



## Factors Associated With the Incidence of Hypertension on Elderly In Kandai Public Health Center, Kendari

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**Abstract.** Hypertension is a circulatory system disorder that causes an increase in blood pressure above normal. The tendency of people to live a dynamic lifestyle, consume instant food, consume high-fat food, smoke, and consume alcoholic beverages is very influential on health. This study aimed to determine the factors associated with the incidence of hypertension in the elderly at the Kandai Health Center in Kendari. The design used in this study was a descriptive-analytic study with a cross-sectional design. This study was carried out at the Kandai Health Center in Kendari for 47 respondents taken by accidental sampling. Analysis of the data used in this research was Chi-Square Test analysis. The results showed there was an association between smoking habits and the incidence of hypertension in the elderly ( $p = 0.011 < 0.05$ ), there was an association between salt consumption and the incidence of hypertension in the elderly ( $p = 0.014 < 0.05$ ) and there was an association between alcohol consumption and the incidence of hypertension in the elderly ( $p = 0.020 < \alpha = 0.05$ ). Conclusions in this study are smoking habits, salt consumption and alcohol consumption associated with the incidence of elderly hypertension. Suggestions in this study are for the parties of the Kandai Health Center, Kendari to improve services to the elderly through posbindu so that they can be controlled from non-communicable diseases suffered by the elderly.

## INTRODUCTION

Hypertension is a circulatory system disorder that causes an increase in blood pressure above normal systolic  $\geq 140$  mmHg and diastolic  $\geq 90$  mmHg (1). Hypertension is often recognized as a “silent killer” as the patients do not feel or realise the specific symptoms if there have been complications such as heart disease, stroke, or kidney damage (2).

The effect of times has an impact on the lifestyle change of society. People today tend

to have a dynamic lifestyle, consume instant food, consume high-fat food, smoking, and consume alcoholic beverages that affect health and can have an impact when they are aging. Hypertension has a close relationship with the elderly because the elderly undergo an aging process causing the body to experience various health problems and loss of endurance (3).

World Health Organization (WHO) globally predicted that about 1 billion people worldwide suffered from hypertension in

2017 (4). In Indonesia, data on national health survey showed that 34.1% of people  $\geq$  18 years old suffered from hypertension with the highest prevalence found in South Kalimantan (44.1%) and the lowest was in Papua, 22.2% (5).

Data from the Health Department of Kendari shows a fluctuating prevalence of hypertension from 2016 to 2018, 10,559 patients, 9,933 patients, and 13,140 patients, respectively (6). Meanwhile, in Kandai Public Health Centre, hypertension has been increased during the last 3 years, 77 patients, 83 patients, 77 patients, and 86 patients in 2016, 2017, and 2018 respectively and remains increasing in May 2019, as many as 87 patients (7).

The result of a preliminary study in 10 elderly people suffering from hypertension, 5 patients had smoking habit, 2 patients often consumed salty food, such as salty fish, egg or add salt to food, and 3 other patients had excessive alcohol consumption. Of all the aforementioned reasons, it is important to study factors associated with the incidence of hypertension in the Elderly in Kandai Public Health Center, Kendari.

## METHODS

This study was a descriptive-analytic with a cross sectional study design. The study was carried out in Kandai Health Center, Kendari in 47 elderly people with hypertension that were selected through an accidental sampling. The data were analysed using chi-square test.

## RESULTS AND DISCUSSION

**Table 1 Characteristics of respondents in Kandai Public Health Center, Kendari**

Demographic Data	n (%)
<b>Age (years)</b>	
60-74	30 (63.8)
75-90	17 (36.2)
<b>Total</b>	<b>47 (100)</b>
<b>Sex</b>	
Male	26 (55.3)
Female	21 (44.7)
<b>Total</b>	<b>47 (100)</b>
<b>Education</b>	
Elementary School	25 (53.2)
Junior High School	10 (21.3)
Senior High School	12 (25.5)
<b>Total</b>	<b>47 (100)</b>

Source : primary data, 2019

Table 1 shows that the majority of respondents were aged 60 – 74 years old as many as 30 people (63.8%). Most of the respondents were male (55.3%), and were elementary graduates (63.2%).

**Table 2 Distribution of Study Variables in Respondents in Kandai Health Center, Kendari**

Study Variables	Mean (Min-Max)	n (%)
<b>Blood Pressure</b>		
Stage 1 Hypertension	Systolic (mmHg)	145.26 (140-155)
	Diastolic (mmHg)	92.11 (90-100)
Stage 2 Hypertension	Systolic(mmHg)	177.68 (160-210)
	Diastolic (mmHg)	107.86 (100-120)
<b>Smoking Habit</b>		
Not smoking		24 (51.1)
Smoker		23 (48.9)
<b>Salt Consumption</b>		
Yes		25 (53.2)
No		22 (46.8)
<b>Alcoholic Beverage Consumptions</b>		
Yes		22 (46.8)
No		25 (53.2)

Source: primary data, 2019

As seen in Table 2, most of the respondents suffered from stage I hypertension, as many as 28 people (59.6%) with the mean of systolic was 177.68 mmHg, the lowest was 160 mmHg, and the highest was 210 mmHg. Meanwhile, the mean of

diastolic was 107.86 mmHg, the lowest was 100 mmHg, and the highest was 120 mmHg. The majority of respondents were not a smoker (51.1%), had excessive salt consumption (53.2%), and did not consume alcoholic beverages (53.2%).

**Table 3 the Association between Smoking Habit and the Incidence of Hypertension in the Elderly in Kandai Health Center, Kendari**

Variable	Incidence of Hypertension				Number		p
Smoking habit	Stage 1		Stage 2				
	Hypertension		Hypertension		n	%	
Not smoking	14	29.8	10	21.3	24	51.1	0.011
smoker	5	10.6	18	38.3	23	48.9	
Total	19	40.4	28	59.6	47	100	

Source: primary data, 2019

The chi-square test shows  $p$  value = 0.011 indicates that there was an association between smoking habit and the incidence of hypertension in the elderly.

The result of the study shows that there was an association between smoking habits and the incidence of hypertension in the elderly in Kandai Public Health Center, Kendari. This might be due to the fact that respondents who are smokers are higher than those who did not smoke. Smoking is known to be a reinforcing factor for hypertension in the elderly.

This study is following the same result with previous studies. A study by Retnaningsih (2016) shows that hypertension is associated with the smoking habits in the male elderly (8). Likewise, a study by Sartik (2017) also shows a significant association between smoking habits and hypertension (2).

Cigarette smoking is often associated with hypertension. The associations between cigarette smoking and the increase in cardiovascular risks have been in many studies. Toxic chemicals, such as nicotine and carbon monoxide, inhaled through smoking can enter the bloodstream and damage endothelial lining of arteries and cause atherosclerosis and hypertension (9).

The brain reacts to nicotine by giving signals to the adrenal glands to release

epinephrine (adrenaline). This strong hormone will constrict blood vessels and force the heart to work harder because of higher pressure. After smoking only two cigarettes, both systolic and diastolic pressures will increase by 10 mmHg (9).

Authors assumed that smoking habit in a long duration may increase the risk of suffering hypertension in the elderly, moreover, aging can decrease the functions of organ. Therefore, the higher the smoking category of individual, the higher the risk of suffering from hypertension.

**Table 4 the Association between Salt Consumption and the Incidence of Hypertension in the Elderly in Kandai Health Center, Kendari**

Variable	Incidence if Hypertension				Number	p
	Stage 1		Stage 2			
	Salt Consumption	Hypertension	Hypertension			
n	n	%	n	%	n	%
Yes	6	12.8	19	40.4	25	53.2
No	13	27.7	9	19.1	22	46.8
Total	19	40.4	28	59.6	47	100

Source: primary data, 2019

The chi square test shows  $p$  value = 0.014 indicates that there was an association between salt consumption and the incidence of hypertension in the elderly.

The result of the study shows that there was an association between excessive salt consumption and the incidence of hypertension in the elderly in Kandai Public Health Center, Kendari. The excessive salt consumption occurs because most of the respondents often consume salty food. Besides that, respondents are also smokers and consume alcoholic beverages that increase the risk of suffering hypertension.

This study is in line with a study by Susanti (2017) which shows an association between sodium intake and systolic and diastolic blood pressure (10). Likewise, a study by Suprihatin (2012) also shows that excessive salt consumption is the risk factor for hypertension (11).

Salt is essential as a risk factor for hypertension. Salt consumption affects the increase of plasma volume (body fluid) and blood pressure. This condition will be followed by the increase of excessive salt excretion to maintain normal hemodynamic conditions (9).

Authors concluded that high consumption of salt can increase the risk of getting hypertension which implies that salt consumption has a linear association with the incidence of hypertension in elderly.

**Table 5 the Association between Alcoholic Beverage Consumption and the Incidence of Hypertension in the Elderly in Kandai Health Center, Kendari**

Variable	Incidence of hypertension						p
	Stage 1 Hypertension		Stage 2 Hypertension		Number		
	n	%	n	%	n	%	
Alcohol consumption							
Yes	5	10.6	17	36.2	2	46.8	0.020
No	14	29.8	11	23.4	2	53.2	
Total	19	40.4	28	59.6	4	100	

Source: primary data, 2019

The chi-square test shows  $p$  value = 0.020 indicates that there was an association between alcoholic beverage consumption and the incidence of hypertension in the elderly.

The result of the study shows that there was an association between alcohol consumption and the incidence of hypertension in the elderly in Kandai Public Health Center, Kendari.

This result is in line with a study by Makaremas (2018) that shows an association between duration of alcohol consumption and the incidence of hypertension in males aged 35-59 years old (12). Likewise, a study by Grace, Malonda, Jayanti, Sarumaha, and Komaling (2018) also shows that alcohol consumption is a risk factor of hypertension (13-16).

High alcohol consumption tends to increase the risk of hypertension though the mechanism remains unclear. However, it is

presumed that the increase of cortisol level and red blood cell volume, as well as blood coagulation, can increase blood pressure. It is predicted that excessive alcohol consumption causes about 5 – 20% of all cases of hypertension (9).

The author assumed that alcoholic beverage consumption can increase the risk of hypertension in the elderly. There is a linear association between alcohol consumption and hypertension in elderly, moreover, some organs can lose their function during adulthood and thus exacerbate the risk of getting hypertension.

## CONCLUSION AND SUGGESTIONS

This study concluded that there is an association between smoking habit, salt consumption and alcoholic beverage consumption with the incidence of hypertension in the elderly.

It is suggested to the Kandai Public Health Center party, to improve health care for the elderly. For the elderly and their family, to improve participation to posbindu and develop knowledge about the degenerative disease by controlling food patterns, smoking habits, salt and alcohol consumption in the elderly. Meanwhile, for the next research, it is suggested to develop study variables about hypertension in the elderly.

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