

THE ASSOCIATION BETWEEN SMOKING AND HYPERTENSION AMONG ELDERLY IN PANTI SOSIAL TRESNA WERDHA WANA SERAYA

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Abstract: The aging process causes decreasing function in most of the physiological system reserves and increasing susceptibility to various diseases and deaths. With the growing of vulnerable bodies to various diseases which can cause death, specifically in the cardiovascular system, such as hypertension. Hypertension is influenced by various risk factors, one of which is smoking. The purpose of this study is to determine the association between smoking and the incidence of hypertension in elderly at Panti Sosial Tresna Werdha Wana Seraya. This research is an analytic study with cross-sectional approach conducted at Panti Sosial Tresna Werdha Wana Seraya. The sampling method is done by total sampling and 28 are obtained. The study samples are residents at Panti Sosial Tresna Werdha Wana Seraya with criteria of age ≥ 60 years old and are willing to sign informed consent and blood-pressure can be measured. Smoking habit is determined by questionnaires for respondents data and smoking habit characteristics, while hypertension is determined through blood pressure measurements using mercury sphygmomanometer. The results of statistical test using Spearman correlation test show that there is no significant association between smoking habits and the incidence of hypertension based on the types of passive smokers ($p=0,382$), active smokers ($p=0,642$) and the degree of mild smokers ($p=0,513$). In this study, there is no correlation between smoking and the incidence of hypertension in elderly at Panti Sosial Tresna Werdha Wana Seraya which is affected by smoking habits and degree of smokers.

Keywords: smoking, hypertension, elderly, risk factors.

I. INTRODUCTION

Increasing life expectancies and decreasing fertility rates have resulted in the increase in the elderly population.[1] According to the World Health Organization (WHO) estimates that there will be an increase in the proportion of the elderly in the world from 7% in 2020 to 23% in 2025. The aging process is a process that transforms a healthy adult into a person who is frail by reducing most of the reserves of the physiological system and increasing susceptibility to various diseases and deaths. With the growing of vulnerability bodies to various diseases can cause death, one of the most common example is hypertension. This is due to increasing age, resulting in changes in the structure and function of cells, tissues, and organ systems. According to WHO (2013), there are 600 million people with hypertension worldwide, and three million of them die every year.[2] The results of the 2009 household health survey in Indonesia shows the prevalence of high blood pressure 83 per 1000 household members and the prevalence of hypertension in the elderly reached 0.37%.[3] WHO estimates that in 2020 non-communicable diseases will cause 73% of mortality and 60% of all morbidity in the world. Hypertension is one of the main problems in public health in Indonesia and in the world. It is estimated that around 80% of cases of hypertension increase mainly occur in developing countries in the year 2025 from a total of 639 million cases in 2000. This number is expected to increase to 1.15 billion cases in 2025. Increasing prevalence of hypertensive patients is caused by various risk factors, one of which is smoking habit. The 2011 Global Adult Tobacco

Survey (GATS) shows that Indonesia ranks first with the prevalence of active smokers compared to 14 other countries that implement GATS, namely 67.4% in men and 2.7% in women. In Indonesia, the number deaths from disease caused by smoking habits reach 300 thousand per year. Nearly 60 percent of deaths in Indonesia are caused by non-communicable diseases caused by cigarettes such as stroke, hypertension and heart disease which are increasing in number now. The purpose of this study to find association between smoking and hypertension among elderly in Panti Sosial Tresna Werdha Wana Seraya based on the types of smokers and degrees of smokers.

II. METHODOLOGY

This research is an analytic study with cross-sectional approach that analyzes the association between independent variable (smoking habits) with the dependent variable (incidence of hypertension). This research analyzes the association of smoking with the incidence of hypertension in the elderly (≥ 60 years). This research is conducted on the elderly group at Panti Sosial Tresna Werdha Wana Seraya in May 2019. The population in this study are 31 people who are the residents of Panti Sosial Tresna Werdha Wana Seraya. The sampling technique is total sampling which meets the inclusion and exclusion criteria, with the inclusion criteria: willing to be a respondent and sign an informed consent, age ≥ 60 years old, willing to the blood pressure be measured and the exclusion criteria: not willing to be a respondent and sign an informed consent. The researcher uses a questionnaire consists of questions about age, sex, active smokers, ex-smokers or passive smokers, the number of cigarettes consumed each day, the duration of smoking and the results of blood pressure measurements. Blood pressure measurement data is used to determine the incidence of hypertension in the study subjects. Blood pressure measurement is taken using mercury sphygmomanometer and stethoscope. Data that are obtained will be analyzed with SPSS software program for windows, version 21.0.

III. RESULT AND DISCUSSION

The research respondents are 28 people consisting of 7 men (25%) and 21 women (75%), age ranges from 60 years to 99 years, with the largest age group is respondents with age 70-79 as many as 13 people (46.4%). Out of 28 respondents who are at Panti Sosial Tresna Werdha Wana Seraya, more than 19 respondents (67.9%) do not suffer from hypertension compared to 9 people with hypertension (32.1%). Out of 28 respondents at Panti Sosial Tresna Werdha Wana Seraya, more respondents are passive smokers, namely 19 people (67.9%) compared to former smokers as many as 2 people (7.1%) and active smokers as many as 7 people (25%). Most respondents are classified as mild smokers as many as 7 respondents (77.8%), moderate smokers as many as 2 people (22.2%) and no heavy smoker is found. The degree of smokers is related to the duration of smoking and the number of cigarettes consumed per day measured by the Brinkman Index, classified as a mild smokers if the multiplication score is less than 200, moderate smokers if the result is 200-599, and heavy smokers if the result is ≥ 600 .

TABLE I: Characteristics of Study Subjects

Category of Study Subjects	n (%)
Age	
60-69	4 (14,3%)
70-79	13 (46,4%)
80-89	8 (28,6%)
90-99	3 (10,7%)
Gender	
Male	7 (25%)
Female	21 (75%)
Hypertension	
Yes	9 (32,1%)
No	19 (67,9%)
Type of smokers	
Passive smokers	19 (67,9%)
Active smokers	7 (25%)
Former smokers	2 (7,1%)
Degree of smokers	
Mild	7 (77,8%)
Moderate	2 (22,2%)

Based on Tab. II, out of 9 respondents who have hypertension, 7 of them are active smokers, 2 of whom are passive smokers and none of whom are former smokers.

TABLE II: Frequency of Correlation between Hypertension and Smoking Habits

Hypertension	Types of smokers			Total	
		Passive Smokers	Active Smokers		Former Smokers
Yes	n (%)	7 (25%)	2 (7,1%)	0	9 (32,1%)
No	n (%)	12 (42,9%)	5 (17,9%)	2 (25%)	19 (67,9%)

TABLE III: Spearman Correlation Test: Hypertension and Smoking Habits

Correlation between Variables	Correlation Coefficient (r)	P
Hypertension and Passive Smokers	0,27	0,382
Hypertension and Active Smokers	0,06	0,642

According to Tab. III, the correlation coefficient value is 0.27 ($p = 0.382$), therefore it is concluded that there is no correlation between passive smoking on elderly at Panti Sosial Tresna Werdha Wana Seraya. In addition, the value of $r = 0.27$, which means there is a weak relationship between hypertension and passive smokers.

According to Tab. III, the correlation coefficient value is 0.06 ($p = 0.642$), therefore it is concluded that there is no correlation between hypertension and active smokers on elderly at Panti Sosial Tresna Werdha Wana Seraya. In addition, the value of $r = 0.06$, which means there is a less significant relationship between hypertension and active smokers.

The result of this study is in line with the research conducted by Thuy et al and Hafiz et al which show that there is no significant relationship between smoking habits and hypertension.[4,5] The research conducted by Thuy et al, said that the risk of hypertension in active smokers is relatively the same as those who have never smoked or not smokers.[4]

Based on Tab. IV, of 2 respondents who have hypertension, all included in the category of mild smokers. Of 7 respondents who do not have hypertension, as many as 5 respondents included in the category of mild smokers and as many as 2 respondents included in the category of moderate smokers.

TABLE IV: Frequency of Correlation between Hypertension and Degree of Smokers

Hypertension	Degree of Smokers		Total	
		Mild		Moderate
Yes	n (%)	2 (22,2%)	0	2 (22,2%)
No	n (%)	5 (55,5%)	2 (22,2%)	7 (77,8%)

TABLE V: Spearman Correlation Test: Hypertension and Degree of Smokers

Correlation between Variables	Correlation Coefficient (r)	P
Hypertension and Mild Smokers	0,09	0,513

According to Tab. V, the correlation coefficient value is 0.09 ($p = 0.513$), therefore it is concluded that there is no correlation between hypertension and of mild smokers on elderly at Panti Sosial Tresna Werdha Wana Seraya. In addition, the value of $r = 0.09$, which means there is a weak relationship between hypertension and mild smokers.

The result of this study is different from the research conducted by Thuy et al and Tawbariah et al which show a significant relationship between the degree of smokers and the incidence of hypertension.[4,6] In line with study conducted by Dwiputra which shows no significant relationship between the degree of smokers and the incidence of hypertension.[7] The research conducted by Dwiputra shows that there are a strong interaction with alcohol consumption, smoking habits and body mass index, indicating that other factors can influence the results of the analysis.[7]

IV. CONCLUSION

Based on the result and discussion of the research about the association between smoking and incidence of hypertension among elderly at Panti Sosial Tresna Werdha Wana Seraya , it can be concluded that there is no correlation between smoking habits and the incidence of hypertension and there is no relationship between the degree of smokers and the incidence of hypertension among elderly at Panti Sosial Werdha Wana Seraya . The absence of a significant relationship between smoking and the incidence of hypertension is caused by the number of hypertension risk factors other than smoking which can affect the characteristics of the study sample. This research is conducted with a cross-sectional design so the result of the study is limited to prove whether there is a relationship between smoking and the incidence of hypertension therefore the causal relationship can not be determined. Similar studies are expected to use cohorts and are expected to be able to examine larger populations and pay attention to other confounding variables.

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