INTERNATIONAL JOURNAL OF HEALTH & MEDICAL RESEARCH

ISSN(print): 2833-213X, ISSN(online): 2833-2148

Volume 02 Issue 12 December 2023

DOI : 10.58806/ijhmr.2023.v2i12n01

Page No. 473-477

The Effect of Smoking and History of Hypertension on The Incidence of Hypertension

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ABSTRACT:

Background: Hypertension is still a health problem in Indonesia, especially in Bandung. The increase in hypertension cases can be caused by unhealthy lifestyles.

Purpose: This study aims to determine the effect of smoking and history of hypertension on the incidence of hypertension.

Methods: This study used a cross-sectional design. The population of this study is a productive age community, which is between 15-60 years. The sample technique in this study used accidental sampling techniques and obtained samples of 67 people. The instrument used is a questionnaire. Data analysis using chi-square test.

Results: More than half of respondents smoke (53.7%), most respondents have no family history of hypertension (55.2%), and more than half of respondents suffer from hypertension (52.2%). The variables that affect the incidence of hypertension are smoking (p = 0.005 and OR = 4.773 (1.696-13.427) and history of hypertension (p = 0.033 and OR = 2.933 (1.075-8.001).

Conclusion: Smoking people are at risk of suffering from hypertension by 4.7 times greater than people who do not smoke and people who have a history of hypertension are at risk of suffering from hypertension by 2.9 times greater than people who have no family history of hypertension.

Suggestion: It is recommended to people who smoke in order to stop smoking. Mainly are those who have a family history of hypertension.

KEYWORDS: Hypertension, Smoking, History of hypertension

INTRODUCTION

Hypertension is a common non-communicable disease with huge impacts globally. This disease increases the risk of several medical conditions such as heart disease, congestive heart failure, stroke, retinal hemorrhage, and kidney disease [1]. Socioeconomic conditions have changed the lifestyle of people in low- and middle-income countries, which increases the risk of developing hypertension [2]. Studies over the past two decades, have led to an increase in the incidence of hypertension [3]. Research studies have shown that hypertension imposes a direct economic burden on patients and the health care system, by increasing the need for hospitalizations, doctor consultations, laboratory examinations, and prescribed medications [4].

According to WHO data, hypertension affects 22 percent of the global population, with Africa having the highest prevalence of hypertension at 27 percent, the Eastern Mediterranean at 26 percent, and Southeast Asia at 25 percent [5]. The prevalence of hypertension in the Indonesian population aged 18 years was 34.11 percent, up 8.31 percent from 2013 [6]. The age groups with the highest prevalence of hypertension were 75 years and over (69.5) and 65-74 years (63.2) [7]. The prevalence of hypertension in Bandung City in 2018 based on blood pressure measurement, was 20.42% and 64.45% occurred in women. Technical Implementation Unit or Technical Implementation Unit Cibiru Puskesmas is one of the Puskesmas in Bandung whose prevalence of hypertension is 16.63% of all residents whose blood pressure is checked there. Based on information from the program of holders of Integrated Assisted Posts-Non-Communicable Diseases (Posbindu-PTM) at Puskesmas, efforts to overcome hypertension cases at Cibiru Health Centers have been carried out a lot. However hypertension cases are still increasing because many people still do not know that they suffer from hypertension and people's lifestyles are not really healthy [8].

Several risk factors have been linked to hypertension. These factors vary from country to country, and are even prone to socio-demographic variations within the same region. Previous epidemiological studies have reported determinants of hypertension as modifiable and non-modifiable risk factors [9–11]. Studies in Indonesia say the risk factor for hypertension is lifestyle [12], such as index body mass, physical activity, family history [13]. Another study in Bandung City states that the risk of suffering from

hypertension can increase if someone smokes [14]. In addition, other studies state that a family history of hypertension can also increase a person's risk of suffering from hypertension [15].

To address the increasing number of cases, efforts have been made to provide health education, home visits, and community engagement [16]. The number of risk factors for hypertension is so high that health workers have difficulty prioritizing preventive measures [17]. So, there is still a need for studies on this hypertensive disease. This study aims to determine the effect of smoking and history of hypertension on the incidence of hypertension.

METHOD

This study used a cross-sectional design [18]. The purpose is to determine the effect of smoking and history of hypertension with the incidence of hypertension. The population of this study is people of productive age, namely between 15-60 years old who are in the working area of the Cibiru Health Center. The sample technique in this study used accidental sampling techniques, with inclusion criteria: 1) patients who visited the Cibiru Health Center, did not have complications of other non-communicable diseases, were able to read and write. While the exclusion criteria are patients who visit but their health conditions do not allow it to be used as a research sample. The data collection time was carried out for 2 weeks, and a sample of 67 people was obtained.

The dependent variable in this study is the incidence of hypertension. Where the data on the incidence of hypertension is seen from the patient's medical record data. Patients who are declared hypertensive are patients with systolic blood pressure ≥ 140 and diastolic blood pressure ≥ 90. The independent variable in this study was smoking behavior. Where smoking behavior is categorized into smoking and not smoking. Declared smoking if the patient has been an active smoker for the past 3 years. The next variable is the history of hypertension. These variables are categorized into no history and no history. It is stated that there is a history if the respondent has hypertensive offspring from parents, grandparents, or siblings

Data were collected using questionnaires. After the data is collected then the data is collected and analyzed. The data analysis uses the chi-square test. Before respondents fill out the questionnaire, they first fill out a willingness sheet to be a respondent. This research has also been approved by the ethics commission of STIK Immanuel Bandung with No.130/KEPK/STIKI/VII/2022.

RESULTS

Table 1. Overview of Respondent Characteristics (n=67)

Characteristics of Respondents	**Total**	**Percentage**
Age (Mean ±SD) (Range)(Years)	(40,58±14,227) (16-60)	
Gender		
Man	10	44,78
Woman	37	55,22
Education		
Primary school	5	7,46
Junior high school	22	32,84
High school	27	40,30
College	13	19,40
Employment Status		
Work	28	41,79
Not Working	39	58,21

Table 1 shows that the mean age was 40.56 with a standard deviation of 14.227. The highest age is 60 years, while the lowest age is 16 years. When viewed from gender, the results showed more than half were women at 55.22%. When viewed from the highest level of education, the results show that as much as 40.30% of education is high school. When viewed from work, the results of the appointment of most respondents to work are 58.21%.

Table 2. Description of Smoking and History of Hypertension and Incidence of Hypertension (n = 67)

Research Variables	**Total**	**Percentage**
Smoking (n/%)		
Yes	36	53,7

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Not	31	46,3
History of Hypertension (n/%)		
Yes	30	44,8
Not	37	55,2
Incidence of Hypertension (n/%)		
Yes	35	52,2
Not	32	47,8

Table 2 shows that more than half of respondents smoke (53.7%), most respondents have no family history of hypertension (55.2%), and more than half of respondents suffer from hypertension (52.2%).

Table 3. The Effect of Smoking and History of Hypertension on the Incidence of Hypertension

Variable	**Incidence of hypertension**				***p-value***	**OR 95% CI**
	n	**%**	**n**	**%**		
Smoke					0,005	4,773 (1,696-13,427)
Yes	25	69,4	11	30,6		
Not	10	32,3	21	67,7		
History of Hypertension					0,033	2,933 (1,075-8,001)
Yes	20	66,7	10	33,3		
Not	15	40,5	22	59,5		

Table 3 shows that the incidence of hypertension in smokers is 69.4% and non-smokers is 32.3%. While those who were not hypertensive and smoked by 30.6% and those who were not hypertensive and did not smoke by 67.7%. The results of statistical tests using the chi square test obtained a p value of 0.005, which means that there is a significant influence between smoking and the incidence of hypertension. Further analysis obtained an OR value of 4,773 (1,696-13,427), meaning that smoking people are at risk of suffering from hypertension by 4.7 times greater than non-smokers.

The incidence of hypertension in those with a history of hypertension is 66.7% and those with no history of hypertension is 40.5%. While those who are not hypertensive and have a history of hypertension by 33.3% and those who are not hypertensive and there is no history of hypertension by 59.5%. The results of statistical tests using the chi square test obtained a p value of 0.033, which means that there is a significant influence between the history of hypertension and the incidence of hypertension. Further analysis obtained an OR value of 2.933 (1.075-8.001), meaning that people with a history of hypertension are at risk of suffering from hypertension by 2.9 times greater than people with no family history of hypertension.

DISCUSSION

This study found the influence of smoking on the incidence of hypertension. The results of interviews with some respondents who smoked, it turned out that they smoked for quite a long time, so they did not realize when they suffered from hypertension. When someone smokes, the nicotine found in cigarettes will be fibered by the bloodstream and can cause damage to arteries, spur near the heart, resulting in the process of arthrosclerosis and increase blood pressure. The occurrence of increased heart rate pressure due to the task of the heart becomes more creative when pumping oxygen, besides that there is an increase in oxygen demand caused by the presence of carbon moxide in the body [19].

Smoking is one of the behaviors that generally occurs during adolescence and adulthood, this is in accordance with the stage of development characterized by increasing the frequency and intensity of smoking, and ultimately resulting in nicotine dependence. Nicotine can be addictive, both in active smokers and in passive smoking [20]. Smoking behavior is the act of eating tobacco that has become a cigar and then ignited by fire. Smoking is divided into 2, namely, the first is smoking cigarettes directly or what is often called active smokers, and the second is those who indirectly smoke cigarettes, but also smoke cigarettes, which is called passive smoking. Various behaviors carried out by humans in response to the stimulus they receive, one form of human behavior that can be observed is smoking behavior [21]. People with smoking habits have a risk of developing hypertension compared to people who do not smoke, this shows that smoking habits are one of the triggers of hypertension [22].

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This research is in line with previous research at the Kawangkoan Health Center, in his research it was found that the results of cigarette consumption were categorized into 3, namely consuming 11-21 cigarettes with an interval of 3160 minutes from waking up (light smokers), consuming smoking about 21-31 cigarettes a day with an interval since waking up ranging from 6-30 minutes (moderate smokers, and consuming cigarettes more than 31 cigarettes per day with an interval of smoking 5 minutes after waking up in the morning (smokers weight). It was found that there was a relationship between smoking and hypertension [23]. Another study conducted in Palembang stated that people who smoke have a 1.7 times greater risk of suffering from hypertension [24].

The results showed an influence between family history and the incidence of hypertension. The results of interviews with several respondents who suffered from hypertension, they stated that they had a history of hypnosis in their family. A family history of hypertension or genetic factors that come from a family with a history of hypertension have a greater risk of suffering from hypertension than those who have no history [25]. If both parents suffer from hypertension, then the incidence of hypertension in offspring will increase 4 to 15 times compared to if the parents are normotensive. If the parents suffer from essential hypertension then 44.8% of their children will suffer from hypertension. If one of the parents suffers from hypertension, then 12.8% of them will have hypertension. Hypertension in a person is the result of genetic changes. It has been proven that not just blood pressure, but the regulatory mechanisms of the reninangiotensin-aldosterone system, the sympathetic nervous system, can all be genetically influenced [26].

This study is in line with previous research that states a relationship between a history of hypertension and the incidence of hypertension [27]. Research in Palembang that states people who have a history of hypertension have a 3.6 times chance of developing hypertension compared to people who do not have a family history of hypertension [28].

CONCLUSION

The conclusion of this study is that there is a significant influence between smoking and the incidence of hypertension. Smoking people are at risk of suffering from hypertension by 4.7 times greater than people who do not smoke. There is a significant influence between the history of hypertension and the incidence of hypertension. People who have a history of hypertension are at risk of suffering from hypertension by 2.9 times greater than people who have no family history of hypertension. It is recommended to people who smoke in order to reduce the frequency of smoking and stop smoking. Mainly are those who have a family history of hypertension

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