

How to Cite:

Lesmana, H., Tukan, R. A., Darni, Pujiyanto, A., Handayani, F., Hasriana, H., & Paridah, P. (2022). Hypertension and risk factors in coastal societies. *International Journal of Health Sciences*, 6(S3), 3347–3354. <https://doi.org/10.53730/ijhs.v6nS3.6451>

Hypertension and risk factors in coastal societies

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Abstract---Hypertension is a global problem since the increasing prevalence rate occurs every year, including in Tarakan City, which topographically consists of coastal and urban societies. The increasing

number of people with hypertension is related to population growth and unhealthy community behaviour. This study aimed to determine the correlation of risk factors for physical activity/sports, smoking and sodium intake with blood pressure in coastal societies in Tarakan City. This study was a cross sectional design with 150 respondents from coastal societies collected by cluster sampling, where sampling was based on a predetermined area. Univariate and bivariate data processing were undertaken using Chi Square test. The results showed that in the coastal societies of Tarakan City, there were 61 respondents (40.7%) of hypertension patients, the highest in the 36-70 year age group. There is correlation between sports activities and blood pressure in coastal communities with a p value of 0.0001. There is correlation between smoking habits and blood pressure in the coastal community of Tarakan City where the p value is 0.001. There is a correlation between salty eating habits and blood pressure in the coastal community of Tarakan City, where the p value is 0.0001. The results of this study are expected to provide input for health workers on duty in coastal areas to emphasize healthy living behaviours.

Keywords---coastal societies, hypertension, salty food consumption behaviour, smoking, sports.

Introduction

Hypertension is a global problem since the prevalence of this disease continues to increase every year, including in North Kalimantan Province. According to WHO (World Health Government) (2011), around 1 billion people worldwide suffer from hypertension, of which two-thirds are in developing countries. Furthermore, hypertension cases are expected to increase by 80% in 2025, from 639 million cases in 2000, estimated to be 1.15 billion cases in 2025 (Triyanto, 2014). In their study, Zhou et al. (2021) found the prevalence of hypertension at the age of 30-79 years had doubled. In general, the prevalence of hypertension in women was 59%, and in men was 49%. According to Riset Kesehatan Dasar (2018), the prevalence of heart disease in Indonesia is around 1.5%, whereas North Kalimantan is the first highest province with 2.2%. The Special Region of Yogyakarta is 2.0%, and Gorontalo is 2.0%. On the other hand, the prevalence of hypertension in Indonesia based on a doctor's diagnosis is 8.36%, of which North Kalimantan Province is the fourth highest province with a prevalence of 10.46%.

Tarakan City is the sole city in North Kalimantan Province with the highest population, 34.6% of the total population in North Kalimantan Province. Although Tarakan City is an archipelago with a broad coastline, it topographically consists of coastal and highland societies (BPS Provinsi Kalimantan Utara, 2021). Based on data from the Tarakan City Health Office from January to December 2017, hypertension was ranked second after Upper Respiratory Tract Infection (ARI). There were 13,723 people affected by hypertension, consisting of 3,858 men and 9,865 women (Dinas Kesehatan Kota Tarakan, 2017). According to Bustam (2007), people who live in urban areas are affected more by hypertension than

people who live in rural areas, besides the geographical location where coastal regions have more hypertension than mountainous areas.

Methods

The design of this study used a descriptive-analytic approach, namely a cross-sectional study to analyze the relationship between sports activities, smoking habits, and the habit of consuming salty foods with blood pressure in coastal societies in Tarakan City. The number of samples in this study was 150 respondents, with the basis of determining using categorical analytical formulas. The inclusion criteria in this study were adult men and women aged 18-60 years who at least lived in the coastal area of Tarakan City for five years. The exclusion criteria were being pregnant and in the puerperium. The research instrument used is a questionnaire sheet that examines the respondent's pattern of exercise activity, smoking habits in a day, and the habit of consuming salty food in 1 week. Besides that, the respondent's blood pressure is measured and recorded on the questionnaire sheet and is categorized whether it includes hypotension, normal blood pressure or hypertension. First, the research data will be processed using a univariate approach consisting of frequency distribution for blood pressure data, physical activity/sports, salty food consumption habits, smoking habits and consumption patterns of vegetables and fruit. After that, data will be processed bivariate by connecting the independent variables (exercise activity, smoking habits, and the habit of consuming salty foods) and the dependent variable (blood pressure) using the Chi-Square test with a significance level of 5%. This research has acquired ethical approval from the Health Research Ethics Committee, Faculty of Health Sciences, Universitas Borneo Tarakan.

Result and Discussions

Result

This research was conducted on 150 respondents. Those respondents came from 3 locations in the coastline area of Tarakan City. The results obtained from this research can be described in the following points.

Table 1
Frequency Distribution of Blood Pressure Status by Age

Age Distribution	Blood Pressure Status						Total
	Hypotension		Normal		Hypertension		
18 – 35 years old	3	2,0	50	33,3	12	8,0	65
36 – 70 years old	4	2,7	32	21,3	49	32,7	85
Total	7	4,7	82	54,6	61	40,7	150

Based on the description in Table 1 above, the hypertension group was mostly found in the 36-70 years old group, which was 32.7%. However, the 18-35 years old group has the most normal blood pressure.

Table 2
Analysis of Blood Pressure with Sports Activities in the Coastline Community of Tarakan City

Frequency of Sports Activities	Blood Pressure Status						Total		p-Value
	Hypotension		Normal		Hypertensio		N	%	
	N	%	N	%	N	%	n		
Often	0	0	25	16,7	4	2,7	29	19,4	0,0001
Seldom	3	2	38	25,3	12	8,0	53	35,3	
Never	4	2,7	19	12,7	45	30,0	68	45,3	
Total	7	4,7	82	54,7	61	40,7	150	100	

Based on Table 2 above, physical activity or exercise was never higher in the hypertension respondent group, which was 45.3%. On the other hand, exercise activity was rarely the highest at 25.3% in the normal blood pressure group. In the hypotensive group, exercise activity was never the highest at 2.7%. The bivariate test on the relationship between these two variables was the Chi-Square test with a significance level of 5% and a test results p-value of 0.0001. Hence, Ho was rejected, and Ha was accepted so that there was a relationship between exercise activity and blood pressure in coastline communities in Tarakan City.

Table 3
Analysis of Blood Pressure with Smoking Habits in the Coastline Community of Tarakan City

Smoking Habit	Blood Pressure Status						Total		p-Value
	Hypotension		Normal		Hypertension		N	%	
	N	%	N	%	N	%			
Yes	2	1,3	30	20,0	41	27,4	73	48,7	0,001
No	5	3,3	52	34,7	20	13,3	77	51,3	
Total	7	4,7	82	54,7	61	40,7	150	100	

Based on Table 3 above, the relationship between blood pressure and smoking status was found in the hypotensive group. The highest was non-smokers, namely 3.3%. However, the normal group who was not smoking was 34.7%. The highest number of respondents in the hypertension group was smokers, namely 27.4%. After doing the bivariate test using the Chi-Square test with a significance level of 5%, a p-value of 0.001 was obtained. Thus, Ho was rejected, and Ha was accepted, so there was a relationship between smoking habits and blood pressure in the coastline community of Tarakan City.

Table 4
Analysis of Blood Pressure with the Frequency of Consuming Salty Food in the
Coastline Community of Tarakan City

Frequency of Consuming Salty Food	Blood Pressure Status						Total		P-Value
	Hypotension		Normal		Hypertension		N	%	
	N	%	N	%	N	%			
Often	1	0,7	20	13,3	40	26,7	61	40,7	0,0001
Seldom	4	2,7	30	20,0	14	9,3	48	32,0	
Never	2	1,3	32	21,3	7	4,7	41	27,3	
Total	7	4,7	82	54,7	61	40,7	150	100	

Based on the description in Table 4 above, the relationship between blood pressure and the frequency of consuming salty foods was 2.7%. However, the frequency of consuming salty foods in the normal blood pressure group was highest at infrequent intensity, which was 20%. In the hypertension group, consuming salty foods was higher in the frequent group by 26.7%. After the bivariate test using Chi-Square with a significance level of 5%, it was found that the p-value test was 0.0001. Thus, H_0 was rejected, and H_a was accepted so that there was a relationship between the habit of consuming salty food and blood pressure in the coastline community of Tarakan City.

Discussions

Coastal communities are a combination of characteristics of urban and rural communities but still have a spirit of togetherness. Because the coastal community structure is very pluralistic, it forms a system and cultural values, which are the cultural acculturation of each component that makes up the community structure. Coastal communities live near the coast because all aspects of convenience can be obtained in various daily activities, such as easier access to livelihood sources as fishermen (Wahyudin, 2003). With a variety of uniqueness, the health of coastal communities has problems that are slightly different from people who live in urban or rural areas. Latif (2017) conducted a descriptive analysis of the health problems of coastal communities in Karongsong-Indramayu Village, which found that there were two categories of diseases, namely infectious diseases, where the highest suffered by coastal communities was cough and cold at 12%. The highest non-communicable disease was hypertension at 0.9%.

Analysis of exercise activity with blood pressure

The results of this study indicate the relationship between sports activities and blood pressure in coastal communities of Tarakan City. This is in line with the results of research conducted by Sapitri, Suyanto dan Butar-butur (2016), who conducted research on risk factors for hypertension in coastal communities in the Siak River, which found that (1) Physical activity/exercise where people who do not exercise regularly have a risk of developing hypertension by 13.47 times compared to people who exercise regularly. Siregar et al. (2020) identified risk factors for hypertension in the coastal community of Medan City. The results show that 20.9% of people who rarely do physical activity experience hypertension

compared to diligent people in do sports. Lack of physical activity can reduce the efficiency of the heart's work, reduce the body's abilities, including sexual ability and physical fitness. A person with high blood pressure who makes changes in lifestyle can reduce high blood pressure (hypertension), such as exercising for 30 minutes walking several times a week can reduce systolic blood pressure by 4-9 mmHg (Karo, 2016). In his study, Nagata et al. (2021) found that 4% of the incidence of hypertension was found in women whose youth had a low level of activity.

Analysis of the habit of consuming salty with blood pressure

Salt causes fluid in the body because it pulls fluid outside the cells from being expelled, thereby increasing blood volume and pressure. In about 60% of cases of primary hypertension, there is a response to lowering blood pressure by reducing salt intake. In people who consume 3 grams of salt or less, the average blood pressure is low, while the average blood pressure is higher in people who consume about 7-8 grams of salt. The results of this study show that there is a relationship between the habitual pattern of consuming salty and blood pressure in the coastal community of Tarakan City. This is in line with the results of research conducted by Siregar et al. (2020), which showed that the majority of respondents who have hypertension rarely consume salty food, instant noodles and soft drinks. (1-10 times per month) which are 32.4% each; 27.4%; and 30.9%. Susanti, Siregar dan Falepi (2020), in their research, show that the unbalanced food consumption of coastal communities is one of the risk factors for hypertension. Saputra dan Anam (2016) stated that the location where people live is a risk factor for the occurrence of hypertension. People who live on the coast tend to consume salty food and consume fish and marine animals with high cholesterol content, which can cause hypertension. Ahmad dan Saqib (2021), conducting research in Bangladesh, especially in two coastal villages, found that consumption with high salinity resulted in the incidence of hypertension.

Analysis of smoking habits with blood pressure

Toxic chemicals such as nicotine and carbon monoxide inhaled through cigarettes will enter the blood circulation and damage the endothelial lining of the arteries, causing atherosclerosis and high blood pressure. In the autopsy study, it was proven that there was a close relationship between smoking habits and the process of atherosclerosis in all blood vessels. Smoking also increases the heart rate, so the oxygen demand of the heart muscles increases. Smoking in people with high blood pressure will further increase the risk of arterial damage. The results of this study show a relationship between smoking habits and blood pressure in the coastal community of Tarakan City. This is in line with the results of research conducted by (Siregar et al. (2020), where the results of the study showed that hypertension sufferers are often exposed to cigarette smoke in a closed room (41, 4%), and the majority of hypertensive respondents who smoke are light smokers (36%). Hypertension is not only caused by active smokers but also by passive smokers. Akpa et al. (2021) conducted a study on a group of respondents who are passive smokers who are exposed to cigarette smoke, showing that 32.6% suffer from hypertension.

Conclusion

There are 61 people (40.7%) with hypertension in the coastal community of Tarakan City, where the highest age group suffering from hypertension is in the range of 36-70 years. There is a relationship between the pattern of exercise activity, smoking habits, and the habit of consuming salty food with blood pressure in the coastal community of Tarakan City. These three factors must be minimized to prevent an increase in hypertension cases in coastal communities in Tarakan City.

Acknowledgements

The researcher would like to thank the Chancellor of the University of Borneo Tarakan, the Institute for Research and Community Service (LPPM) of the University of Borneo Tarakan, the Dean of the Faculty of Health Sciences and those who have provided support to the researchers, and the Tarakan City Government who has permitted researchers to conduct research.

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