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Factors Related to the Incidence of Hypertension in the Working Area of the Tumin Health Post, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste

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ABSTRACT

Hypertension is defined by the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC) as a pressure higher than 140/90 mmHg and is classified according to its severity, ranging from high normal blood pressure (BP) to malignant hypertension. This condition is categorized as primary/essential (almost 90% of all cases) or secondary, occurring as a result of a recognizable and often correctable pathological condition (Doenges, Moorhouse & Geissler, 2012). This study uses a Cross-Sectional Study approach, namely researchers conduct measurements or research at one time. Researchers use a Cross-Sectional Study design because researchers intend to identify whether or not there is a relationship between the independent variable and the dependent variable in one measurement using a questionnaire measuring instrument. Based on the results of statistical tests, alcohol consumption obtained a p-value of 0.0317 (<0.5), and smoking habits obtained a p-value of 0.0307 (<0.5). With statistical test results of less than 0.05, it can be concluded that there is a significant relationship between alcohol consumption and smoking habits with the incidence of hypertension.

KEYWORDS: Alcohol Consumption, Smoking Habits, Hypertension Incidence

INTRODUCTION

Hypertension is defined by the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC) as blood pressure higher than 140/90 mmHg and is classified according to its severity, ranging from high-normal blood pressure (BP) to malignant hypertension. This condition is categorized as primary/essential (almost 90% of all cases) or secondary, occurring as a result of a recognizable and often reversible pathological condition (Doenges, Moorhouse, & Geissler, 2012).

Hypertension begins with atherosclerosis, a structural disorder of the peripheral blood vessels that progresses to blood vessel stiffness. This blood vessel stiffness is accompanied by narrowing and possibly enlargement of plaques, which impede peripheral circulation. This stiffness and sluggish blood flow increase the heart's workload, which is ultimately compensated for by increased cardiac pumping effort, resulting in increased blood pressure in the circulatory system (Bustan, 2010).

Hypertension is usually asymptomatic until target organ damage occurs. Headaches in hypertension are not related to blood pressure. The dangerous phase of hypertension can be characterized by headaches and vision loss. Long-term risks of hypertension include target organ damage, including cerebrovascular diseases such as thrombotic and hemorrhagic strokes. Other diseases include vascular diseases such as coronary heart disease. Hypertension also causes left ventricular hypertrophy, a compensatory mechanism for chronically elevated blood pressure. This is an independent predictor of death and cerebrovascular injury (Davey, 2009).

According to Mansjoer (2013), approximately 95% of hypertension cases have no known cause (essential hypertension), while 5% are non-essential hypertension. Advanced hypertension, meaning it has been present for years, is usually accompanied by symptoms. People with hypertension often experience headaches, blurred vision, insomnia, shortness of breath, and body aches. Generally, the general public recognizes someone as having hypertension if their blood pressure is higher than 160/90 mmHg.

Risk factors as causes of hypertension. Risk factors for hypertension can be divided into non-modifiable risk factors (such as heredity or genetics, gender, and age) and modifiable risk factors such as being overweight or obese, lack of exercise or physical activity, stress, salt consumption, alcohol consumption, and smoking (Sarumaha, 2018).

Excessive alcohol consumption can negatively impact long-term health. One consequence of excessive alcohol consumption is increased blood pressure, known as hypertension. Alcohol is one of the causes of hypertension because alcohol has the same effect as carbon dioxide which can increase blood acidity, so that it becomes thick and the heart is forced to pump1, in addition, excessive alcohol consumption in the long term will affect the increase in cortisol levels in the blood so that the activity of the renin-angiotensin aldosterone system (RAAS) increases and results in increased blood pressure. Smoking can cause hypertension due to the chemicals

contained in tobacco, especially nicotine, which can stimulate the sympathetic nerves, triggering the heart to work faster so that blood circulation flows faster and narrowing of the blood vessels occurs, as well as the role of carbon monoxide which can replace oxygen in the blood and force the heart to meet the body's oxygen needs (Sukmana, 2009).

Data from the United States, according to the National Health and Nutrition Examination Survey (NHNESIII), indicates that at least 30% of hypertensive patients are unaware of their condition, and only 31% of treated patients achieve their target blood pressure of below 140/90 mmHg. A 2006 study by the American Hypertension Association found that only 68% of hypertensive patients were aware of their condition, while the remainder reported complete ignorance (Triyanto, 2014).

According to the Timor-Leste (TL) Health Government, the head of the non-communicable diseases department stated that in 2021, hypertension in Timor-Leste reached 43%. Of this prevalence, only 8% received regular treatment, and the majority did not receive treatment. According to the author's study conducted by the Oecusse District Health Government on March 15, 2022, the number of patients with hypertension in 2021 was as follows:

Table 1.1. Distribution of hypertension incidence in Oecusse Regency in 2021

No	Month	Amount	Percentage
1	January	118	8.8%
2	February	88	6.6%
3	March	139	10.4%
4	April	125	9.4%
5	May	115	8.6%
6	June	121	9.1%
7	July	113	8.4%
8	August	125	9.3%
9	September	110	8.2%
10	October	83	6.2%
11	November	94	7.0%
12	December	108	8.0%
	Total	1339	100%

Source: TL health department (2021).

Based on data on hypertension at the Tumin sub-health center on March 16, 2022, the number of patients with hypertension in 2021 was as follows:

Table 1.2. Distribution of hypertension incidence in Tumin Sub-Health Center in 2021

No	Month	Amount	Percentage
1	January	13	8.5%
2	February	9	5.9%
3	March	11	7.2%
4	April	19	12.4%
5	May	21	13.7%
6	June	13	8.5%
7	July	8	5.2%
8	Augustu	12	7.8%
9	September	15	9.8%
10	October	6	3.9%
11	November	11	7.2%
12	December	15	9.8%
Total		153	100%

Source: Tumin Sub-Health Center (2021).

Based on the background described above, the author is interested in finding out more about patients with hypertension at the Tumin Sub-Health Center, Bobometo Village, Oe-Silo Health, Oe-Cusse Regency, Timor-Leste.

RESEARCH METHOD

This research uses a cross-sectional study approach, where the researcher conducts measurements or research at a single point in time. The cross-sectional study design aims to identify the relationship between the independent and dependent variables in a single measurement using a questionnaire. This type of research is correlational or associational, examining the relationship between variables and aims to identify and explain a relationship, estimate, and test it based on existing theory (Nursalam, 2020).

RESEARCH RESULTS AND DISCUSSION

RESEARCH RESULTS

The study, "Factors Associated with the Incidence of Hypertension in the Work Area of the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste," was conducted on August 14, 2022. The study involved 60 respondents with hypertension. This study was designed as a cross-sectional study.

1. Univariate Analysis

a. Respondent Characteristics

1) Respondent Alcohol Consumption

Table 4.1. Frequency distribution of respondents based on alcohol consumption at the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

No	Alcohol Consumption	Total (f)	Percentage (%)
1	Light	5	8.3%
2	Currently	2	3.3%
3	Heavy	45	75.0%
4	Very heavy	8	13.3%
Total		60	100%

Source: Primary data, 2022.

Based on table 4.1, the distribution of alcohol consumption shows that 5 respondents (8.3%) consumed light alcohol, 2 respondents (3.3%) consumed moderate alcohol, 45 respondents (75%) consumed heavy alcohol and 8 respondents (13.3%) consumed very heavy alcohol.

1) Smoking habits

Table 4.2. Frequency distribution of respondents based on smoking habits at the Tumin Community Health Center, Bobometo Village, Oe-Silo District, Oecusse Regency, Timor-Leste

No	Smoking Habit	Total (f)	Percentage (%)
1	Light	34	56.7%
2	Currently	22	36.7%
3	Heavy	4	6.7%
Total		60	100%

Source: Primary data, 2022.

Based on Table 4.2, the distribution of smoking habits shows that 34 respondents (56%) are light smokers, 22 respondents (36.7%) are moderate smokers, and 4 respondents (6.7%) are heavy smokers.

1) Respondent Age

2)

Table 4.3. Frequency distribution of respondents by age at the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste

No	Age	Amount (f)	Percentage (%)
1	40-60 years	34	56.7
2	60 years and above	26	43.3
Total		60	100%

Source: Primary data, 2022.

Table 4.3 shows that 34 respondents (56.7%) were aged 40-60 years, and 26 respondents (43.3%) were over 60 years old.

1) Respondent Gender

Table 4.4. Frequency distribution of respondents by gender at the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

No	Gender	Amount (f)	Percentage (%)
1	Male	55	91,7%
2	Female	5	8,3%
Total		60	100%

Source: Primary data, 2022.

Table 4.4 shows that 55 respondents (91.7%) were male and 5 respondents (8.3%) were female.

1) Respondent Education

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Table 4.5. Frequency Distribution of Respondents by Education at the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

No	Education	Amount (f)	Percentage (%)
1	Doesn't School	44	73,3%
2	Elementary School	7	11,7%
3	Junior High School	6	10%
4	Senior High School	3	5%
Total		60	100%

Source: Primary data, 2022.

Based on Table 4.5, the distribution of education shows that 44 respondents (73.3%) did not attend school, 7 respondents (11.7%) graduated from elementary school, 6 respondents (10%) graduated from junior high school, and 3 respondents (5%) graduated from high school.

1) Respondents' Occupations

Table 4.6. Frequency distribution of respondents by occupation at the Tumin Sub-Community Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

No	Job	Amount (f)	Percentage (%)
1	Private	58	96,7%
2	Civil servants	2	3,3%
Total		60	100%

Source: Primary data, 2022.

Based on Table 4.6, the distribution of occupations shows that 58 respondents (96.7%) were private sector employees, and 2 respondents (3.3%) were civil servants.

1) Occupation with Hypertension

Table 4.7. Frequency distribution of respondents based on hypertension at the Tumin Community Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

No	Hypertension	Amount (f)	Percentage (%)
1	Normal	0	0%
2	Pre hypertension	38	63,3%
3	Grade 1 hypertension	21	35%
4	Grade 2 hypertension	1	1,7%
Total		60	100%

Source: Primary data, 2022.

Based on Table 4.7, the distribution of hypertension shows that 38 respondents (63.3%) had pre-hypertension, 21 respondents (35%) had stage 1 hypertension, and 1 respondent (1.7%) had stage 2 hypertension.

1. Bivariate Analysis

a. Relationship between Alcohol Consumption and Hypertension at the Tumin Community Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste. Hypertension is classified into four categories: normal, pre-hypertension, stage 1 hypertension, and stage 2 hypertension.

Table: 4.8 Frequency Distribution Results of the Relationship between Alcohol Consumption and Hypertension

	Pre hypertension		Grade 1 hypertension		Amount		*P value*
Alcohol Consumption	N	%	N	%	N	%	
Ringan	0,8	0,0%	4,3	100%	5,0	100%	
Currently	0,3	0,0%	1,7	100%	2,0	100%	0,0317
Heavy	6,8	20.0%	38,3	80,0%	45,0	100%	
Very heavy	1,2	0,0%	6,8	100%	8,0	100%	
Total	9,0	15,0%	51,0	85,0%	60	100%	

Source: Primary data, 2022.

Based on Table 4.8, the analysis of the relationship between alcohol consumption and hypertension shows that of the 60 respondents, 0.8 respondents (0.0%) experienced pre-hypertension with light alcohol consumption, 4.3 respondents (100%) experienced grade 1 hypertension, 0.3 respondents (0.0%) experienced pre-hypertension with moderate alcohol consumption, 1.7 respondents (100%) experienced grade 1 hypertension, 6.8 respondents (20.0%) experienced pre-hypertension with heavy alcohol consumption, 38.3

respondents (80.0%) experienced grade 1 hypertension, and 1.2 respondents (0.0%) experienced pre-hypertension with very heavy alcohol consumption, and 6.8 respondents (100%) experienced grade 1 hypertension.

Based on the statistical test results, a p-value of 0.0317 (<0.5) was obtained, thus concluding that there is a significant relationship between alcohol consumption and the incidence of hypertension.

a. The Relationship Between Smoking Habits and Hypertension at the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

Table: 4.9. Distribution of the Relationship Between Smoking Habits and Hypertension at the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

Smoking Habit	Pre hypertension		Grade 1 hypertension		Amount		*P value*
	N	%	N	%	N	%	
Light	51	8.8%	28.9	91.2%	34.0	100%	
Currently	3.3	22.7%	18.7	77.3%	22.0	100%	
Berat	.6	25.0%	3.4	85.0%	4.0	100%	0,0307
Total	9	15%	51	85%	60	100%	

Source: Primary data, 2022.

Based on Table 4.9, the analysis of the relationship between smoking habits and hypertension shows that out of 60 respondents, 5.1 respondents (8.8%) had pre-hypertension with light smoking habits, 28.9 respondents (91.2%) had grade 1 hypertension, 3.3 respondents (22.7%) had pre-hypertension with moderate smoking habits, 18.7 respondents (77.3%) had grade 1 hypertension, and 0.6 respondents (25.0%) had pre-hypertension with heavy smoking habits, and 3.4 respondents (85.0%) had grade 1 hypertension.

Based on the statistical test results, a p-value of 0.0307 (<0.5) was obtained, thus concluding that there is a significant relationship between smoking habits and the incidence of hypertension.

RESEARCH DISCUSSION

This research was conducted by collecting data through interviews and using questionnaires. Primary data collection used questionnaires, while secondary data collection was obtained from the Tumin Sub-Health Center in Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste. In this research design, the researcher conducted observations on patients with hypertension within the inclusion criteria. After that, the researcher then distributed questionnaires to each patient. Before the questionnaires were filled out, the researcher informed the respondents about the purpose of the research and the nature of their participation in the research, how to fill out the questionnaire, and before the respondents filled out all the questions available in the research questionnaire, the respondents first signed the research consent form (informed consent). After the research data were collected, the data were edited, coded, and entered into a master table. The data were then processed using the SPSS program. The results of the processing were presented in frequency and distribution tables and explained in narrative form.

1. The relationship between alcohol consumption and hypertension at the Tumin Community Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

Based on Table 4.8, the analysis of the relationship between alcohol consumption and hypertension shows that out of 60 respondents, Among those with mild alcohol consumption, 0.8 respondents (0.0%) experienced pre-hypertension, 4.3 respondents (100%) experienced grade 1 hypertension, among those with moderate alcohol consumption, 0.3 respondents (0.0%) experienced pre-hypertension, 1.7 respondents (100%) experienced grade 1 hypertension, among those with heavy alcohol consumption, 6.8 respondents (20.0%) experienced pre-hypertension, 38.3 respondents (80.0%) experienced grade 1 hypertension, and among those with very heavy alcohol consumption, 1.2 respondents (0.0%) experienced pre-hypertension, and among those with 6.8 respondents (100%) experienced grade 1 hypertension.

Based on the results of the statistical test, a p-value of 0.0317 (<0.5) was obtained, so it can be concluded that there is a significant relationship between alcohol consumption and the incidence of hypertension. This is in line with research conducted by Anggara & Prayitno (2012) regarding factors related to high blood pressure or hypertension at the Telaga Murni Community Health Center, West Cikarang in 2012, where based on research results on 75 samples, it was shown that consuming alcohol had a significant relationship with hypertension.

Alcohol is a contributing factor to hypertension because it has the same effect as carbon dioxide, increasing blood acidity, thickening the blood and forcing the heart to pump harder. Furthermore, excessive alcohol consumption over the long term will increase cortisol levels in the blood, increasing the activity of the Renal-Angiotensin-Aldosterone System (RAAS), which can lead to high blood pressure (Jayanti et al., 2013). Hypertensive patients who consume alcohol should limit their consumption to no more than 20-30 g of ethanol per day for men and no more than 10-20 g per day for women.

In this study, researchers assumed that alcohol consumption significantly influenced the incidence of hypertension in the Tumin Sub-Health Center Work Area. This is because respondents consumed alcohol over a long period of time and consumed alcohol in amounts exceeding the normal limit of one 600 ml bottle of water, thus increasing the risk of developing hypertension. The most commonly consumed types of alcohol are beer, Diablo, DS Strong, whiskey, Legend, and palm wine.

1. The relationship between smoking habits and hypertension at the Tumin Community Health Center in Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste.

Based on Table 4.9, the analysis of the relationship between smoking habits and hypertension reveals that of the 60 respondents, 5.1 respondents (8.8%) had pre-hypertension, 28.9 respondents (91.2%) had grade 1 hypertension, 3.3 respondents (22.7%) had moderate smoking habits, 18.7 respondents (77.3%) had grade 1 hypertension, and 0.6 respondents (25.0%) had heavy smoking habits, and 3.4 respondents (85.0%) had grade 1 hypertension.

Based on the statistical test results, a p-value of 0.0307 (<0.5) was obtained, indicating a significant relationship between smoking and hypertension. Buston (2010) stated that smoking carries a risk of hypertension and coronary heart disease, with the greatest risk depending on the number of cigarettes smoked per day. If someone quits smoking, the benefits can be felt immediately; they will be free from carbon monoxide within one day and free from nicotine within one or two weeks. According to the Indonesian Ministry of Health (2016), toxic chemicals such as nicotine in carbon monoxide inhaled through cigarettes enter the bloodstream and can damage the endothelial lining of high blood vessels. Smoking also increases the heart rate, increasing the need for oxygen to supply to the heart muscles. Smoking in people with high blood pressure further increases the risk of arterial damage.

Anggara's (2012) study, "Factors Associated with Blood Pressure at the Telaga Murni Community Health Center in West Cikarang," found a significant relationship between smoking and blood pressure, as daily smoking increases the risk of hypertension. Smoking habits are associated with hypertension in respondents who have smoked, not only among women. Some respondents also said they have been smoking for a long time but have not been able to stop, so the habit has continued into their current age and is influenced by environmental factors. The longer smoking, the greater the negative impact on health. Therefore, self-awareness measures are needed to eliminate this smoking habit.

CONCLUSION

Based on the research results and discussion presented previously, the following conclusions can be drawn:

1. There is a significant relationship between alcohol consumption and the incidence of hypertension, with a p-value of 0.0317 (<0.5).
2. There is a significant relationship between smoking habits and the incidence of hypertension, with a p-value of 0.0307 (<0.5).

SUGGESTION

In this study, the researcher still encountered several limitations, including the small number of bibliographic books related to the research title, the relatively homogeneous sample size, and the limited time. Therefore, the researcher recommends:

1. For Healthcare Institutions

The results of this study can improve knowledge, learning, and understanding in healthcare institutions regarding factors related to hypertension.

2. For Educational Institutions

Educational institutions can improve their educational capacity and quality so that the information from this study can be used as additional material to enrich knowledge and provide reference materials for nursing science regarding factors related to hypertension.

3. For the Community

The community in the working area of the Tumin Sub-Health Center, Bobometo Village, Oe-Silo District, Oe-Cusse Regency, Timor-Leste. Based on the data obtained from this study, it is recommended that the community in Tumin sub-district, Bobometo Village, needs to prevent hypertension as early as possible, especially for people who have risk factors for hypertension through improving their lifestyle, the need for blood pressure checks, regular medication, and living a healthy lifestyle.

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