Factor Influencing Blood Pressure : A Study on Paluh Sibaji Fisherman in 2023

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Abstract

Non-communicable diseases (NCDs) are one of the main priorities in the world of health. As the world population soars, deaths from NCDs will increase every year. Globally, there are 41 million cases or the equivalent of 74% of deaths caused by NCDs every year. This research is a type of quantitative research with a cross-sectional type of research conducted on a group of fisherman in Paluh Sibaji Village. This research was carried out on September 21 2023. The population in this research was all fisherman in Paluh Sibaji Village, totaling 200 hundred fisherman. The sampling method used in this research was convenience sampling with a total of 60 fisherman respondents. This study aims to analyze the factors that influence fisherman's blood pressure on the incidence of hypertension (HTN). This research uses multiple linear regression analysis and application analysis using the Statistical Program for Social Sciences tools. The significance value of the consumption pattern, knowledge and attitude variables is below p<0.05, so it can be concluded that consumption pattern, knowledge and attitude influence the incidence of HTN among fisherman in Paluh Sibaji village. This study revealed that the majority of respondents, especially those belonging to the risk group, had experienced HTN. Age at risk was found to have a 2.26% higher likelihood of developing HTN. A large number of respondents showed poor consumption patterns, good knowledge, negative attitudes, and poor behavior regarding HTN prevention. These findings underscore the importance of targeted interventions and awareness campaigns to address these factors and reduce the risk of HTN in the studied population. It is recommended that further research discuss more broadly the factors that can influence the increase in blood pressure in fisherman and conduct a detailed food recall to assess the impact of consumption on HTN.

Keywords: Attitude, Consumption pattern , Fisherman, HTN, Knowledge

INTRODUCTION

Hypertension (HTN) is one part of non-communicable diseases which is currently a challenge for the people in Indonesia, and approximately 30% of the world population was affected by the disease. According to the World Health Organization (WHO), HTN is a condition where blood vessels have high blood pressure, namely systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg that persists (World Health Organization, 2023).

Taken from Riskesdas data in 2013, the prevalence of HTN in Indonesia is 25.8%, but along with the change of years and changes in behavior patterns in society, now the prevalence of HTN in Indonesia as of 2021 is 34.1%.[4] Meanwhile, the mortality rate in Indonesia due to HTN reached 427,218 deaths which occurred in the age group of 31-44 years with a percentage of 31.6%, age of 45-54 years with a percentage of 45.3%, and age of 55-64 years with a

percentage of 55.2%. In 2018, The Health Ministry of Indonesia reported that North Sumatra occupied the 4th position as the province with the highest HTN Prevalence compared to other provinces (Riskesdas Sumut, 2018).

Deli Serdang Regency, a provincial district in North Sumatra, consisted of several villages located at the coast with a high population of fisherman. The profession of fisherman, which is an informal sector job, is one of the most common livelihoods in the area. Interestingly, the people who live at the coast are thought to have a relatively high salt diet. Various factors such as ethnic backgrounds, socio-economic status, geographic location, climate, religious beliefs, technological advancements, and livelihoods can shape consumption patterns through the influence of eating habits established since childhood (Khomsan et al., 2007). This study aims to analyze the factor influencing blood pressure the incidence of HTN in fisherman in Paluh Sibaji Village.

METHODS

This research is a type of study research with a cross-sectional design conducted on a group of fishing communities in Paluh Sibaji Village with the *convenience* sampling method until the minimum sample size is met, namely 60 people Fisherman. The inclusion criteria of this study were individuals with male gender with an age range between 17-67 years old who worked as fisherman and resided in Paluh Sibaji Village.

The questionnaire it self consists of several questions regarding consumption patterns, knowledge, attitudes and behaviors. Blood pressure was also measured by medical personnel. The data analysis method is univariate analysis which is used to obtain a description of each independent variable which includes consumption patterns, knowledge, attitudes and behaviors. Meanwhile, the dependent variable refers to blood pressure. Categorical data will be presented in the form of frequency distribution with percentage. Bivariate analysis is done by chi-square test with 95% CI calculation to determine and test the independent variables in this study that are consumption patterns, knowledge, attitudes and behaviors, having a relationship with the dependent variable, namely blood pressure. Meanwhile, Multivariate Analysis will be carried out to see the relationship between the independent variables that dominantly influence the dependent variable by using multiple linear regression tests.

RESULTS

1. Respondent Characteristics

	Frequency	Percent
	N = 60	% = 100
Age		
Not Potentially (≤45 years)	37	61,7
≥45 years	23	38,3
Working Hours		
≥12 Hours	35	58,3
≤12 Hours	25	41,7

Based on the table above, it was found that 37 respondents (61.7%) were not potentially suffering from HTN while about 24 respondents (38.3%) were classified as 'Potentially'. The total percentage reached 100%, reflecting the entire population observed in the sample. Futhermore 35 respondents (58.3%) worked at least 12 hours a day, while 25 respondents (41.7%) worked less than 12 hours a day. The total percentage reached 100%, reflecting the entire population observed in the sample. This table provides an overview of the distribution of working hours among individuals in the population.

2. Univariate Analysis

Table 3. The Results Of Univariate Analysis of Consumption Patterns, Knowledge, Attitudes, Behavior

	Frequency	Percentage
	N=60	%=100
Consumption Pattern		
Good	31	51,7
Bad	29	48,3
Knowledge		
Good	43	71,6
Bad	17	29,4
Attitude		
Positive	20	33,3
Negative	40	66,7
Behavior		
Good	5	8,3
Bad	55	91,7

Based on the data obtained from 60 respondents, 31 respondents (51.7%) had good consumption patterns and 29 respondents (48.3%) had poor consumption patterns. Furthermore, viewed from the behavior patterns, 55 respondents (91.7%) had bad behavior and 5 respondents (8.3%) were good. Based on the attitudes, it can be concluded that 40 respondents (66.7%) had negative attitude and 20 respondents (33.3%) had positive attitude. Meanwhile,

based on the knowledge, it can be concluded that 43 respondents (71.6%) had good knowledge and 17 respondents (29.4%) had poor knowledge.

3. Bivariate Analys

Table 4. Results of Bivariate Analysis of Consumption Patterns, Knowledge, Attitudes, Behavior

	Blood Pressure				Total		OR (95% CI)	P-*value*
	Normal		HTN					
	n	%	n	%	n	%		
Consumption Pattern								
Good	25	41,7	16	26,7	31	51,7	4,375	0,012
Bad	5	8,3	14	23,3	29	48,3		
Knowledge								
Good	29	48,3	14	23,3	43	71,6	0,030	0,001
Bad	1	1,7	16	27,7	17	29,4		
Attitude								
Good	12	20	28	46,7	40	66,7	0,048	0,001
Bad	18	30	2	3,3	20	33,3		
Behavior								
Good	26	43,4	29	48,4	55	91,8	0,224	0,161
Bad	4	6,6	1	1,6	5	8,2		

Based on the data from the table above, there were 30 respondents with normal blood pressure of which 25 respondents (41.7%) had good consumption patterns and 5 respondents (8.3%) had poor consumption patterns. Meanwhile, 30 respondents with HTN were divided into 16 respondents (26.7%) who had good consumption patterns and 14 respondents (23.3%) had poor consumption patterns. A chi square analysis result was obtained of 0.012, which means there is a significant relationship between consumption patterns and the incidence of HTN. It can be concluded that consumption patterns have a 4.375 higher risk effect on experiencing HTN.

In knowledge, 30 respondents who had normal blood pressure as many as 29 (48.3%) had good knowledge and 1 (1.7%) had poor knowledge. Meanwhile, 30 respondents with HTN were divided as many as 14 respondents (23.3%) had good knowledge and 16 respondents (27.7%) had poor knowledge. The results of the chi square analysis obtained a p value of 0.001, which means there is a significant relationship between knowledge and the incidence of HTN. It can be concluded that knowledge has a 0.030 higher risk of experiencing HTN.

In the attitude pattern, 30 respondents who had normal blood pressure, 12 respondents (20%) had a positive attitude pattern and 18 respondents (30%) had a negative attitude pattern. Furthermore, 30 respondents with HTN were divided as many as 28 respondents (46.7%) who

had a positive attitude and 2 respondents (3.3%) had a negative attitude. The results of chi square analysis were obtained with a p value of 0.001, which means there is a significant relationship between attitude and the incidence of HTN. It can be concluded that attitude has an influence on the risk of 0.048 higher for experiencing HTN.

In bivariate analysis, behavioral variables include things such as smoking habits, alcohol consumption, sleeping hours and stress behavior of the fisherman. In behavioral patterns, 30 respondents who had normal blood pressure of which 26 respondents (43.4%) had good behavior and 4 respondents (6.6%) had bad behavior patterns. Meanwhile, 30 respondents who experienced HTN were divided as many as 29 respondents (48.4%) had good behavior and 1 respondents (1.6%) had bad behavior. The results of the chi square analysis were obtained with a P value of 0.161, which means that there is no significant relationship between behavior patterns and the incidence of HTN, but it can be concluded that behavioral patterns have a 0.224 higher influence on the risk of experiencing HTN.

4. Multivariate Analysis
Table 5. Multivariate Analysis Results using Multiple Logistic Regression

Variable variations	B	Sig.	OR	95%CI	
				Lower	Upper
Consumption Pattern	2,547	0,039	12,763	1,137	143,278
Knowledge	-4,782	0,002	0,008	0,000	0,161
Attitude	6,245	0,001	0,014	0,001	0,178
Behavior	-4,357	0,015	0,013	0,013	0,430

Based on the results of the data analysis above, the significant value of the consumption pattern variable is $p = 0.039$ ($p < 0.05$), it can be concluded that consumption patterns affect the incidence of HTN in fisherman in Paluh Sibaji village. With the results of OR = 12.763, the consumption pattern is the most influential variable in the incidence of HTN in fisherman. Namely, consumption patterns are the most dominant variable 12.763 times to the incidence of HTN.

Consumption Pattern: This variable has a coefficient (B) of about 2.547, which is significant at a confidence level of 0.039. The Odds Ratio is about 12.763, and the 95% confidence interval for the OR does not include the value of 1. This indicates that the Consumption Pattern contributes significantly to the dependent variable.

Knowledge: This variable has a coefficient (B) of about -4.782, which is highly significant at the 0.002 confidence level. The Odds Ratio is about 0.008, and the 95%

confidence interval for the OR does not include the value 1. This indicates that Knowledge also contributes significantly to the dependent variable, but with the opposite effect.

Attitude: This variable has a coefficient (B) of about 6.245, which is highly significant at the 0.001 confidence level. The Odds Ratio is about 0.014, and the 95% confidence interval for the OR does not include the value 1. This indicates that Attitude contributes significantly to the dependent variable, with the opposite effect..

Behavior: This variable has a coefficient (B) of about -4.357, which is significant at the 0.015 confidence level. The Odds Ratio is about 0.013, and the 95% confidence interval for the OR includes a value of 1. This indicates that Behavior contributes significantly to the dependent variable, but the effect may be less strong compared to other variables.

DISCUSSION

Researchers used the Iowa Satisfaction with Anesthesia Scale (ISAS) instrument which has been used by other researchers in several different countries. This research instrument was also validated and developed by Franklin Dexter, MD, PhD and Keith A. Candiotti, MD in 2011. In the results of this research, researchers obtained a level of satisfaction based on the average value obtained on the questionnaire that had been filled in by respondents, namely, the first level is at the average questionnaire score of 1-11, it is stated that the respondent is very dissatisfied with the analgesics given, the second level is the average questionnaire score of 12-22, it is stated that they are quite dissatisfied, then the third level is the average questionnaire score is 23- 33 were declared slightly dissatisfied, then the fourth level, namely the average questionnaire score of 34-44, was declared slightly satisfied, and the fifth level, with an average questionnaire score of 45-55, was declared quite satisfied, the last level or sixth level was with an average There are many factors that can affect the incidence of HTN, one of which is consumption patterns. A community group has different consumption patterns due to factors that influence the consumption patterns of that community group. The consumption patterns of fisherman who live on the coast must have differences ifx it is compared to the consumption patterns of urban communities. Food consumption patterns are a person's habits related to the type of food and the amount of food consumed every day (Elivia, 2022).

Generally, coastal communities tend to have dietary patterns with high sodium levels and also consume seafood which causes nutritional imbalances. Through the results of the analysis of consumption patterns with the incidence of HTN obtained data (P = 4.375) which can be interpreted that consumption patterns have a significant relationship to the incidence of HTN in Paluh Sibaji village. Furthermore, it can be concluded that consumption patterns have

a risk effect of 0.012 higher to experience HTN. This study is different from previous research conducted by Ranti Mairiza Putri et al. Based on the results of research that has been done, it shows that there is a significant relationship between adequate diet and HTN P value = 0.000 and OR = 0.1. (Ranti, 2021).

This study is in line with research conducted by a group of informal sector workers who produced a p value (0.001) < α (α = 0.05) which means H0 is rejected and Ha is accepted which states that there is a significant relationship between diet and the incidence of HTN in residents of Gaung Asam Village in the working area of the Belida Darat Health Center, Muara Enim Regency (Riski Dinda Yanti, Khoirul Latifin, Muharyani, 2022) . Khomsan argues that eating habits since childhood can be influenced by various things including ethnic differences, socio-economic levels, geography, climate, religion and beliefs as well as the level of technological advancement (Khomsan et al., 2007). This is in line with research conducted in the Nambo area located on the coast of Kendari, which shows a relationship between diet and the incidence of HTN in male adolescents in the working area of the Nambo health center with a p value = 0.003 < α 0,05 (Faisal et al., 2022). Many researchers' assumptions state that consumption patterns play a close role in the incidence of HTN. Based on the data on food and non-food consumption patterns of the fishing community in Arakan village, it was found that consumption patterns varied according to the income of fisherman (Jacline I. Sumual, Wensy F.I.Rompas, 2019). Due to the varying income of fisherman, this is a consideration of the consumption behavior of the fisherman.

The consumption behavior of these fisherman is strongly influenced by their income. If the weather is bad, they automatically cannot work, the income of fisherman affects what they will consume later. Based on the results of interviews with respondents, if a fisherman gets a high wage, when he goes to sea he will bring some ingredients / food supplies that tend to be at risk of HTN such as foods containing coconut milk and instant food with high flavoring. However, there are also fisherman who choose to bring ingredients / food supplies that are in accordance with the 4 healthy 5 perfect consumption pattern. Coconut milk contains fat which is needed in the body as a protective and building substance. However, excessive consumption will result in the plasks development in the blood vessels which, if consumed regularly, will lead to HTN. (Kiki, 2021).

Knowledge is the basic science for an individual. Knowledge is the result of the process of finding out, from not knowing to knowing, from not being able to be able to be able to know (Ridwan et al., 2021). An individual's knowledge is gained through experience. Acceptance of new behavior or adoption of process behavior based on knowledge, awareness and positive

attitudes, will be longlasting (Hendrawan, 2020). Through the results of the analysis of respondents' knowledge with the incidence of HTN, the data obtained (P = 0.001) which means that knowledge has a significant relationship with the incidence of HTN in Paluh Sibaji village. Meanwhile, it can be concluded that knowledge is related to the incidence of HTN but not risky (OR = 0.03). According to previous researchers, the higher the level of knowledge of respondents about HTN, the better the attitude of respondents in preventing complications of HTN (Harjo et al., 2019). Compared to research by Rozikin, Musyarrafah, Setyaningrum, T. W (2023) it can be seen that respondents have less knowledge about HTN 48 people (51.1%). Low education affects the level of knowledge of a person, the more educated the person, the higher the level of knowledge(Setyaningrum, 2023)

Based on the results of interviews with 67 respondents, there were only 2 respondents studied up to high school level. It cannot be denied that the higher a person's education, the higher they receive information and in the end, the more knowledge they have. A person's knowledge is closely related to the behavior he will take, because with this knowledge he has a reason and basis for making a choice. The lack of knowledge of the fisherman about HTN results in an unfavorable attitude. According to Alexander et al, 2003 Patient's knowledge and attitudes about HTN are important factors in achieving blood pressure control (Alexander et al., 2003).

This study is in line with that conducted by Anjayati et al. which was conducted on coastal communities and obtained the results of the chi square test obtained a p-value of 0.000 <0.05 and a phi value = 0.426, meaning that there is a moderate relationship between knowledge and behavior to prevent HTN in the North Buton District Health Office Working Area(Anjayati et al., 2023). Public knowledge of HTN is the main key that will affect the way a person carries out proper HTN prevention in controlling himself. A person's lack of knowledge about HTN will affect a person's preventive behavior

Attitude is a person's action in dealing with a situation. Attitude is a very important aspect in dealing with an illness. Attitudes can refer to the way a person prevents or improves the health status of an individual. Attitudes are divided into two, positive and negative (Setiarini, 2018). In a positive attitude there is a tendency for actions such as approaching liking, expecting certain objects, while in a negative attitude there is a tendency to stay away, avoid, dislike certain objects.(Setiarini, 2018).

Judging by the results of data analysis on the attitude variable using the Bivariate Test with the incidence of HTN, the data obtained (P = 0.001) which means that attitude has a significant relationship to the incidence of HTN. Meanwhile, it can be concluded that attitude

does not have a high risk of 0.048 influence on the incidence of HTN. According to Notoatmodjo (2012), attitude is a reaction or response that is still closed from a person to a stimulus or object. (Notoatmodjo, 2003) A fisherman's attitude towards the incidence of HTN varies greatly depending on various factors, including their knowledge of the condition, understanding of risk factors, and access to health services. According to the researcher's assumption, the number of negative attitudes of respondents towards HTN is due to the fact that the better one's attitude, the better one's knowledge.

Behavior is an action that can be observed and understood from an individual, organism or system. To choose a behavior, knowledge is needed which will later be used as a reason and also a basis for making a choice. According to Siti Rohimah Kumullah et al, Behavior rooted in knowledge tends to endure longer compared to behavior lacking a solid knowledge foundation, as knowledge is a crucial domain in shaping an individual's overt actions or behavior (Rohimah Kumullah & Chotimah, 2021).

The results of the analysis of behavior with the incidence of HTN obtained the data (P = 0.161) which can be interpreted that behavior does not have a meaningful relationship to the incidence of HTN. Furthermore, it can be concluded that behavior is not risky and has an OR = 0.224 effect on the incidence of HTN. The author's assumption is that this happens because the behavior of the fisherman about preventing HTN does not have a significant effect because the fisherman does not know if he has been suffering from HTN. This is in line with Notoatmodjo's opinion which can be concluded that a person's behavior can be based on several factors. One of it is the behavior influenced by knowledge (Notoatmodjo, 2010). Behavior which is based on knowledge has a longer period than behavior that is not based on knowledge. Social support needs to be considered in behavior change. If people have less knowledge about HTN, then they will not make changes to better health behavior. Therefore, knowledge is a crucial factor for behavior change. (Oo et al., 2018).

In general, the incidence of HTN occurs mostly in the elderly population but it does not rule out the possibility that the adolescent to adult population can also experience HTN (Arum, 2019). Based on the data collected from this study, the majority of male fisherman in Paluh Sibaji Village are >40 years old. The older they are, the higher the chances of an individual suffering from HTN. According to previous researchers, Amanda & Martini, HTN generally occurs in individuals who are over 40 years of age (Amanda & Martini, 2018). This is caused by the changes in the structure of blood vessels such as the narrowing lumen, and the stiff walls of blood vessels and decreasing their elasticity, thereby the blood pressure will increase (Adam,

2019). The average age of cases of HTN in fisherman in Paluh Sibaji village shows the age of 42 years

The researcher defines 'working hours' as the duration a fisherman actively works in the offshore area, which will vary greatly from one another although it depends on each individual's preference in determining their ideal working hours. Generally, fisherman are involved in various activities throughout the day and their working hours are influenced by various factors that cannot be singularly identified in this study. Working hours in the lives of fisherman in Indonesia are determined by the length of fishing operations ranging from 10-15 hours per day. Another factor that can trigger HTN is the length of working hours (Noor, 2022).

Many other risk factors are thought to trigger the incidence of HTN in fisherman in the village. Although the fisherman work more than >12 hours at sea, it does not mean that these fisherman work non-stop to cause HTN. It is possible that there are many factors that can hinder the work of fisherman. Natural conditions that hinder the fisherman's livelihoods and slow down fisherman's survival efforts are climatic conditions that change and are accompanied by strong winds and storms.

CONCLUSIONS

Based on this research, it is concluded that: The research highlights significant associations between various factors and the prevalence of HTN within the studied population. Among the 28 respondents classified as at-risk groups, 28.3% experienced HTN, compared to 21.7% among those not considered at risk. Age emerges as a noteworthy factor, with individuals in at-risk age groups having a 2.26% higher likelihood of experiencing HTN. Furthermore, dietary habits play a role, as 51.7% of respondents demonstrated good consumption patterns, while 48.3% exhibited poor consumption habits. Knowledge levels about HTN were found to be generally positive, with 71.6% of respondents possessing good knowledge and 29.4% having poor knowledge. Attitudinal insights reveal that 66.7% of respondents held a negative attitude towards HTN, while 33.3% had a positive outlook. Additionally, behavioral patterns emerged as a concern, with a substantial 91.7% of respondents displaying poor behaviors related to HTN, contrasting with the 8.3% who exhibited good behavior. These findings collectively underscore the complex interplay of factors influencing HTN prevalence, emphasizing the need for targeted interventions addressing not only medical aspects but also lifestyle, knowledge, and attitudes within the studied population.

SUGGESTION

Further research is needed regarding blood pressure among fisherman to identify the factors that may influence an increase in blood pressure among them. For subsequent studies, it is recommended to conduct a detailed food recall to assess the impact of dietary patterns on the blood pressure of fisherman.

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