



## HISTORICAL RISK ANALYSIS OF HEART DISEASE INSULSEL EXPO PARTICIPANTS

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### KEYWORDS

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### ABSTRACT

**Background:** Currently PTM has become the biggest cause of death in the world. As many as 38 million (68%) of the 56 million deaths in the world in 2012 were caused by PTM. Coronary heart disease is one of the non-communicable diseases with the largest mortality rate.

**Objective:** This study aims to *analyze* the factors associated with a history of heart disease in the participants of the South Sulawesi Expo 2018.

**Method:** The type of research used is quantitative analytic with a cross-sectional approach. **Sampling** using purposive sampling technique so that the number of samples is 107 people

**Result:** There is a significant relationship between a history of diabetes, *hypertension*, heart disease, stroke, and cancer in the family against a history of heart disease ( $p < 0.05$ ) in the 2018 South Sulawesi Expo participants, while there is no significant relationship between the history of asthma and cholesterol. smoking behavior, consumption of fruits and vegetables, physical activity, and alcohol consumption ( $p > 0.05$ ) on the history of heart disease among participants in South Sulawesi Expo 2018.

**Conclusion:** Government involvement is needed to provide education for the community related to the prevention of PTM, and for the community to continue to strive to improve patterns of life to avoid PTM.

## **INTRODUCTION**

In recent years there has been a transition to disease patterns or what is often called an epidemiological transition in which the disease pattern has shifted from infectious disease to a non-communicable disease. Until now, PTM has become the biggest cause of death in the world. And this has a direct impact on the losses that have been experienced by several countries in the world. As many as 38 million (68%) of the 56 million deaths in the world in 2012 were caused by PTM (WHO, 2014).

In developing countries, of all deaths that occurred in people aged less than 60 years, 29% were caused by PTM, while in developed countries, it caused 13% of deaths. The proportion of causes of death for PTM in people aged less than 70 years, cardiovascular disease was the biggest cause (39%), followed by cancer (27%), while chronic respiratory disease, digestive diseases, and other PTM together account for about 30% of deaths. and 4% of deaths caused by diabetes.

According to the World Health Organization, deaths from Non-Communicable Diseases (PTM) are expected to continue to increase worldwide, the largest increase will be in middle and poor countries. More than two thirds (70%) of the global population will die from non-communicable diseases such

as cancer, heart disease, stroke, and diabetes. In total, in 2030 it is predicted that there will be 52 million deaths per year due to non-communicable diseases, up 9 million from 38 million people today.

In the last 30 years, this epidemiological transition has occurred in Indonesia. In the 1990s, the biggest cause of death and illness was infectious diseases such as upper respiratory tract infections, tuberculosis, diarrhea, and others. However, since 2010, the biggest cause of illness and death has been non-communicable diseases (PTM) such as stroke, heart disease, and diabetes. The sufferers also experience a shift. Now PTM not only attacks old age but also young people, from all walks of life, both rich and poor, living in cities and villages (Kemenkes RI, 2017).

From the results of the Regional Basic Health Research (Riskesdas) 2013, coronary heart disease is the disease with the highest number of deaths in Indonesia, followed by a stroke in the second position and diabetes mellitus and hypertension in the next position. In 2014, according to the Health Profile of South Sulawesi, heart disease was the highest infectious disease at 60.89% and was the first cause of death (49.44%).

The prevalence of coronary heart disease diagnosed by doctors in South Sulawesi was 0.6%, and those diagnosed

by doctors or symptoms were 2.9%. The highest prevalence of coronary heart disease diagnosed by doctors was in North Toraja (1.1%), followed by Makassar City, Tana Toraja Regency, Pinrang Regency, and Bulukumba Regency with 1.0% each. Then the highest prevalence of coronary heart disease according to diagnosis or symptoms was in Tana Toraja Regency (6.2%), followed by Bantaeng Regency (5.7%), Luwu Regency (5.4%), and North Toraja Regency (5.0%).

There were 957 cardiac cases consisting of coronary heart disease as many as 204 old cases, 104 new cases, 4 deaths, 320 new cases of acute myocardial infarction, 41 old cases with 39 deaths, Subsequent myocardial infarction 191 new cases, and 97 old cases with 8 deaths.

Increased morbidity and mortality rates are basically driven by changes in people's behavior that tend to be less healthy, such as decreased physical activity, wrong diet, smoking, and alcohol consumption, on the other hand, genetic factors can also be a factor in non-communicable diseases.

This study aims to analyze the factors associated with a history of heart disease in the participants of South Sulawesi Expo 2018.

## **METHODS**

The type of research used is quantitative analytic research with a cross-

sectional approach. The data in this study are secondary data obtained from the results of health examinations conducted at the Posbindu PTM South Sulawesi Provincial Health Office in the 2018 South Sulawesi Expo activities. Data collected includes data on age, gender, family history of the disease, history of the disease in themselves, a history of smoking, physical activity, and consumption of vegetables and fruits.

The population in this study was 126 employees of city/regency government agencies in South Sulawesi who examined Posbindu PTM Health Office of South Sulawesi Province. Sampling using a purposive sampling technique so that the sample size in this study is 107 people who meet the inclusion criteria. The inclusion criteria referred to is the population that fills in all the data contained in the health examination form. The data obtained were processed using a computer through Microsoft Excel version 2010 and SPSS (*Service Package for Social Science*) version 25.0. For data analysis used univariate data analysis and bivariate data analysis.

## **RESULTS**

### **Univariate Analysis**

Based on table 1, the number of respondents who were male was 34 people while the female gender was 73 people. While the characteristics of the most

respondents aged 30-39 years, namely 32 people (29.9%), followed by the age range of 20-29 years, 40-49 years and 50-59 years respectively as many as 24 people (22, 4%) and the age range 60-69 years (2.8%).

**Table 1. Characteristics of respondents**

Characteristics	Number (n)	Percentage (%)
<b>Gender</b>		
Male	34	31.8
Female	73	68.2
<b>Ages</b>		
20-29 years	24	22.4
30-39 years	32	29.9
40-49 years	24	22.4
50-59 years	24	22.4
60-69 years	3	2.8

*Source: primary data, 2018*

Table 2 shows that the relationship between family history of non-communicable disease and the respondent's history of heart disease, namely 9 respondents who have and 98 respondents who do not have a history of heart disease. Among them, there were 3 respondents with a family history of diabetes, 2 respondents with a family history of hypertension, 2 respondents with a family history of cholesterol, and 1 respondent each with a family history of heart disease, stroke, asthma, and cancer.

Furthermore, the test used in this bivariate analysis was the chi-square test, the results of the above test analysis showed that there were five diseases in the

family history of PTM that had a significant relationship with the respondent's history of heart disease, including diabetes ( $p = 0.002$ ), hypertension ( $p = 0.009$ ), heart ( $p = 0.001$ ), stroke ( $p = 0.001$ ) and cancer ( $p = 0.001$ ).

Based on table 3, out of 9 respondents with a history of heart disease, 5 respondents smoke behavior with a significance value of  $p = 0.079$ , 7 respondents routinely consume fruits and vegetables with a significance value of  $p = 0.384$ , while 7 respondents answered no in doing physical activity with a value significance  $p = 0.778$  and all respondents with a history of heart disease answered no alcohol consumption.

## DISCUSSION

Cardio disease Vascular or what is commonly called heart disease generally refers to conditions that involve narrowing of the blood vessels that can cause heart attacks, chest pain, and even strokes. Other heart conditions that affect the heart muscle, valves or rhythm, are also considered heart disease (American Heart Association, 2017)

**Table 2. Relationship Between Family History of PTM and History of Heart Disease**

History of PTM Family	History of Heart Disease				P
	Yes	%	No	%	
Diabetes					
Yes	3	33.3	5	5.1	0.002
No	6	66.7	93	94.9	
Hypertension					
Yes	2	22.2	3	3	0.009
No	7	77.8	95	97	
Heart					
Yes	1	11.1	0	0	0.001
No	8	88.9	98	100	
Stroke					
Yes	1	11.1	0	0	0.001
No	8	88.9	98	100	
Asthma					
Yes	1	11.1	5	5.1	0.458
No	8	88.9	93	94.9	
Cancer					
Yes	1	11.1	0	0	0.001
No	8	88.9	98	100	
Cholesterol					
Yes	2	22.2	17	17.3	0.717
No	7	77.8	81	82.7	

*Source: primary data, 2018*

**Table 3. Relationship of Smoking, Fruit and Vegetable Consumption, Physical Activity and Alcohol Consumption to History of Heart Disease**

Lifestyle	History of Heart Disease				P
	Yes	%	No	%	
Smoking Behavior					
Yes	5	55.6	27	27.6	0.079
No	4	44.4	71	72.4	
Consumption of Vegetables and Fruits					
Yes	2	22.2	36	36.7	0.384
No	7	77.8	62	63.3	
Physical Activity					
Yes	2	22.2	26	26.6	0.778
No	7	77.8	72	73.4	
Alcohol Consumption					
Yes	0	0	5	5.1	0.488
No	9	100	93	94.9	

*Source: Primary Data, 2018*

In 2014 according to the Health Profile of South Sulawesi, heart disease was the highest infectious disease, amounting to 60.89%, and was the leading cause of death on the list. first (49.44%). 957 cardiac cases were consisting of coronary heart disease as many as 204 old cases, 104 new cases, 4 deaths, 320 new cases of acute myocardial infarction, 41 old cases with 39 deaths, Subsequent myocardial infarction 191 new cases and 97 old cases with 8 deaths.

Gender is one of the determinants of cardiovascular disease. In this study, 9 out of 107 respondents had a history of heart disease, which was dominated by female respondents (66.7%). Based on research (Oemenati, 2015) that groups of women are more at risk of cardiovascular events, especially CHD than men. This is also in line with the prevalence of CHD according to sex both in the Riskesda report in 2007 and 2013. However, it is different from a study conducted by (Penno, 2013) in Italy, where the study suggested that men are more at risk of developing CHD than Male.

Heart disease is a disease that can be caused by genetics or heredity. According to Nesochi Okeke-Igbokwe, MD, MS, cardiovascular disease can develop from generation to generation. Genetic disease is basically a condition caused by an abnormality of one or more genes that

causes a clinical phenotype condition. From the results of the study, there is a relationship between family history of heart disease and a history of heart disease among respondents. This is consistent with a study conducted by Sulistyno, in which someone who has a family history of heart disease is 11.2 times more at risk than someone without a family history (OR = 6.4; CI 95%). This study is also following the theory (Manning, 1994) which states that CHD is more likely to occur in someone whose parents have a previous history of CHD.

Family history of other diseases also had a significant relationship in this study, including diabetes, hypertension, stroke, and cancer. Where the four diseases have a p-value of less than 0.05. Based on the theory, someone who has diabetes is at risk of getting chronic complications, one of which is CHD. however, the most at risk are patients who have had diabetes for a long time, uncontrolled sugar levels, and have a history of hypertension and kidney damage (Malau, 2010). This is also in line with research conducted by Yuliani (2014) that there is a significant relationship between long-suffering from diabetes and a history of hypertension to the incidence of CHD. Although research or theory does not lead to the relationship of the family history of the four diseases to the heart, the theory above can be a reference about the

relationship with heart disease. This is also in line with several researches conducted by Marleni & Alhabib (2017), Setiyorini & Wulandari (2017) dan Lathifah (2017). Basically, both diabetes, hypertension, stroke are related to heart disease and usually complicate a disease in a person.

Then four other factors, namely smoking behavior, physical activity, consumption of vegetables and fruit, and alcohol consumption did not have a significant relationship with a history of heart disease. Although in this study no relationship was found, previous studies had different results. Cigarettes can be a factor in the occurrence of heart disease. The effect of smoking causes the myocardium to increase due to stimulation by catecholamine and also decreased O<sub>2</sub> levels due to CO inhalation and can cause vasoconstriction of blood vessels and change the permeability of blood vessel walls. Besides, the high content in cigarettes such as reactive oxygen species derived from chemicals can cause necrosis of the blood vessels, which makes it easier for lipids to stick, which ends in narrowing the lumen of the blood vessels.

Consumption of fruits and vegetables is a protective factor against heart disease (Zuraida, 2015). The nutritional content in fruits and vegetables can improve blood flow, especially fe then stimulate metabolism in the body.

(Anggraini & Hidajah, 2018; Ghani et al., 2016; Harun et al., 2016)

Although heart disease is a disease that can be inherited from genetics, this disease can be prevented by improving food intake patterns and physical activity, besides avoiding smoking and alcohol consumption. The need for someone to maintain heart health because basically, the heart is one of the most important components in the body, the heart is one of the centers of life besides the brain. Where its function is to pump blood throughout the body along with the food substances contained in it which are needed by body cells to carry out the life of these cells.

In Islam the heart is described as the heart, as in the hadith of the Prophet Muhammad which means "Remember that actually in the human body there is a lump of flesh, if he is good then the whole body is good and if he is damaged then the whole body is damaged, none other than that that is called. heart." (Narrated by Bukhari-Muslim). Although it does not directly mention the heart, this hadith defines the heart explicitly. When viewed from an anatomical point of view, the location of the heart is in the chest cavity, mostly in the left chest cavity. This is according to the word of Allah SWT in QS. Al-Hajj: 46:

Meaning: "Then do they not walk on the earth, then they have a heart with

which they can understand or have ears with which they can hear? For really it is not the eye that is blind, but the blind one, it is the heart that is in the chest. "

From the verse above, the heart has a very important function in human practice that controls the good and bad of human behavior. If the liver is bad it will interfere with other body components. Likewise with the heart as previously explained the importance of heart function for humans. If there is a problem with the heart it will cause problems in other organs.

## CONCLUSION

From the results of this study, it can be concluded that there is a significant relationship between a history of diabetes, hypertension, heart disease, stroke, and cancer in the family against a history of heart disease ( $p < 0.05$ ) in the 2018 South Sulawesi Expo participants, while there is no significant relationship between the history of asthma and cholesterol, smoking behavior, consumption of fruits and vegetables, physical activity and alcohol consumption ( $p > 0.05$ ) on the history of heart disease in the 2018 South Sulawesi Expo participants.

## SUGGESTION

For researchers to further expand their studies related to PTM and deepen the instrument material in this research. For the government to provide education for the community regarding the

prevention of PTM. For the community to improve their lifestyle to avoid non-communicable diseases.

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