Identification of Hypertension Risk Factor at Tarowang Village, Takalar, Indonesia

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Abstract

The prevalence of hypertension is increasing in the world and in Indonesia. The disease, known as the silent disease, is experienced by many people, but diagnosed too late. As a result, the impact is much greater, namely death from heart disease and stroke. Lifestyle and food intake are modifiable risk factors for hypertension. In addition, gender, age, and genetic history are risk factors that cannot be changed, but by identifying them, it can increase awareness to avoid other risk factors. This study aimed to identify risk factors for hypertension in Tarowang Village. This research was conducted with a cross-sectional study design, total sample was 116 people chosen by purposive sampling method. Hypertension defined using JNC 7 category and measured by ABN Spectrum Aneroid Sphygmomanometer. The results of this study indicate that the prevalence of hypertension was 18.97%. Age and nutritional status have significant relationship with hypertension (0.004 and 0.021, respectively). The variable consumption of vegetables and fruits, although it did not show a significant relationship, the hypertension proportion was still higher in respondents who did not eat vegetables and fruit every day. Promoting healthy behavior was needed to prevent increasing hypertension prevalence. Implementation from nutrition guidelines such as maintaining weight, increasing fruit and vegetable consumption were important in Tarowang Village.

Introduction

Hypertension or elevated blood pressure is one of the most common noncommunicable diseases in Indonesia (Kemenkes, 2019). Although it does not directly cause death, an increase in blood pressure for a long period can cause damage to the kidneys (kidney failure), heart (coronary heart disease) and other diseases. Hypertensive patient with uncontrolled blood pressure continues to rise (Banegas et al., 2011; Soenarta et al., 2020).

The global prevalence of hypertension was estimated at 1.13 million in 2015, of which 30-45% occurred in adults (24% in men and 20% in women) (Mancia et al., 2018). WHO data showed that highest prevalence was in Afrika and also have large proportion with unaware condition (Asemu et al., 2021), with more pronounced association in men (Miao et al., 2020). In Asia, hypertension prevalence was 23.5%-60% (Chan et al., 2021). According to Indonesia national health report showed that national prevalence was 34.11 and this increased in almost all province (Kemenkes, 2019). Although national prevalence was high, but awareness was still low (Peltzer & Pengpid, 2018).

Hypertension related with several risk factors such as aged, sex, family history, smoking status, nutritional status, physical activity, and food habits (Kumar & Misra, 2021; Meshram et al., 2022). In Indonesia several studies have conducted about hypertension risk factors, such as (Ayu et al., 2022; Musfirah, 2019; Peltzer & Pengpid, 2018). But, still limitation study in Coastal Area.

Takalar was one of the districts in south Sulawesi, with several subdistrict in coastal area, including Tarowang village. Study conducts in the coastal are of Medan Labuhan district in Medan City, showed that nutritional status and less physical activity with hypertension. This study aimed to identification hypertension in Tarowang village, Takalar, including social-demographic factors, food habits, and nutritional status as a risk factor of hypertension.

Methods

This study conducted at Tarowang Village, Takalar, South Sulawesi in Indonesia at September 2022. This was cross-sectional study design using purposive sampling method with total sampling was 116 respondents. The dependent variables of this study were hypertension defined by Joint National Committee (JNC 7) on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. The respondents were claimed having hypertension if their systolic blood pressure was ≥ 140 mmHg and diastolic blood pressure was ≥ 90 mmHg. Blood pressure was measured using ABN Spectrum Aneroid Sphygmomanometer by alumni from Nursing Faculty Hasanuddin University. Respondent weight measured using SECA Scale and height measured using microice. Characteristic responden and variables related to hypertension collected using Kobo Collect Aplication and analysis with Jeffreys's Amazing Statistics Program (JASP) that can be downloaded freely. This study was approved by ethical considerant from Public Health Faculty Hasanuddin university with protocol number 30922105027. Informed consent was also taken from respondent using Kobo Collect application using digital signature.

Results and Discussion

Table 1. Distribution of Characteristic Respondents in Tarowang Village

Variable	Mean±SD	Frequency (n=116)	%
Age	42,38 ± 14,10		
Age Group			
≥ 40 years		69	59,48
< 40 years		47	40,52
Sex			
Female		88	75,86
Male		28	24,14
Education			
Low Education		40	34,48
High Education		76	65,52

Table 1 shows the frequency distribution based on the characteristics of the respondent in research location, mean age was 42.38 years, most of whom were aged ≥ 40 years**,** as many as 69 respondents (59.48%). Female respondents dominate in this study as many as 88 respondents (75.86%). Based on the education level, our respondents were almost having high education, as many as 76 respondents (65.52%).

Based on these results it can be shown that our respondent dominated by female respondents. It also shown in another research that conducted in India (Kumar & Misra, 2021). There was

10

34.48% respondent sill have low education (not finish senior high school). Indonesia have regulated 9 years free to get education. Our respondent maybe not include in this program that can be shown also from age group ≥ 40 years was 59.48%. Education level was one of modifiable risk factors that related with increasing noncommunicable disease (Oshio & Kan, 2019).

Table 2. Distribution of respondents based on research variables in Tarowang Village

Variable	Mean±SD	Frequency (n=116)	%
Hypertension Status			
Hypertension		22	18.97
Not Hypertension		94	81.03
BMI (Kg/m^2)	24.37 ± 4.17		
Overweigth		39	33.62
Normal		77	66.38
Tobacco Use			
Current		16	13.79
Never/Quit		100	86.21
Physical Activity			
High		70	60.34
Low		15	12.93
Moderate		28	24.13
Family History			
Yes		26	22.41
Not		90	77.59
Salty Eating Habits			
Risk ≥1 times/day		37	31.89
Not Risk < 1 times/day		79	68.11
Fried Food Eating Habits			
Risk ≥1 times/day		25	21.55
Not risk < 1 times/day		91	78.45
Vegetable Consumption			
Risk < 1 times/day		13	11.20
Not Risk ≥1 times/day		103	88.80
Fruit Consumption			
Risk < 1 times/day		93	80.17
Not Risk ≥1 times/day		23	19.83

Table 2, shown that prevalence of hypertension in our study was 18.97%. Mean of BMI was 24.37 kg/m^2, current tobacco use was 13.79%, low physical activity was 12.9% and having hypertension family history was 22.41%. Food habits swon in several variable such as, salty eating habits was 31.89%, fried eating habits was 21.55%, risk vegetable consumption was 11.20% and risk fruits consumption were 80.17%.

Table 3. Association between hypertension with independent variables

Variable	Hypertension Status				n	%	*P-value*
	Hypertension		Not Hypertension				
	n	%	n	%			
Age Group							

≥ 40 years	19	27.53	50	72.46	69	100	0.004*
< 40 years	3	22.00	44	51	47	100	
Sex							
Female	15	17.04	73	82.95	88	100	0.350
Male	7	25.00	21	75.00	28	100	
Education							
Low Education	9	22.50	31	77.50	40	100	0.481
High Education	13	22.00	63	63.00	76	100	
BMI							
Overweight	12	30.76	27	69.23	39	100	0.021*
Normal	10	22.00	67	87.01	77	100	
Tobacco Use							
Current	4	30.76	9	69.23	13	100	0.512
Never/Quit	3	20.00	12	80.00	15	100	
Physical Activity							
High	11	15.71	59	84.28	70	100	0.494
Low	2	13.33	13	86.67	15	100	
Moderate	7	17.69	21	75.00	28	100	
Family History							
Yes	3	11.53	23	88.46	26	100	0.273
Not	19	22.00	71	78.89	90	100	
Salty eating habits							
Risk	6	16.21	31	83.78	37	100	0.605
Not Risk	16	20.25	63	79.74	79	100	
Fried food eating habits							
Risk	2	8.00	23	92.00	25	100	0.114
Not Risk	20	20.00	71	78.02	91	100	
Vegetable Consumption							
Risk	4	30.76	9	69.23	13	100	0.249
Not Risk	18	22.00	85	82.52	103	100	
Fruit Consumption							
Risk	20	21.50	73	78.49	93	100	0.161
Not Risk	2	8.69	21	91.30	23	100	

Table 3, shown bivariate analysis from independent variables. We analysis that age group and BMI were significant relation with hypertension (p=0,004 and p=0,021, respectively). Other risk factors such as, sex, education, physical activity, family history, and food habits were not shown significant relation with hypertension. Even no shown significant relation, several factors shown that proportion higher in the hypertension, like tobacco use, vegetable consumption and fruit consumption.

Prevalence of hypertension in our study was 18,97%. This prevalence higher than found in India (Meshram et al., 2022) but still lower than Indonesia prevalence (Kemenkes, 2019). Our data showed prevalence of hypertension in age group ≥ 40 years was 59,48% in this study. This study finding same with India, that show age as variables associated with hypertension (Kumar & Misra, 2021). Arterial stiffness were an indepent risk factor from aging with related in hypertension (Sun, 2015). Blood pressure also related with increasing in visceral fat and circulating leptin wich induced by age (Intapad et al., 2013). Our study showed the same results with data from Indonesia Family Life Survey 5 (IFLS5) (Mahiroh et al., 2019).

In our study showed, obesity have significant relationship with hypertension. This also same as with meta analysis for study conduct in India with pooled odd ratio of obesity and hypertension was 3.820 (95%CI: 3.392-4.248) (Babu et al., 2018). Obesity contributed to hypertension from development of kidney disorders. Mechanisme showed that development of kidney disease increasing tubular reabsorption to impair pressure natriuresis and it make expansion of the sympathetic nervous system (SNS) and Renin-angiotensin system (RAS) (Jiang et al., 2016; Kotsis et al., 2010).

In our study salty eating habits and fried food eating habits were not related with hypertension. Different with study conducted in Gowa, that show eating habits such as fatty and salty foods were one of hypertension risk factor (Minarti et al., 2022). Salty eating habits related with sodium intake, this can be shown from several mechanism such as water retention, increase in systemic periperhal resistance, an in the auntonomic neuronal modulation of the cardiovascular system (Grillo et al., 2019).

Vegetable and fruits consumption were not show significant relation with hypertension in our study. Although not significant, our data showed proportion hypertension who consume vegetables and fruits 1 times/day have lower than not consume in one day.. Fruit consumption can lower blood pressure via body weigth regulation (Seravalle & Grassi, 2017) and also flavonoid contain (Maaliki et al., 2019). Our study same as with study conduct by Dendup that show low vegetable intake increasing risk of hypertension (Dendup et al., 2020). Meta analysis conducty by Bingrong Li, et al, 2016, showed a significantly inverse association between fruit consumption and hypertension (Li et al., 2016).

Conclusion

Our study showed age and nutritional status were the variables related to hypertension. Vegetables and fruits less consumption also showed higher proportion in hypertension. Government needs to promoting healthy behaviour among society and implemented nutrition balance guidelines, such as maintain weight, increasing fruits and vegetables consumption expecially in Tarowang village.

Acknowledgments

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