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Original Research Article

Factors associated with the occurrence of hypertension in the Talaud islands regency

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ABSTRACT

Background: Hypertension is one of the leading causes of death for cases of non-communicable diseases in Indonesia. Basic Health Research in 2018 by the ministry of health of the republic of Indonesia found the number of non-communicable diseases such as hypertension, stroke and diabetes mellitus has increased compared to revious research. The aim of this study was to determine the factors associated with the occurrence of hypertension in the Talaud Islands Regency.
Methods: This is a survey research using cross sectional method, the instrument used is a questionnaire that has been tested for validity and reliability. The number of samples are 100 people with purposive sampling technique.
Results: The results of the chi square analysis show that gender does not associate with the occurrence of hypertension (p value 0.641), age has no association with the occurrence of hypertension (p value 0.641), obesity and hypertension showed that there was a significant association (p value 0.033), family history and hypertension were associated (p value 0.033), no association between smoking and hypertension (p value 0.582), consumption of risky food do not have an association with the occurrence of hypertension (p value 0.612), there is no association between physical activity and the occurrence of hypertension (p value 0.641), alcohol consumtion and hypertension were associated (p value 0.024), stress has no association with the occurrence of hypertension (p value 0.083).
Conclusions: Factors associated with hypertension in the Talaud Islands Regency are obesity, family history of hypertension and alcohol consumption.

Keywords: Hypertension, Risk factors, Islands

INTRODUCTION

Hypertension is a long-term disease and those who suffers hypertensionmostly are detected at the time the patient carries out an examination for certain diseases so that it is often referred to as the "silent killer".[1] World health organization (WHO) in 2013 stated that hypertension is an increase in persistent pressure in arteries where systolic blood pressure is equal to or above 140 mmHg and diastolic pressure is equal to or above 90 mmHg on two measurements with intervals of five minutes under adequate conditions rest and calm.[2]

Based on the cause, hypertension is divided into the first essential hypertension or primary hypertension, namely hypertension of unknown cause, also called idiopathic hypertension. Essential hypertension may be caused due to heredity or genetics and is also influenced by the environment, hyperactivity of the sympathetic nervous system, obesity, alcohol, smoking and so forth. Second is secondary hypertension, namely hypertension caused by other diseases.[3,4]

There are several risk factors that can cause hypertension in a person, namely physical activity/exercise, obesity,

stress, smoking habits, salt intake, alcohol consumption and fat intake, age, gender, family history, genetic and ethnicity.[5] Basic health research in 2018 conducted by the ministry of health of the republic of Indonesia found the number of non-communicable diseases such as hypertension, stroke and diabetes mellitus has increased compared to the previous results. Based on the results of blood measurement, hypertension prevalence increased from 25.8% of cases in Indonesia in 2013 to 34.1% in 2018. The increase in prevalence is due to lifestyles such as smoking, alcohol consumption, lack of physical activity, lack of consumption of fruits and vegetables. The prevalence of hypertension in the North Sulawesi Province in 2018 based on doctor's diagnosis is 13.5% and the prevalence based on measurement of blood pressure measurement is almost 34.1%, increasing from 2016 and 2017.[6]

Data on the ten most diseases in Talaud Islands Regency in 2017 found that hypertension was the second highest disease after acute respiratory infections with a total of 4,330 cases.[7] The aim of this study was to determine the factors associated with the occurrence of hypertension in the Talaud Islands Regency.

METHODS

This is an analytic survey research with cross sectional design. This study was conducted at the Regional General Hospital of Talaud Islands Regency in August 2019. The population of this study was all patients seeking treatment at the Internal Medicine Polyclinic of the Talaud Islands Regional General Hospital. The sample was calculated using the Lamenshow formula with convidence level of 95%, Estimated proportion 50% and precision 10%. The number of samples in this study amounted to 100 people. Sampling technique using non probability sampling with purposive method, the inclusion criteria were patient over 30 years old and willing to be interviewed

Independent variables are age, gender, family history, physical activity, obesity, consumption of risky food, alcohol consumption, stress, smoking and the dependent variable is hypertension. Ethical committee permission was sought before the start of the study.

Statistical analysis

Data were collected by interview using questionnaire. Data were entered and through SPSS. The data was analyzed with univariate to get an overview of the frequency of each variable category, bivariate to know the relation between independent variable (age, gender, family history, physical activity, obesity, consumption of risky food, alcohol consumption, stress, smoking) with dependent variable (hypertension). bivariat analysed using chi square test, p value of 0.05 was taken as margin for establishing statistical significance.

RESULTS

In table 1 of the 100 respondents, most of them were female, 56 of whom suffered from hypertension. 44 respondents were male, 31 of whom suffered from hypertension. Bivariate analysis results obtained p value 0.641 (>0.05) which showed no association between gender and hypertension. (Table 1).

Table 1: Association between gender and hypertension.

Gender	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Male	31	70.5	13	29.5	44	100	
Female	37	66.1	19	33.9	56	100	0.641
Total	68	68.0	32	32.0	100	100	

Table 2: Association between age and hypertension.

Age (in years)	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
30-60	34	64.2	19	35.8	53	100	
>60	34	72.3	13	27.7	47	100	0.381
Total	68	68.0	32	32.0	100	100	

Distribution of respondents based on age found that most respondents aged 30-60 years as many as 53 people, 34 of whom suffer from hypertension. Chi square test results obtained p value 0.381 (<0.05) which indicates no association between age and hypertension. (Table 2).

Table 3: Relationship between obesity and hypertension.

Obesity	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Obesity	23	56.1	18	43.9	41	100	
No obesity	45	76.3	14	23.7	59	100	0.033
Total	68	68.0	32	32.0	100	100	

Obesity is calculated based on the respondent's body mass index. Of the 100 respondents, 59 people were not obese. Of the 59 people who are not obese, there are 45 people who suffer from hypertension and of 41 people who are obese, 23 of them suffer from hypertension. Bivariate test results obtained p value 0.033 (<0.05) which shows there is a significant association between obesity and hypertension. (Table 3).

Out of 100 respondents, 62 have family history of hypertension. Of the 62 people who have family history of hypertension, 50 of them suffer from hypertension. Chi bivariate test results obtained p value 0.001 (<0.05) which

shows there is a significant association between family history of hypertension with the occurrence of hypertension (Table 4).

Table 5 shows that out of 100 respondents, 56 people did not smoke and 46 people smoked or had a history of smoking. Bivariate test results obtained p value of 0.582 which means there is no association between smoking and the occurrence of hypertension (Table 5).

Almost all respondents have done physical activity amounted to 96 people, 66 of whom suffer from hypertension. Bivariate test results obtained p value 0.641 (>0.05) which indicates that there is no association between physical activity and the occurrence of hypertension (Table 6).

Of 100 respondents, 66 people continue to consume foods that are at risk of developing hypertension and 34 people do not. Chi square test results obtained p value 0.612 (>0.05) which states there is no association between consumption of risky food and hypertension (Table 7).

Table 4: Association between family history and hypertension.

Family history of hypertension	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Yes	50	80.6	12	19.4	62	100	0.001
No	18	47.4	20	52.6	38	100	
Total	68	68.0	32	32.0	100	100	

Table 5: Association between smoking and hypertension.

Smoking	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Yes	30	65.2	16	34.8	46	100	0.582
No	38	70.4	16	29.6	54	100	
Total	68	68.0	32	32.0	100	100	

Table 6: Association between physical activity and hypertension.

Physical Activity	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Yes	66	68.7	30	31.3	96	100	0.641
No	2	50.0	2	50.0	4	100	
Total	68	68.0	32	32.0	100	100	

Table 7: Association between consumption of risky food and hypertension.

Consumption of risky food	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Always	46	6 9.7	20	3 0.3	66	100	0.612
Rarely/not	22	64.7	12	35.3	34	100	
Total	68	68.0	32	32.0	100	100	

Table 8: Association between alcohol consumption and hypertension.

Alcohol consumption	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Yes	10	47.6	11	52.4	21	100	0.024
No	58	73.4	21	26.6	79	100	
Total	68	68.0	32	32.0	100	100	

Table 8: Association between stress and hypertension.

Stress	Hypertension				Total		P value
	Yes		No				
	N	%	N	%	N	%	
Yes	32	6 0.4	21	39.6	53	100	
No	36	76.6	11	23.4	47	100	0.083
Total	68	68.0	32	32.0	100	100	

The alcohol consumption data in table 7 shows that 79 respondents did not consume alcohol and 58 of them suffered from hypertension. Bivariate test results obtained p value 0.024 (<0.05) which indicates there is a significant association between alcohol consumption and hypertension (Table 8).

From the results of univariate and bivariate tests, out of 100 respondents, 53 people felt symptoms of stress and 47 people did not. The p value obtained is 0.083 (>0.05) which indicates there is no association between stress and hypertension (Table 9).

DISCUSSION

In Table 1, the results of the chi square analysis show that gender does not associate with the occurrence of hypertension in the Talaud Islands Regency where the p value of 0.641 is greater than 0.05. The results of this study are supported by the results of the study of Arifin, et al which states that gender is not associated with hypertension.8

Age categories of respondents are divided into age categories of 30-60 years and more than 60 years. The division of this category is based on age risk factors for hypertension. Out of 100 respondents, 53 were at the age of 30-60 years and most of them (72.3%) had hypertension. Chi square analysis results show that age has no association with the occurrence of hypertension in Talaud Islands Regency with p value of 0.641, greater than 0.05. The results of this study are supported by research by Raihan et al where age is not related to the occurrence of hypertension in the community in the working area of Rumbai Pesisir Health Center with a score of 0.21 (>0.05).[9] The results of this study contradict with research conducted by Puspita and Hakas where age is associated with hypertension with a p value of 0.009 (<0.05).[10]

The results between obesity and hypertension showed that there was a significant association between obesity and hypertension in the Talaud Islands Regency with p value of 0.033 (<0.05). People who weigh over 30 percent of ideal body weight, are more likely to suffer high blood pressure. The results of this study are supported by the results of research conducted by Sapitri et al, which also foundassociation between obesity and hypertension in coastal communities in Siak City, Rumbai District, Pekanbaru City.[11]

Based on table 4, the chi square test results obtained p value of 0.001 which indicates that there is a significant association between family history and hypertension in Talaud Islands Regency with p value of 0.033 (<0.05). Someone with a family history of hypertension has a risk of developing hypertension. Various studies have shown that family history is associated with hypertension. One of the studies that support the results is a study from Situmorang stating that heredity is associated with hypertension12 as well as research conducted by Arifin where genetic history is associated with hypertension.[8]

Chi square test results between smoking and hypertension obtained p value of 0.582 (>0.05) which indicates that there is no association between smoking and hypertension in Talaud Islands Regency. The results of this study are in line with research by Sapitri, et al where there is no association between smoking and the occurrence of hypertension in coastal communities on the SiakCity with a p value of 0.230 (>0.05).[11]

Several studies have found that physical activity affect the reduction in blood pressure. Moderate physical activity carried out regularly two to three times a week for 30 minutes can reduce blood pressure. In table 6, 96 people did physical activities every day for 30-90 minutes and some even more than 90 minutes the chi square test obtained p value of 0.641 (>0.05) which indicates that there is no association between physical activity and the occurrence hypertension in the Talaud Islands Regency. The results of this study are in line with research conducted by Sapitri et al which also found association between physical activity and the occurrence of hypertension with p value of 0.00,11 and different from the results of Situmorang study where there is no association between physical activity and the occurrence of hypertension with a p value 0.263 (>0.05).[12] Karim, et al with the results of their study suggested that there is a significant association between physical activity and hypertension.[13]

Diet is an important factor in hypertension. People who frequently consume foods containing salt, sodium, caffeine and fat have greater risk of increasing blood pressure. The consumption of risky food asked by respondents included consumption of salty foods, consumption of processed meat, consumption of fried

foods, consumption and use of seasonings, consumption of grilled food and consumption of coffee. In Table 7, the results of the chi square show that consumption of risky food do not have an association with the occurrence of hypertension in the Talaud Islands Regency with p value of 0.612 greater than 0.05. The results of this study differ from the results of the study by Manawan et al about the association between food consumption and the incidence of hypertension in the Tandengan Satu village, Eris district, Minahasa regency with the results of the study there is a significant association between fat intake and sodium intake with hypertension, as well as research conducted by Pontoh, et al where there is an association between sodium consumption and the occurrence of hypertension in adults in Tompaso Public Health Center in Minahasa regency and as the dominant variable related to the incidence of hypertension.[14,15]

Chi square results of the association between alcohol consumption with hypertension obtained p value of 0.024 which indicates that there is a significant association between alcohol consumption with the occurrence of hypertension in the Talaud Islands Regency. The results of this study are supported by research conducted by Jayanti et al there is a significant association between the type of drink and the amount of alcohol consumption with the occurrence of hypertension, and different from the research conducted by Arifin et al which states there is no association between alcohol consumption and the occurrence of hypertension.[8,16]

The association between stress and hypertension, the results of the chi square analysis showed that stress has no association with the occurrence of hypertension in the Talaud Islands Regency with p value of 0.083 (>0.05). This study is supported by Pontoh et al in Tompaso Public Health Centerwhere there is no association between stress and hypertension,15 as well as research conducted by Sapitri, et al where there is no association between stress and the risk of hypertension in coastal communities of Siak City.[11]

Limitations

The characteristics of the sample in this study were more woman than men so for further research on the relationship between smoking, alcohol consumption with accurence of hypertension it was more specifically for respondents with male characteristics so the results were more significant.

CONCLUSION

Factors associated to the occurrence of hypertension are obesity (p=0.033), family history of hypertension (p=0.001) and alcohol consumption (p=0.024). Unrelated factors consist of gender, age, smoking, physical activity, consumption of risky foods and stress.

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