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Knowledge, eating patterns, and hypertension among elderly in the coastal areas of Bangkalan, Indonesia

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Article Info

ABSTRACT

Hypertension is a non-communicable disease which frequently occurs in the elderly. This study aimed to assess hypertension and knowledge as well as hypertension and eating patterns among elderly in the coastal areas. The design of this study is cross-sectional study. The population in this study were elderly with hypertension who lived in the Sukolilo Health Center area in Bangkalan. The sample was selected using simple random sampling of 110 elderlies. The inclusion criteria were elderly who were aged ≥60 years old with systolic blood pressure (SBP) of >140 mmHg and diastolic blood pressure (DBP) of >90 mmHg. The instrument was food frequency questionnaire (FFQ). The blood pressure was measured by using standard operating procedures. The data were analyzed by the Spearman's rank test. The results indicated that most of the respondents were lack of knowledge of 66 people (29.1%) and had a poor eating pattern of 78 people (70.9%). Most of the respondents were in the moderate hypertension of 52 people (47.3%). The statistical analysis indicated a relationship between knowledge and the incidence of hypertension of p=0.004 (p<0.05; r=0.974). In conclusion, understanding about blood pressure control is required to prevent hypertension.

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1. INTRODUCTION

Hypertension is a non-communicable disease that frequently occurs in the elderly [1]. Hypertension can cause morbidity, falls, or fractures among the elderly [2]. The high prevalence of hypertension among the elderly in coastal areas becomes a public health issue. Hypertension among the elderly can be caused by various factors including poor eating patterns and consuming too much salt, especially for the elderly who live in the coastal areas [3], [4]. Poor eating patterns are affected by the knowledge about diet intake which causes hypertension [1], [5], [6]. A healthy eating pattern among hypertension patients is reflected in the selection of food [7].

The results of the Indonesian Basic Health Research showed that the prevalence of hypertension in the elderly was higher in men, approximately 50.5% [8]. East Java Province has a hypertension rate exceeding the national rate of 22.71% [9]. Furthermore, in one of the cities in East Java, Bangkalan, it was found that there were 1,518 hypertension cases, and this increased to 7,034 sufferers in 2018. The preliminary data obtained from the Sukolilo Health Center in 2019 for three months revealed 695 people (25%) who experienced hypertension. In other words, the number of hypertension cases in Bangkalan is still high. Furthermore, the preliminary study also indicated that 66.7% of elderly with hypertension in coastal areas consumed excessive

salt intake, fatty foods with high cholesterol, and also sugar. The results of the food frequency questionnaire (FFQ) screening questionnaire found that 60% of the elderly with poor eating patterns also experienced moderate and severe hypertension.

The elderly living in the coastal areas consume salty foods, and it can trigger high blood pressure [3]. Also, they consume food without sufficient potassium and fiber. This condition can cause an imbalance in nutritional status [10] and risk factors for hypertension, coronary heart disease, and diabetes mellitus [11]. The preliminary data also indicated that the community in Sukolilo Health Center often consumes junk food, salty food, high calorie and sugar, low fiber, fatty food, and coffee. They also had short sleep duration. The previously-mentioned conditions can trigger hypertension [11]–[13].

Eating pattern has an important role in the process of monitoring, maintaining, and preventing complications of hypertension [14], [15]. A good eating pattern is also the key to preventing hypertension [15]–[18]. To our best knowledge, references related to eating patterns and the incidence of hypertension in the coastal areas are still rare. Knowledge of food management and food selection is also related to the occurrence of hypertension. Preventing and controlling blood pressure by reducing stress, consuming healthy foods including fruits, fresh vegetables, fiber, and potassium, limiting salt intake and high sugar, and reducing alcoholic beverages and coffee [19]. This study highlighted eating patterns and knowledge in food management among the elderly in the coastal areas. In light of this background, this study aimed to assess hypertension and knowledge as well as hypertension and eating patterns among the elderly in the coastal areas. By understanding these factors, hypertension among the elderly can be prevented and controlled.

2.   METHOD

This study was granted by ethical clearance number 072/1508/433/2021 from Nursing School, Universitas Muhammadiyah Surabaya, Indonesia. The population in this study were elderly with hypertension who lived in the Sukolilo Health Center area, Bangkalan. The data were obtained through three months of documentation. This study applied observational analytic correlation with a cross-sectional design. Total population in this study was 152. We used Slovin Formula to calculate the sample size. The final sample was 110 elderlies selected by simple random sampling. The inclusion criteria were elderly aged ≥60 years old with a systolic blood pressure of >140 mmHg and diastolic blood pressure of >90 mmHg [19]. The exclusion criteria were the elderly with serious hearing loss, aggressive physical behavior, and not having other disease complications. The researchers obtained informed consent from respondents before collecting the data.

The data were collected by using a self-report questionnaire. We already tested content validity and reliability using internal concistency. The content validity for each questionnaire was measured using correlation between each item and total score. The result showed significant (p-value <0.05) and r>0.2. The Cronbach alpa of each questionnaire showed >0.6, it was acceptable. The instrument used to assess eating patterns was FFQ. The questionnaires measured the type, frequency, and amount of food consumed in a certain period. It used an ordinal scale with a score of 0 (not consumed), 1 (rarely consume), 10 (once to twice a week), 15 (3-6 times a week), 25 (once a day), and 50 (every day) [20]. The total score was interpreted as good, moderate, and fair. The researchers used six questions to assess knowledge of hypertension among elderly with two options to answer, yes (1) and no (0). The questionnaire consisted of a definition of hypertension, the causes of hypertension, foods that should and should not be consumed, and prevention of hypertension through dietary adjustments. A total score of ≤2 was considered to have poor knowledge, a score of >2-4 was considered to have sufficient knowledge, and a score of >4 considered to have good knowledge. Blood pressure was measured by using standard operating procedures from JNC 8 (2014) and Potter & Perry [21], [22] . Then, the data were analyzed by the Spearman's rank test with a statistical p-value<0.05. In addition, a correlation of more than 0.2 was satisfaction [23].

3.   RESULTS AND DISCUSSION
3.1. The characteristic of respondents

Data in Table 1 show the characteristic of respondents. A total of 80 respondents (72.72%) are female, 44 respondents (40%) are 66-70 years old, and 49 respondents (44.54%) are widows. A total of 58 respondents (52.7%) are elementary school graduates, 72 respondents (65.4%) have income less than IDR 1,000,000, and 11 respondents (10%) earn more than IDR 3,000,000. Most of the respondents were elderly with no education degree and their income was less than IDR 1,000,000 (<66 USD). Previous study mentioned that elderly had risk of cognitive impairment [24]. Furthermore, less income also related with unhealthy eating [25]. It contributed to lack of knowledge and eating pattern among the elderly.

3.2. Knowledge, eating patterns, and hypertension among elderly with hypertension

Data in Table 2 show the distribution of knowledge, eating patterns, and hypertension among the elderly. A total of 66 respondents (60%) are lack of knowledge, 78 respondents (70.9%) have a poor eating pattern, and 52 respondents (47.3%) are in the moderate hypertension category.

Table 1. The characteristics of respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	30	27.27
Female	80	72.72
Total	110	100.0
Age		
60-65 years old	26	23.63
66-70 years old	44	40
71-75 years old	25	22.7
76- 80 years old	15	13.63
Total	110	100.0
Marital status		
Marriage	40	36.36
Widower	21	19.09
Widow	49	44.54
Total	110	100.0
Educational background		
Not finished school	31	28.2
Elementary school	58	52.7
Junior high school	15	13.6
Senior high school	6	5.5
Total	110	100.0
Income		
<IDR. 1,000,000	72	65.4
IDR 1,000,000 - 3,000,000	27	24.54
>IDR 3,000,000	11	10
Total	110	100.0

Table 2. Distribution of knowledge, eating pattern, and hypertension among elderly

Variable	Frequency	Percentage (%)
Knowledge		
Good	2	1.81
Sufficient	42	38.18
Poor	66	60
Eating pattern		
Good	0	0
Moderate	32	29.1
Poor	78	70.9
Hypertension		
Mild >140/90 mmHg	44	40
Moderate >160/100 mmHg	52	47.3
High >180/110 mmHg	14	12.7

In terms of knowledge, 29.1% of the elderly had inadequate or less knowledge about foods prone to hypertension. The 50% of the elderly reported that hypertension was a common disease at their age. Knowledge is needed to prevent hypertension, especially to control hypertension. A previous study mentioned that good knowledge could control high blood pressure [6]. Healthcare providers must pay attention to health education promotion among the elderly and families of elderly with hypertension to increase their knowledge [26], [27]. This study also found respondents in the less knowledge category had a history of low education. It is assumed that the elderly is hard to receive information related to good food consumption to prevent hypertension from healthcare providers, family, or friends.

The majority of the elderly living in the Sukolilo Health Center area had poor eating patterns. Eating patterns are a way or behavior of a person in choosing food to be consumed every day, which includes the type of food, the amount of food, and the frequency of food to maintain health, and it is related to diet quality [28]. The elderly must pay attention to nutritional intake to prevent some diastases [29]. This essential nutritional need for maintaining their immune system [30]. This study found that respondents often consume foods containing high sodium and fatty foods. Nutrition is also needed for the elderly to reduce degenerative diseases

and the possibility of malnutrition [31], [32]. Controlling the elderly's eating patterns includes the amount of food, meal schedule, and type of food according to the needs of the elderly. It also requires attention from the elderly's families in providing good food for the elderly. Moreover, initially, healthcare providers must provide health education to them [33].

Regarding hypertension, the majority of respondents were in the category of moderate hypertension based on WHO guidelines [19], in which their systolic blood pressure was above 140 mmHg and their diastolic blood pressure was above 90 mmHg. Hypertension is a condition in which a person experiences an increase in blood pressure which can result in morbidity and mortality [19]. In addition, hypertension occurred when blood pressure is too high. High blood pressure is related to cardiovascular disease, renal failure, and cerebral stroke [34].

Factors affecting hypertension in the elderly include uncontrolled risk factors (major) such as age, sex, heredity, and race, while controlled risk factors include changes in lifestyle, poor diet, excessive alcohol consumption, smoking habits, obesity, lack of exercise, and excessive sodium consumption. Consuming salty foods leads to hypertension, volume expansion, a disorder in sodium balance, and renin-angiotensin, aldosterone system [35]. Therefore, it is required to control salt intake among the elderly.

3.3. The relationship between knowledge, eating pattern, and hypertension in the elderly

Data in Table 3 showed the correlation between knowledge, eating pattern, and hypertension. It shows that most of the elderly with severe hypertension category have poor eating patterns as many as 14 people (12.7%). The statistical test results show that there is a relationship between diet and the incidence of hypertension p=0.004 (p<0.05; r=0.974). In addition, 32 elderly people with moderate hypertension have less knowledge (29.1%). Furthermore, there is a relationship between knowledge and the incidence of hypertension p=0.004 (p<0.05; r=0.974).

Table 3. The Relationship between Knowledge, Eating Pattern, and Hypertension

| | Hypertension | | | | | |
| | Mild | | Moderate | | High | |
	n	%	n	%	n	%
Knowledge						
Good	2	1.8	16	14.5	26	23.6	p-value<0.05
Sufficient	0	0	20	18.2	32	29.1	r=+0.974
Poor	0	0	6	5.4	8	7.3	
Eating pattern						
Good	0	0	18	16.4	26	23.6	p-value<0.05
Moderate	0	0	11	10	41	37.3	r=+0.974
Poor	0	0	3	2.7	11	10	

The results showed that the elderly with moderate hypertension had poor eating patterns. In this study, the respondents were reported to consume salty food and coconut milk. These foods are associated with high blood pressure [35], [36]. In addition, the lack of consuming food containing potassium and fiber will cause the amount of sodium to accumulate [37], [38].

The elderly consumed foods containing high sodium, such as salt, salted fish, salted eggs, and boiled fish because their sense of taste was decreasing. Furthermore, the respondents did not know about foods and eating patterns which could trigger hypertension [39]. The results of the interviews showed that 8 respondents with severe hypertension often consumed salty food and fatty foods. Cholesterol from fatty food can trigger hypertension among the elderly. High cholesterol can increase the risk of atherosclerosis as well as blood pressure [40]. Cholesterol levels can form a plaque which causes blood flow to slow down, forcing the heart to pump blood harder, and leading to hypertension [41]. On the other hand, fresh vegetables and fruit contain lots of vitamins, minerals, and potassium which can help lower blood pressure [41].

Based on the results of the study, it was found that there was a relationship between knowledge, eating patterns, and hypertension among the elderly. Controlling blood pressure is required to prevent hypertension and can be conducted by having good eating patterns. In addition, health education related to hypertension must be provided by nurses or healthcare providers in the primary health care.

4. CONCLUSION

In conclusion, the elderly living in the coastal areas is lack of knowledge about hypertension. Also, most of the elderly had poor eating patterns. The incidence of hypertension in the elderly is predominantly with moderate hypertension. Furthermore, there is a relationship between knowledge, eating patterns, and the incidence of hypertension in the elderly living coastal areas. The elderly must pay attention to their eating patterns and at the same time, healthcare services must provide health education to the elderly and their families, especially those

living in the coastal areas. This study is limited in terms of location, in the coastal areas, so it cannot be generalized. Further study is needed to assess high blood pressure among the elderly in other areas.

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