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ANALYSIS OF THE CHARACTERISTICS OF RESPONDENTS WITH THE INCIDENCE OF HYPERTENSION DISEASE AT THE ONE MILLION GLASSES EXAMINATION

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Abstract

Degenerative diseases are one of the major health problems in Indonesia, especially among the elderly population. This study aims to describe the prevalence of degenerative diseases detected during the one million spectacles screening programme at Brawijaya Military Command, Surabaya City. Using a descriptive approach, this study identifies the most common types of degenerative diseases found and analyses their influencing factors. The method used in this research is quantitative research with a cross sectional approach conducted at the One Million Glasses Check-up at Kodam Brawijaya, Surabaya City. The population in this study were all elderly participants who were measured 698 respondents. The sampling technique used total sampling where the entire population became the sample of this study, the sample of this study was 698 hypertension participants. Data collection was carried out in June 2024. Data analysis was carried out using the Chi Square test. It was found in this study that there was a relationship between anxiety and smoking habits on the incidence of hypertension while for abdominal circumference, body mass index and age range there was no relationship related to this.

Keywords: Hypertension, BMI, Smoking, Abdominal Circumference

Introduction

Hypertension is the result of an increase in blood pressure that occurs in the human body, increasing blood pressure that exceeds normal limits. Hypertension can be found in old age and young age. Hypertension is defined as an increase in systolic blood pressure of at least 140 mmHg or diastolic blood pressure of at least 90 mmHg (Kemenkes, 2014) in (Priyadarsani et al., 2021). Hypertension is a degenerative disease that often occurs has a very high mortality rate and can affect a person's quality of life and productivity. Hypertension is known as the silent killer because hypertension is a hidden killer and generally, people do not know that they have hypertension before checking their blood pressure (Purwanto, 2022).

According to the world health organisation (WHO) the number of people with hypertension in the world has doubled to 1.28 billion, this increase occurred in adults aged 30-79 years (Fitriyatun & Putriningtyas, 2023). Based on data (B2PTM) in(Faisal et al., 2022) stated that the prevalence of hypertension cases in Indonesia was 63,309,620 people, while the death rate due to hypertension was 472,218 people (P2PTM Ministry of Health RI, (2019). The health office through the East Java provincial health profile in 2020 shows that the prevalence of hypertension is 36.3%, the estimated number of people

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with hypertension aged ≥15 years in East Java province is around 11,008,334 residents (East Java Provincial Health Office, 2020).

Increasing age in the elderly brings various compensations in terms of decreased function. There is an increase in the prevalence of degenerative diseases in the elderly (Agustina & Pradana, 2022). Health complaints do not always result in disruption of daily activities. Still, the occurrence of health complaints and the types of complaints experienced by the population can roughly describe the level of health (Hammado et al., 2023). With increasing age, physiological functions decline due to ageing, so many non-communicable diseases appear in the elderly. Degenerative problems also reduce endurance so the elderly are vulnerable to infectious diseases (Hasina et al, 2022).

This study aims to describe the prevalence of degenerative diseases detected during the one million spectacles screening programme at Brawijaya Military Command, Surabaya City.

Research Methods

The method used in this study is quantitative research with a cross sectional approach, namely measuring the dependent and independent variables only once at a time. The research was conducted at the One Million Glasses Examination at Kodam Brawijaya Surabaya City. The population in this study were all elderly participants who were measured 698 respondents. The sampling technique used total sampling where the entire population became the sample of this study, the sample of this study was 698 hypertension participants. Data collection was carried out in June 2024. The data collection method in this study was carried out by distributing questionnaires. The questionnaire used is a Demographic Data questionnaire: Age, gender, occupation, and family history of family support and hypertension control adherence questionnaire Diagnoses of diabetes, hypertension, and heart disease, including duration of disease and treatment undertaken. Data were analysed using the Chi Square test.

Results and Discussion

The results showed that out of a total of 698 screening participants, 25% had hypertension, 15% had diabetes mellitus, and 10% had visual impairment due to cataracts. Age, family history, and lifestyle factors such as diet and physical activity played a significant role in the prevalence of these degenerative diseases.

Table 1. Characteristics of Respondents Based on Gender, Age Range and Education at the One Million Glasses Examination at Brawijaya Military Command, Surabaya City

No	Gender	Frequency	Percent
1	Male	362	51.9
2	Female	336	48.1
No	Age		
1	< 30 Years	7	1.0
3	30 - 40 Years	35	5.0
4	41 - 50 Years	283	40.5
5	51 - 60 Years	239	34.2
2	> 60 Years	134	19.2
No	Education		
1	Primary School	83	11.9
2	Junior High School	104	14.9
3	High School	407	58.3

No	Gender	Frequency	Percent
4	College	100	14.3
	Total	698	100.0

The characteristics of respondents based on table 1 show that more than half of the respondents were female as many as 362 people (51.9%), more than most of the respondents aged 41-50 years as many as 283 people (40.5%), more than half of the respondents had a high school education of 407 (58.3%).

Abdominal circumference was measured from the midpoint of the border/margin of the lower ribs and the border of the right and left iliac crest and then measured horizontally using a measuring tape. Measurement was carried out in a way that the subject was asked in a polite way to undress the upper part to determine the measurement point, but if the respondent objected, the respondent could wear thin clothes that were not too thick. Measurement of abdominal circumference was carried out by a measurer of the same gender as the respondent. Respondents are classified as abdominal obesity based on WHO criteria for Asian adults, namely if the abdominal circumference of male respondents is ≥ 90 cm and women is ≥ 80 cm, while not classified as abdominal obesity if the abdominal circumference of male respondents (Septyaningrum & Martini, 2014). The following is a Cross Tabulation of Abdominal Circumference Categories Against the Incidence of Hypertension at the One Million Glasses Examination at the Brawijaya Military Command, Surabaya City.

Table 2. Cross Tabulation of Abdominal Circumference Categories on the Incidence of Hypertension at the One Million Glasses Examination at Kodam Brawijaya Surabaya City

No	Abdominal circumference category	Hypertension				Total
		No	%	Yes	%	
1	Normal	221	39,0%	46	35,1%	267
2	Not Normal	346	61,0%	85	64,9%	431
	Total	567	100,0%	131	100,0%	698

From Table 2 Cross Tabulation of Abdominal Circumference Categories on the Incidence of Hypertension at the One Million Glasses Examination at Kodam Brawijaya Surabaya City, it is found that most of them have an abnormal category and are not hypertensive by 61%. Body Mass Index (BMI) is a parameter used to determine a person's weight status whether classified as normal or not (underweight, or overweight), the data needed to find BMI is the difference between body weight and height. BMI can also be used to roughly describe body composition, although the value of the weight contribution of fat and muscle does not accompany it (Arini & Wijana, 2020). The following is a Cross Tabulation of Body Mass Index Categories on the Incidence of Hypertension at the One Million Glasses Examination at Kodam Brawijaya Surabaya City.

Table 3. Cross Tabulation of Body Mass Index Categories on the Incidence of Hypertension at the One Million Glasses Examination at Brawijaya Military Command, Surabaya City.

No	BMI Category	Hypertension				Total
		No	%	Yes	%	
1	Underweigh	7	1,2%	2	1,5%	9
2	Normal	180	31,7%	41	31,3%	221
3	Overweight	235	41,4%	61	46,6%	296

No	BMI Category	Hypertension				Total
		No	%	Yes	%	
4	> Obesity	144	25,4%	27	20,6%	171
Total		567	100,0%	131	100,0%	698

Based on Table 3. It was found that most of the participants were overweight and did not have hypertension. Anxiety is caused by excessive concern about problems that are being faced (real) or imagined that might occur. Anxiety is most often caused by disease, one of which is hypertension. Hypertension is a disease that causes new problems, namely stroke, heart failure, kidney and all of them will have an impact on the occurrence of death. So there needs to be early prevention so that hypertension does not cause new problems in patients. This problem will make patients and families anxious about the patient's condition (Kati et al., 2018). The following is a Cross Tabulation of Feelings of Anxiety towards the Incidence of Hypertension at the One Million Glasses Examination at the Brawijaya Kodam, Surabaya City.

Table 4. Cross Tabulation of Feelings of Anxiety towards the Incidence of Hypertension at the Million Glasses Examination at the Brawijaya Military Command in Surabaya City.

No	Anxiety	Hypertension				Total
		No	%	Yes	%	
1	No	562	99,1%	128	97,7%	690
2	Yes	2	0,4%	3	2,3%	5
Total		567	100,0%	131	100,0%	698

Age is one of the main factors that cause hypertension (Tindangen et al., 2020) states that age is one of the main factors affecting hypertension, this is due to natural changes in the body in the heart, blood vessels, and hormones. The age classification according to this study is as follows: < 30 years; 30 - 40 years; 41 - 50 years; 51 - 60 years; > 60 years; elderly > 60 years. Cross Tabulation of Age Range on the Incidence of Hypertension at the One Million Glasses Examination at the Brawijaya City Kodam.

Table 5. Cross Tabulation of Age Range on the Incidence of Hypertension in One Million Glasses Examination at Brawijaya Military Command Surabaya City

No	Age	Hypertension				Total
		No	%	Yes	%	
1	< 30 Years	4	0,7%	3	2,3%	7
2	30 - 40 Years	30	5,3%	5	3,8%	35
3	41 - 50 Years	225	39,7%	58	44,3%	283
4	51 - 60 Years	201	35,4%	38	29,0%	239
5	> 60 Years	107	18,9%	27	20,6%	134
Total		567	100,0%	131	100,0%	698

Table 5 provides information that most of the participants were 41 - 50 years old and 51 - 60 years old. And not hypertensive. Smoking behaviour is smoking tobacco smoke that has become a cigar and then ignited. According to him, there are two types of smoking. The first is smoking cigarettes directly which is called active smoking, and the second is those who indirectly smoke cigarettes (Runturumbi et al., 2019a). But also inhaling cigarette smoke is called passive smoking. Various behaviours that humans do in response to the stimulus they receive, one form of human behaviour that can be

observed is smoking behaviour. People with smoking habits have a risk of developing hypertension compared to people who do not smoke, this shows that smoking is one of the triggers for hypertension (Umbas, Tuda and Numansyah, 2019). The following is a Cross Tabulation of Smoking Habits on the Incidence of Hypertension at the One Million Glasses Examination at Kodam Brawijaya Surabaya City.

Table 6. Cross Tabulation of Smoking Habits on the Incidence of Hypertension at the One Million Glasses Examination at Brawijaya Military Command, Surabaya City

No	Smoking	Hypertension				Total
		No	%	Yes	%	
1	No.	363	64,0%	104	79,4%	467
2	Yes	201	35,4%	27	20,6%	228
Total		567	100,0%	131	100,0%	698

Table 6. Cross Tabulation of Smoking Habits on the Incidence of Hypertension at the One Million Glasses Examination at the Brawijaya Military Command in Surabaya City provides information that most do not smoke and do not have hypertension.

Table 7. Chi Square Table of α sig Value of Variables Against the Incidence of Hypertension at the One Million Glasses Examination at the Brawijaya Military Command in Surabaya City

No	Variable	Sig.
1	Category Abdominal circumference	0.237
2	BMI category	0.704
3	Anxiety	0.007
4	Age	0.321
5	Smoking	0.002

From Table 7. Chi Square results above, it can be seen that Anxiety and Smoking habits sig $\alpha < 0.05$ indicates that Ho is rejected and Ha is accepted this shows there is an association between feelings of anxiety and smoking habits on the incidence of hypertension.

Discussion

Waist circumference measurement is a strong predictor of hypertension. Central obesity has been strongly associated with a high prevalence of hypertension. Women with a waist circumference greater than normal have a three-fold increase in hypertension. Findings from study of (Mandala, 2014), a 2.5 cm increase in waist circumference for women corresponds to a 1 mmHg increase in systolic blood pressure (Krause et al., 2009). Research on 772 Chinese subjects showed that in male subjects, waist circumference was 89.05 cm while in female subjects, waist circumference of 90.90 cm could detect hypertension (Liu et al., 2011) in (Ningrum, Azam and Indrawati, 2019). In this study based on the chi square test it was found that sig $\alpha > 0.05$. The abdominal circumference category showed no relationship between abdominal circumference and the incidence of hypertension.

Body mass index (BMI) is a simple tool for monitoring the nutritional status of adults, especially concerning underweight and overweight. IMT users are only applicable to adults over 18 years of age. IMT cannot be applied to infants, children, adolescents, pregnant women and sportsmen (Rumaisyah et al., 2023). One of the most important

cardiovascular disorders is hypertension. Hypertension is often associated with obesity and increased risk of cardiovascular disease. About 75% of hypertension is directly related to overweight (Ho, 2009). Body Mass Index is one of the most frequently used and practical indicators for measuring adult population levels, where BMI is categorised into underweight, normal, overweight, at risk, obesity I, and obesity II (Faisal et al., 2022). Increased body weight plays an important role in the mechanism of onset of hypertension in obese people (Jalal et al., 2014). In this study In this study based on the chi square test it was found that sig α> 0.05. The category of Body Mass Index (BMI) abdominal circumference shows no relationship between body mass index and the incidence of hypertension.

Based on the results of this study, it was found that the level of anxiety in hypertensive patients during the covid 19 pandemic was highest in the moderate anxiety category as many as 35 people (40.2%) and the lowest distribution was the category of no anxiety, namely 14 people (16.1%) (Istiana et al., 2021). This study shows that most respondents have a moderate level of anxiety because the patient has been exposed to enough information about hypertension and its handling, this condition is in line with the statement that the level of anxiety has a significant relationship, that the level of knowledge will affect the level of anxiety. This shows that at the time of the study most adults had anxiety in themselves. Anxiety is one of the most common psychiatric diseases in adults and is a major public health problem in many countries, anxiety damages the health and quality of life of individuals. Individuals with anxiety have a higher risk of hypertension than those without anxiety. And conversely, hypertensive patients have a higher risk of anxiety than those who do not have hypertension (Shafanisa Aulia et al., 2023). In this study In this study based on the chi square test it was found that sig α < 0.05. The Anxiety category shows there is an association of anxiety with the incidence of hypertension.

(Adila & Mustika, 2023) states that the pathophysiology of these aging mechanisms, including oxidative stress, mitochondrial dysfunction, impaired resistance to molecular stressors, low-grade chronic inflammation, increases with age, changes in the arteries in the body become wider and stiffer which results in reduced capacity and recoil of blood accommodated through the blood vessels. Ageing also disrupts neurohormonal mechanisms such as the reninangiotensin-aldosterone system and also causes increased peripheral plasma concentrations and also the presence of glomerulosclerosis due to aging and intestinal fibrosis resulting in increased vasoconstriction and vascular resistance, resulting in increased blood pressure (hypertension). The results showed that those with old age (Nuraeni, 2019). In this study In this study based on the chi square test it was found that sig α> 0.05. Category range Age anxiety shows no relationship between anxiety and the incidence of hypertension.

Nicotine in cigarettes will directly increase blood pressure even in addicts. The effect of increasing blood pressure is indeed temporary, about 30 minutes during a person smoking. However, as long as someone smokes blood pressure continues to increase. Many studies state that smoking is a risk factor for hypertension, quitting smoking can reduce the risk of hypertension and the risk of cardiovascular disease (Mulyasari et al., 2023). The results of statistical tests in this study p-value = 0.002 which means that there is a relationship between smoking status and the incidence of hypertension. This study is not following the theory which states that smoking is a risk factor for hypertension. This study is in line with research conducted by (Runturumbi et al., 2019b) which states that

there is a relationship between smoking habits and the incidence of hypertension in the Wajo Puskesmas work area (p-value = 0.00654).

Conclusion

The prevalence of degenerative diseases among the participants of the million spectacles screening at Kodam Brawijaya was high, with hypertension and diabetes mellitus being the most common conditions. Early detection and appropriate intervention are essential to reduce the burden of these diseases in the community. Mass health screening programmes need to be continued and improved to identify and treat degenerative diseases early. It was found in this study that there is a relationship between Anxiety and smoking habits on the incidence of hypertension while for abdominal circumference, Body Mass Index and Age Range there is no relationship related to it.

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