
| | Total | 68 | 100 |

Based on the table above, it can be seen that the majority of head of families was 47-56-year-old as much as 32.4% of the head of the family, the majority of Junior High School education is as much as 32.4% of the head of the families, and the majority of marital status is married as much as 66.2% of the head of the families.

Table 2. The Complaint Respondent About Acute Respiratory Infection (ARI) In the Village of Perbaji Karo Regency in 2017

| <i>Acute Respiratory Infection (ARI),</i> | Frequensi (F) | Percent (%) |
|---|---------------|-------------|
| Have | 38 | 55.9 |
| Have not | 30 | 44,1 |
| Total | 68 | 100 |

Based on the table above, the majorities was complaint with ARI as many as 55.9% of the head of the family (families), and not have complaint as much as 44.1% of the head of the family (families).

Table 3. The Relationship Behavior Of Citizens With Complaints Of Acute Respiratory Infection (ARI) In the Village of Perbaji Karo Regency in 2017

| Behaviour of Respondent | Complaint | | | | Total | P Value |
|-------------------------|-----------|------|------|------|-------|---------|
| | Have Not | | Have | | | |
| | N | % | N | % | N | % |
| Not Good | 1 | 1,5 | 27 | 39.7 | 28 | 100 |
| Good | 29 | 42,6 | 11 | 16,2 | 40 | 100 |

Based on the table above, from 28 heads of family who have not good behavioral as much as 39.7% of families who have complaints of respiratory diseases, and as much as 1.5% had no complaints. About 40 families with good behavioral have no complaint with respiratory diseases as much as 42.6%, and as much as 16.2% families have complaint with respiratory diseases. The chi square test results can be obtained the value of $p = 0.000$ ($p\text{-value} = < 0.05$), meaning the hypothesis is denied, h_0 showed that there is a connection between the behavior of citizens exposed by volcanic ash with respiratory disease occurrence in the Perbaji Village in 2017.

Table 4. The relationship of the conditions the House of Respondents with complaints of Acute Respiratory Infection (ARI) In the Village of Perbaji Karo Regency in 2017

| The Condition of the House | Complaint of ARI | | | | | |
|----------------------------|------------------|------|------|------|-------|-----|
| | Have not | | Have | | Total | |
| | N | % | N | % | N | % |
| Not Good | 5 | 7.4 | 35 | 51.5 | 40 | 100 |
| Good | 25 | 36.8 | 3 | 4.4 | 28 | 100 |

Based on the table above, from 40 families who have home conditions are not good is 51.5% of families who have complaints of, and about 7.4% families has no complaints of ARI . About 28 families have good home conditions, which is as much as 36.8% of families has no complaint with the acute respiratory infection and as much as 4.4% have a complaint. Chi-Square test results can be obtained the value of $p = 0.000$ ($p\text{-value} = < 0.05$), meaning this is denied, H_0 showed that there is a relationship between the condition of the houses exposed to volcanic ash with the genesis of ARI in the village of Perbaji in 2017.

DISCUSSION

1. The Relationship Behavior Of Citizens With Complaints Of Acute Respiratory Infection (ARI)

The results of the answers of the respondents against the behavior of citizens exposed by volcanic ash, a total of 58.8% families have good behavior, while 41.2% of families do not have good behavior. The respondents who are cleaning the House frequently as much as 77.9%, sometimes cleaning the House as much as 22.1% of Families . Respondents who frequent opens/closes the window when the eruption happened as much as 66.2%, sometimes it opens/closes the window when the eruption happened as much as 20.6% families , and never open/close the window as much as 13.2% of families . Respondents who wears a mask while being outdoors as much as 36.8%, sometimes using the mask as much as 25.0% families , and never use the mask as much as 38.2% of families.

Behavior is an action and a reaction to its environment. This means that the behavior may occur if the cause reactions that is also known as the stimulus, so that the stimulation would cause a reaction or a particular behaviours. The measurement of behavior could be done by way of indirect such as interview conducted a few hours, days, or months ago, and directly by way of observing the actions of the respondent.

Various factors that influenced behavior comes from within and outside of the individual, as for the factors include: central nervous arrangement, perception, motivation, emotion, learning, environment, and so on. Passive Human reactions (knowledge, perceptions, and attitudes), and active (a real action), There are four principal elements, namely pain and disease, health care and the environment, which can stimulating person.

Resent study use statistical test of chi square shows that the result $p = 0.006$ (< 0.05) this means there is a relationship between exposure to dust with the incidence of respiratory tract disorder in Kelurahan Kairagi 1 Manado City . The results indicate that respondents based on the results of the analysis the statistics get the existence the relationship between exposure to dust with the incidence of respiratory tract disorders in Subdistricts of Kairagi 1 Manado City [4].

Health behavior role gets high attention because health behaviors affect the tendency of the chronic diseases development and the getting fatal. Behavioral health is the most important element for the health and existence of man [5].

According to the results study of Acute Respiratory Infection (ARI), obtained from the behavior of the citizens who are still unfavourable, it is caused by a lack of concern for the health of himself, a lack curiosity about the danger of the volcanic ash, and obtained There are still many villagers Perbaji who does not wear a mask when engaging in activities outside the home at the time of the eruption with the reason not accustomed to wearing respiratory masks and disturbing them.

2. The relationship of the conditions the House of Respondets with complaints of Acute Respiratory Infection (ARI)

The condition of the roof are not good as much as 51.5% the head of family, because volcanic ash which thicken and make the most of zinc corrosion/home becomes blemished and may damage the roof house so volcanic dust can get into the house. The condition of the wall that is not good as much as 63.2% of the head of family. The floor condition which was not good about 67.6% of families, because the house almost made entirely of wood, either from the floor or the walls of the home, the walls of the house are

made of wood which is not easy to clean, and a crack of wood can be accessed by dust volcanic. The air vents are not good as much as 72.1% the head of family, because at the time of the survey window condition seen houses made from wood arrangement partly damaged as it cannot be closed/opened and hollow. The density of occupants a good home as much as 83.8%.

A house is the principal requirement for human life, because house is where the human take rest, shelter from the heat and rain. The building of a house is different, adapted to the culture of each community. After the people entered the modern century they build the house but still inherit the previous culture [5].

A healthy home is one of the means to achieve the optimum health degrees. To obtain a healthy home is determined by the availability of sanitary means of housing. The sanitation among other means of ventilation, temperature, humidity, natural lighting, residential density, building construction, means of garbage disposal, means of disposal of human waste, and the provision of clean water [6].

When volcanic ash fluttering inside or on the home page of the host, rarely they can clear volcanic ash. This was caused by the lack of clean water in post eruption of Mount Sinabung. Volcanic ash that is not cleaned of plants or streets often carried by the wind into the house and inhaled the citizens. Residential neighborhood is very influential on the occurrence and spread of respiratory [7].

According to the results of the study, the condition of the home exposed to volcanic ash with the genesis of ARI disease in the village of Perbaji which has the structure of a building using wood that is like a wall, window, as well as the floor and the wood is already started damaged and perforated. Volcanic ash can enter the home through cracks between the wooden one with the other, and the result of a build-up of volcanic ash, zinc Perbaji villagers homes have been damaged and blemished/corrosion, this can lead to disruption of function respiratory health especially.

CONCLUSION

There is a relationship of the behavior of citizens exposed to volcanic ash with the incidence of ARI Perbaji villagers in Karo Regency in 2017. Perbaji villagers still hard to wear a mask if they are in outdoors, and rarely cleans up her house after the eruption occurred. No relationship condition Home exposed volcanic ash with the incidence of ARI at Perbaji villagers in Karo Regency in 2017 i.e. condition of roof, floor, and walls of the house that was already damaged and accessible volcanic ash, air vents in the lid which could not or in the open.

POLICY RECOMMENDATIONS

To the residents of the village of Perbaji Karo Regency is expected to wear a mask if you're engaging in activities outside the home during the eruption of Mount Sinabung, and to the condition of the House, which is not as good as the air vents and the damaged roof of the house, is expected to close the holes in the wall or window by using a cloth or plastic, as well as zinc house which was destroyed in order to be repaired. For the village chief Perbaji Karo Regency is expected to provide information about the dangers of volcanic ash, an impact that would occur if the dust inhaled, actions should be done in case of the eruption, and helping residents in a fix buildings damaged by volcanic ash heap. For the health service is expected to pay more attention to the conditions of the citizens. As well as the role of the health service is to reduce the incidence of ARI figures in the village of Perbaji Karo by giving free medical treatment, the granting of a mask.

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