

FACTORS RELATED TO THE INCIDENCE OF HYPERTENSION IN NON-MEDICAL WORKERS AT X BOGOR HOSPITAL

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ABSTRACT

Background: Hypertension is a degenerative disease that is a serious problem in the world. Hypertension is categorized as a silent killer disease because sufferers do not know they have hypertension. According to the World Health Organization (2021), 42% of sufferers are unaware of having hypertension because it often occurs without complaints. **Purpose:** The purpose of this study was to determine whether there is a relationship between age, gender, family history, smoking habits, and obesity with the incidence of hypertension. **Methods:** The type of research conducted was quantitative with a cross-sectional approach. The sample size obtained from the results of the study was 58 samples. The research took place in April - July 2023. The instruments used in this study were questionnaires and digital tensimeters to measure blood pressure. The data results are presented in the form of univariate and bivariate analysis using the chi-square test. **Results:** The results showed that age ($p=0.047$), gender ($p=0.015$), family history ($p=0.007$), and obesity ($p=0.019$) showed a significant relationship with the incidence of hypertension. However, smoking habit ($p=0.634$) did not show a significant relationship. **Conclusion:** age, gender, family history, and obesity showed a significant relationship with the incidence of hypertension, and smoking habit did not show a significant relationship with the incidence of hypertension.

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INTRODUCTION

Disease patterns in Indonesia have undergone an epidemiological transition over the past two decades, namely from communicable diseases which were originally a major burden and then began to switch to non-communicable diseases (Ministry of Health, 2015). Non-Communicable Diseases (PTM) or also known as degenerative diseases. Non-communicable diseases are a public health problem because of the high morbidity and mortality rates globally, the estimated death caused by noncommunicable diseases is around 60% and 43% of them die with illness (WHO, 2013).

Hypertension is a non-communicable disease that can cause death. Categorizing this disease as the silent killer disease because sufferers do not know they have hypertension before checking their blood pressure (WHO, 2018). Hypertension is a degenerative disease which is a serious problem today. Hypertension is categorized as the silent killer disease because sufferers do not know they have hypertension. Hypertension is a disease that is often found in society, both in the general public and working people, and also in young and old age groups (Azwardi et al., 2023; Maksuk, 2012).

Hypertension is a condition in which blood vessels continuously increase pressure. Blood is carried from the heart to all parts of the body through blood vessels. The higher the pressure, the harder the heart has to pump. Hypertension is a very dangerous disease, because there are no typical symptoms or signs as an early warning. Most people feel healthy and energetic despite hypertension (Kemenkes RI, 2010).

According to data from the World Health Organization (WHO) for 2020, around 1.13 billion people in the world have hypertension, meaning that 1 out of 3 people in the world is diagnosed with hypertension. The number of people with hypertension continues to increase every year, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 9.4 million people die from hypertension and its complications. The World Health Organization (WHO) estimates that the current global prevalence of hypertension is 22% of the total world population. The prevalence of hypertension in Southeast Asia ranks 3rd highest at 25% of the total population (WHO, A Global Brief On Hypertension. World Health Organization, 2020).

According to Riskesdas in the Indonesian Ministry of Health (2021) the prevalence of

hypertension in Indonesia is 34.1%, an increase compared to the prevalence of hypertension in Riskesdas 2013 of 25.8%. According to data from the Sample Registration System (2014) Indonesia in 2014, hypertension with complications (5.3%) is the number 5 (five) cause of death at all ages.

According to the World Health Organization (2021) 42% of sufferers are not aware that they have hypertension because it often occurs without complaints. In 2018, West Java was in second place as the province with the highest cases of hypertension in Indonesia, namely 39.6% after South Kalimantan (RI Ministry of Health, 2019). Based on data from the 2018 Bogor City Health Office, hypertension is included in the top ten most common diseases in Bogor City, the second most common after acute nasopharyngitis. Data on hypertension visits has increased from 2016 to 2020. Hypertension data in 2016 contained 12,658 people suffering from hypertension, and there was an increase in 2020, namely 53,635 people. Of the 53,635 hypertension sufferers in 2020 in the city of Bogor, 31,882 sufferers are female and 21,753 are male (Bogor City Health Office, 2018).

The professions of various workers in the hospital have varying patterns of physical activity. The incidence of hypertension at hospital X in Bogor is influenced by several risk factors. Workers at this x hospital have a profession that has a risk of developing hypertension such as in the Hospital Management section which has a long sitting position every day. The intensity of sitting too prolonged periods of time with minimal movement can increase the risk of obesity in workers due to the accumulation of fat in the body.

This condition makes it not optimal to burn calories so that the energy balance in the body can be disrupted and have an impact on being overweight and at risk of hypertension and employees at this hospital have an average age of ≥ 45 years, there are several employees who have overweight body conditions and active smoker. In the preliminary study results, it was found that 6 out of 10 workers suffer from hypertension. From the results of interviews, the cause was a family history factor, having excess body weight and having an age of ≥ 45 years. Of these 10 people, 7 people (70%) had a history of hypertension in the family, 7 people (70%) were employees aged ≥ 45 years, 6 people were active smokers (60%), and 4 people (40%) were heavy excess body.

The population in this study were non-medical workers at the X Bogor Hospital, totaling 100 workers with a required sample of 58 workers. The sampling technique used random sampling

technique. This study aimed to determine the factors associated with the incidence of hypertension in workers at the X Bogor Hospital in 2023.

METHODS

This research was conducted using a quantitative approach with a cross-sectional research design, namely research that observes the independent variable and the dependent variable at the same time. This research was conducted in a hospital in the city of Bogor. The sample of this research is part of the population determined by the sample formula with different proportions, namely 58 samples. The sampling technique in this study used the simple random sampling method, namely taking samples from members of the population. The process is carried out randomly regardless of strata or position. The sampling method is to draw all the population numbers such as arisan and those who come out of the lottery to be sampled.

The variables measured in this study include: age, gender, family history, smoking habits, and obesity. Data was collected using a questionnaire, and physical measurements, namely weight, height and blood pressure. Data analysis was carried out univariately using frequency distribution tables, and bivariately to determine the relationship between the dependent variable and the independent variable.

RESULTS

Based on Table 1, from the results of a study of 58 workers, it was found that as many as 36 workers (62%) suffered from hypertension, 37

workers (63.8%) had age ≥ 45 years, male and female workers had a frequency of 29 workers (50%), workers with a family history of hypertension, namely 42 workers (72.4%), workers who have smoking habits, namely 30 workers (51.7%), and workers who are overweight or obese as many as 43 workers (74%). Univariate and bivariate data analysis is presented in the Table 1 dan Tabel 2 below: The univariate and bivariate data analysis is presented in the Table 1 dan Tabel 2 below:

Table 1. Frequency distribution of hypertension, age, gender, family history, smoking habits, and obesity in workers at the X Bogor Hospital in 2023

Variabels	Frequency (n)	Percentase (100%)
Hypertension		
1. Hypertension	36	62
2. Not Hypertension	22	38
Age		
1. ≥ 45 years	37	63,8
2. < 45 years	21	36,2
Gender		
1. Male	29	50
2. Female	29	50
Family History		
1. There is History Family	42	72,4
2. No family history	16	27,6
Smoking Habit		
1. Smoke	30	51,7
2. Do not smoke	28	48,3
Obesity		
1. Yes	43	74
2. No	15	26

Table 2. The relationship between the variables age, gender, family history, smoking habits, and obesity with the incidence of hypertension in workers at the X Bogor Hospital in 2023

Characteristic	Hypertension				<i>p value</i>	PR (95% CI)
	Yes		No			
	n	%	n	%		
Age						
- ≥45 years	27	73	10	27	0,047	1,703 (1,00 – 2,90)
- <45 years	9	42,9	12	57,1		
Gender						
- Male	23	79,3	6	20,7	0,015	1,77 (1,13 – 2,76)
- Female	13	44,8	16	55,2		
Family History						
- Yes	31	73,8	11	15,9	0,007	2,36 (1,12 – 4,99)
- No	5	31,3	11	68,8		

Smoking Habit	20	66,7	10	33,3	0,634	1,16 (0,77 – 1,75)
- Yes						
- No	16	57,1	12	42,9		
Obesity						
- Yes	31	72,1	12	27,9	0,019	2,16 (1,03 – 4,53)
- No	5	33,3	10	66,7		

Based on Table 2, the results of the bivariate analysis on the chi-square test showed that there was a relationship between age and the incidence of hypertension in hospital workers x (p-value 0.047 <0.05) and the Prevalence Ratio value indicated that workers aged ≥45 years were at risk 1.703 times to get hypertension compared to workers who are <45 years old. There is a relationship between gender and the incidence of hypertension in hospital workers x (p-value 0.015 <0.05) and the Prevalence Ratio value shows that male workers have a 1.77 times risk of developing hypertension compared to female workers.

There is a relationship between family history and the incidence of hypertension in workers at the hospital x (p-value 0.007 <0.05) and the Prevalence Ratio value shows that workers who have a history of hypertension in the family are at risk of 2.36 times for developing hypertension compared to workers who do not have a history hypertension in the family.

There is no relationship between smoking habits and the incidence of hypertension in workers in the hospital x (p-value 0.634 > 0.05) and the Prevalence Ratio value shows that workers who have smoking habits are at risk of 1.16 times for developing hypertension compared to workers who do not have smoking habits.

There is a relationship between obesity and the incidence of hypertension in hospital workers x (p-value 0.019 <0.05) and the Prevalence Ratio value indicates that workers who are overweight or obese have a 2.16 times risk of developing hypertension compared to workers who are not obese.

DISCUSSION

Based on the results of the study, the highest prevalence of hypertension among x Bogor hospital workers in 2023 was 36 workers (62.1%). Based on Basic Health Research (Riskesdas) data for 2018, the prevalence of hypertension in Indonesia is 34.1%. This has increased compared to the prevalence of hypertension in the 2013

Riskesdas of 25.8%. Based on functional characteristics, civil servants (PNS) have the highest percentage suffering from high blood pressure, namely 36.91%, followed by farmers/workers 36.14%, then entrepreneurs 34.03%, fishermen 27.85% and private workers 24.37 % (Riskesdas, 2018). Based on data from the Bogor City Health Office in 2018, hypertension is included in the top ten most common diseases in Bogor City, the second most common after acute nasopharyngitis (Bogor City Health Office, 2018). In this study, the highest worker systolic blood pressure was 169 mmHg and the lowest systolic blood pressure was 97 mmHg. The highest working diastolic blood pressure is 106 mmHg and the lowest diastolic blood pressure is 86 mmHg. The results of the study show that the highest proportion of workers is experiencing hypertension.

Based on the results of the research that has been done, it is known that the age prevalence of workers at the X Bogor Hospital in 2023 is the highest, namely the proportion of age in the age category at risk of developing hypertension, namely age ≥45 years, totaling 37 workers (63.8%). From the results of the study, the highest proportion was the age category at risk of developing hypertension (≥45 years). Where the age of ≥ 45 years is included in the pre-elderly category, increasing age from year to year will cause aging which is a natural process that cannot be avoided, runs continuously and continuously. Furthermore, it will cause anatomical, physiological and biochemical changes in the body so that it will affect the function and ability of the body as a whole. The average age of workers at the X Bogor Hospital in 2023 is 37-63 years old.

Based on the results of the research that has been done, it is known that the prevalence of gender in workers at the X Bogor Hospital in 2023 is a balanced respondent, namely 50% of each male sex and female gender where 29 workers are male and 29 female workers. In this study, there were 29 male and female respondents. The number of male and female respondents was balanced perhaps because during the employee recruitment process, the Hospital had planned that the number of male and female employees be made in a

balanced manner. Gender is a risk factor for hypertension that cannot be modified. However, some literature has suggested that the relationship between gender and hypertension is also influenced by age.

Based on the results of the study, the prevalence of family history of hypertension in workers at Hospital X Bogor in 2023 is the highest, having a history of 42 workers (72.4%). Family history is a condition that reflects the same genetics and environment in some people. Approximately 70-80% of patients with essential hypertension found a history of hypertension in the family. If a history of hypertension is found in both parents, the suspicion of essential hypertension is greater (Lestari, 2019).

Based on the frequency distribution, it shows that in the smoking habit variable in the smoking category, there are 30 workers (51.7%). The results of further analysis, 10 workers are heavy smokers (21-30 cigarettes per day), 5 workers are moderate smokers (11-20 cigarettes per day) and 15 workers are light smokers (1-10 cigarettes per day). The proportion of smokers in workers at the X Bogor Hospital is 51.7% because most male workers are active smokers, workers will smoke after they eat, drink coffee, or when they feel anxious and anxious because of work. Workers will smoke their first cigarette in the morning for 30 minutes before starting their work and smoke a large number of cigarettes when they feel tired from work and after eating or drinking coffee. Based on the results of the study, the highest prevalence of obesity among workers at the X Bogor

Hospital in 2023 was overweight or obese (IMT ≥ 25) of 43 workers (74.1%). The high obesity rate in workers at the X Bogor Hospital is most likely caused by genetic factors in the families of workers who are overweight or caused by an unhealthy lifestyle, this shows that the number of calories consumed by workers is more than burned through exercise. In Indonesia, based on Basic Health Research data in 2018, the level of nutritional status in adults, namely 35.4%, is obese. One of the nutritional problems experienced by workers is the problem of excess nutrition. Nutritional events are more caused by an energy imbalance in the body, namely the energy consumed is greater than the energy expended (Aziza, 2018).

Based on the results of the study, the highest number of respondents was found in respondents aged ≥ 45 years, namely 27 workers (73%). The results showed that there was a significant

relationship between age and the incidence of hypertension (p value 0.028). The results of the Prevalence Ratio show a PR value = 1.703 (95% CI: 1.00-2.90) which means that respondents aged ≥ 45 years have a 1.703 times chance of being at risk of hypertension compared to respondents aged < 45 years. In general, blood pressure will rise with age, this is caused by stiffness and thickening of the arteries due to arteriosclerosis so that they cannot expand when the heart pumps blood through these arteries. The older you get, the more likely a person suffers from hypertension. Loss of tissue elasticity and atherosclerosis and dilation of blood vessels are factors that cause hypertension in old age (Aziza, 2018).

Based on the results of the study, the highest number of respondents was found in male respondents who suffered from hypertension, namely 23 workers (79.3%). The results showed that there was a significant relationship between gender and the incidence of hypertension (p-value 0.014). The Prevalence Ratio results show a PR value = 1.769 (95% CI: 1.13 – 2.76) which means that male respondents have a 1.769 times chance of being at risk of hypertension compared to female respondents. Hypertension attacks men more easily, that is probably because men have more factors driving hypertension such as smoking, fatigue, male sex at the productive age of 55 years will be more likely to get hypertension, but for those aged 55-67 years it is likely more women will be affected by hypertension (WHO, 2018).

Based on the results of the study, the highest number of respondents was found in respondents who had a family history of hypertension, namely 31 workers (73.8%). The results of the study showed that there was a significant relationship between history families with hypertension (p-value 0.005). The Prevalence Ratio results show a PR value = 2.362 (95% CI: 1.11 – 4.99) which means that respondents who have a family history of hypertension have a 2.362 times chance of being at risk of hypertension compared to respondents who do not have a family history of hypertension. A history of hypertension in parents is a risk factor for hypertension that cannot be modified.

Blood pressure has a tendency to run in families or there are hereditary factors. If a history of hypertension is found in both parents, the risk of developing primary hypertension is 2-fold compared to other people who do not have a history of hypertension in their parents. Someone will have a greater possibility of getting

hypertension if their parents are hypertensive sufferers (Lestari, 2019).

Based on the results of the study, it showed that the highest proportion of workers who smoked was 20 workers with hypertension (66.7%). The statistical test results showed that there was no significant relationship between smoking habits and the incidence of hypertension in workers at the X Bogor Hospital. An increase in blood pressure can be caused by nicotine being absorbed by the small blood vessels in the lungs and being circulated into the bloodstream which then reaches the brain. The brain reacts to nicotine by signaling the glands to release epinephrine or adrenaline. This strong hormone will constrict blood vessels and force the heart to work due to higher pressure (Aziza, 2018). Based on the results of the statistical test with the smoking habit category, 16 workers (84.2%) were at risk for hypertension, while the non-smoking category, 11 workers (61.1%) were at risk for hypertension. With this it can be concluded that workers who have smoking habits and do not have smoking habits at risky age still have the potential to suffer from hypertension.

Based on the results of the study, the highest number of respondents was found in respondents with obesity or Body Mass Index ≥ 25 , namely 31 workers (72.1%). The results showed that there was a significant relationship between obesity (IMT ≥ 25) and the incidence of hypertension. The Prevalence Ratio results show a PR value = 2.163 (95% CI: 1.03 – 4.53) which means that respondents with obesity or IMT ≥ 25 have a 2.163 times chance of being at risk of hypertension compared to respondents who are not obese or IMT < 25 .

Overweight increases heart rate and insulin levels in the blood. Increased insulin causes the body to retain sodium in water. Underweight can increase the risk of infectious diseases, while excess body weight will increase non-communicable diseases. Maintaining a normal body weight allows a person to achieve a longer life expectancy (Kemenkes RI, 2015). Hypertension can be prevented by doing regular physical activity, namely through regular elderly exercise (Maksuk et al., 2020; Maksuk, Yusneli, 2020).

CONCLUSION

There is a significant relationship between the variables of age, gender, family history, and obesity with the incidence of hypertension. There is no significant relationship between smoking

habits and the incidence of hypertension. Therefore, it is necessary to empower peer groups in controlling hypertension both in the general public and the working community (Maksuk et al., 2022).

Suggestion, the hospital needs to check the blood pressure and nutritional status of workers at least once a month. The hospital should organize an exercise program at least 3 times a week and make posters with the theme of the importance of exercise for the body to remind workers to do sports, the hospital makes a joint weekly exercise program such as morning exercises on Saturdays and Sundays. Workers who are overweight are advised to lose weight by increasing physical activity by exercising regularly and adjusting their diet according to the body's energy needs so that incoming energy is balanced with energy expended thereby preventing fat accumulation which causes obesity, and it is hoped not skipping breakfast and reducing consumption of fried foods or foods high in fat.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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