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Prevalence of Hypertention and Its Associated Factors Among Peoples Whom were 40 Years Old and Older in Cu Sue Commune, Cu M'gar District, Dak Lak Province in 2023

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Abstract*—Hypertension is becoming a current and common issue in the community today, causing death and disability, leaving severe psychological and economic consequences for families and society.* ***Objectives****: This study was conducted to determine the prevalence of hypertension and describe some factors associated with hypertension among peoples whom were 40 years old and older in Cu Sue commune, Cu M'gar district, Dak Lak province in 2023.* ***Research subjects and methods****: A cross-sectional study was conducted on 398 individuals aged 40 and above living in Cu Sue commune, Cu M'gar district, Dak Lak province, in 2023.* ***Results****: The prevalence of hypertension in this area is still quite high (47.5%). Among them, 41.2% had stage 1 hypertension, 6.3% had stage 2 hypertension, and there were no cases of stage 3 hypertension. Some factors associated with hypertension were age, gender, ethnicity, occupation, education level, family economic status, smoking, alcohol consumption, salty food intake, physical activity, family history of hypertension, waist circumference, and BMI with p<0.05.* ***Conclusion****: The prevalence of hypertension among peoples whom were 40 years old and older in Cu Sue commune, Cu M'gar district is still high. Therefore, to reduce the rate of hypertension in the area, it is necessary to strengthen communication and education on health and improve economic conditions.*

***Keywords*—** *Hypertension, age ≥ 40, Cu Sue commune, Cu M'gar district, Dak Lak.*

I. Introduction

Hypertension is becoming a current and common issue in the community today, causing death and disability, leaving severe psychological and economic consequences for families and society. According to the World Health Organization (WHO), an estimated 9.4 million people die from high blood pressure each year [18]. Based on the global burden of high blood pressure, it is estimated that there will be around 1.56 billion people with high blood pressure by 2025 [14]. In Vietnam, the prevalence of hypertension is rapidly increasing. According to a survey conducted by the Vietnam Heart Association in 2008 in 8 provinces and cities nationwide, 1 out of 4 adults in our country has high blood pressure [12]. High blood pressure is referred to as the "silent killer" because most people with high blood pressure are unaware of their condition. According to the Vietnam Heart Association in 2015, only 61% of cases are aware of their high blood pressure, and up to 69% of patients with high blood pressure have not achieved control [11]. Therefore, hypertension is gradually becoming a major threat due to dangerous complications such as coronary heart disease, stroke, heart failure, and chronic kidney disease, leading to death or affecting the quality of life of patients.

Cu Sue is a commune in Cu M'gar district, Dak Lak province, and it is a locality where 60% of the population belongs to ethnic minorities. Despite being adjacent to the center of Buon Ma Thuot City, the prevalence of high blood pressure in the area is quite high, possibly due to the awareness and lifestyle habits of the ethnic people in the area, especially their customs and dietary habits that contribute to the high prevalence of high blood pressure. To answer these questions, we conducted a study on "The prevalence of high blood pressure and related factors in people aged 40 and above in Cu Sue commune, Cu M'gar district, Dak Lak province in 2023".

II. Objectives

(1) Determine the prevalence of hypertension among people whom were 40 years old and older in Cu Sue commune, Cu M'gar district, Dak Lak province in 2023. (2) Describe some factors related to the prevalence of hypertension among people whom were 40 years old and older in Cu Sue commune, Cu M'gar district, Dak Lak province in 2023.

III. Research Methodology

A. Study design

A cross-sectional description with analysis was conducted on people whom were 40 years old and older in Cu Sue commune, Cu M'gar district, Dak Lak province.

B. Sample

Using the formula:

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} P(1-P)}{d^2}$$

In which p is the proportion of estimated prevalence based on the study by Hai Van Thi Ngo in Ia Khuoi commune, Chu Pah district, Gia Lai province in 2021, the prevalence of hypertension is 38% [10]. Choose d = 0.05 as the absolute error, α = 0.05. The minimum sample size is 362 people, plus

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an additional 10% to increase the survey sample size in Cu Sue commune to 398 people.

Inclusion criteria were: (1) People whom were 40 years old and older living and having registered residence in Cu Sue commune for more than 1 year before the survey date. (2) Agreeing to participate in the study.

Exclusion criteria were: People whom were 40 years old and older who are mute, deaf, suffer from mental illnesses, newly consume alcohol, or do not agree to participate in the study

Investigate through direct interviews using pre-prepared questions with basic information, anthropological indicators, biometrics, and disease indicators. Examine the indicators: blood pressure, height, weight, and waist circumference of the research subjects.

C. Data analysis

Data were cleaned and processed using SPSS 25.0 software. The results are presented in tabular form showing frequency, percent, PR, CI 95%.

D. Approval

The research was conducted after being approved by the scientific council of the Buon Ma Thuot University of Medicine and accepted by the community. Before contacting the research subjects to collect information, we explained the research objectives thoroughly and only proceeded with the data collection steps after obtaining the subjects' consent. The information is kept confidential and only serves the research purposes. Additionally, we do not use it for any other purposes. Therefore, the entire research activity does not affect any medical issues.

IV. Result and Discussion

A. General characteristics of research object

TABLE I: General characteristics of research object

Content		Frequency (n)	Rate (%)
Gender	Male	169	42,5
	Female	229	57,5
Ethnic	Different	107	26,9
	The Kinh	291	73,1
Occupation	Farmer	315	79,1
	Different	83	20,9
Age group	40 – 49	56	14,1
	50 – 59	122	30,7
	60 – 69	160	40,2
	≥70	60	15
Education level	Illiterate	46	11,6
	Primary and secondary level	270	67,8
	High school	75	18,8
	Unversity	7	1,8
Economic conditions	Poor	31	7,8
	Not poor	367	92,2

The total number of survey samples is 398 people, of which females account for 57.5% and males account for 42.5%. The majority ethnic group is the Kinh ethnic group (73.1%), the age group from 60 - 69 has the highest proportion (40.2%), and the lowest is the group from 40 - 49 (14.1%). In terms of education level, the group with primary and secondary has the highest proportion (67.8%), the illiterate group accounts for 11.6%, the main occupation is farmers (79.1%), and 7.8% of households belong to poor households.

B. Prevalence of hypertension

TABLE II: Prevalence of hypertension

Content		Frequency (n)	Rate (%)
Hypertension	Yes	189	47,5
	No	209	52,5

There are 189 people with high blood pressure, accounting for 47.5% of the total. The results of this study are higher than the majority of other studies, such as: Hai Van Thi Ngo on the Gia Rai ethnic people in Ia Khuol commune, Chu Pal district, Gia Lai province in 2021 is 38% [10]; Hung Van Hoang in Tuyen Quang in 2021 is 33.3% [4]; Khoi Van Doan in Minh Duc commune, Tu Ky district, Hai Duong province is 38.7% [5].

On the contrary, this rate is lower than the study by author Thanh Thi Tran in Ea Tir commune, Ea H'leo district, Dak Lak province is 48% [9]. It is also lower than the study by author Hoang Vu Dinh on the H're ethnic people in Minh Long district, Quang Ngai province in 2022 is 47.7% [3]. This result is due to the differences in ethnicity and research areas between us and the authors mentioned above. Our research area is a commune adjacent to the city with many conditions for prevention and control hypertension, and more than 70% of our research subjects are Kinh ethnic people.

TABLE III: The rate of blood pressure increase by degree

Hypertension classification	Frequency (n)	Rate (%)
Normal	148	37,2
Prehypertension	61	15,3
Stage 1	164	41,2
Stage 2	25	6,3
Stage 3	0	0

Stage 1 hypertension accounts for 41.2%, stage 2 accounts for 6.3%, and there are no cases of stage 3 hypertension. This result is quite similar to the study by author Thanh Thi Tran in Buon Ma Thuot, Dak Lak, where stage 1 hypertension accounts for the majority at 25.5%, stage 2 and 3 account for 7.9% and 2% respectively [8].

C. Factors related to the prevalence of hypertension

The analysis results show that gender, age group, ethnic, occupation, education level, family economic status, smoking, alcohol consumption, salty eating habits, physical activity, family history of hypertension, waist circumference, and BMI are all related to the prevalence of hypertension ($p<0.05$).

The results show that there is a correlation between gender and hypertention, with males having a 1.26 times higher risk of developing hypertension compared to females. The lifestyle of males often includes habits of alcohol consumption, smoking, and higher levels of work. Therefore, it can be seen that there is a close relationship between gender and hypertension.

Our study found that the risk of hypertension in the group aged 60 and above is 1.54 times higher than in the group aged below 60. The older the age, the higher the prevalence of hypertension. Age is related to the prevalence of hypertension

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due to the aging and hardening of arteries, which reduces elasticity and increases pressure in the blood vessels, creating favorable conditions for hypertension.

TABLE IV: Factors related to the prevalence of hypertension

Content		N	Hypertension	Rate (%)	PR, CI 95%	P
Gender	Male	169	91	53,8	1,3 (1,1 – 1,5)	0,029
	Female	229	98	42,8		
Age group	≥ 60	220	124	56,4	1,5 (1,2 – 1,9)	0,00
	< 60	178	65	36,5		
Ethnic	Minority	107	60	56,1	1,3 (1,0 – 1,6)	0,037
	The Kinh	291	129	44,3		
Occupation	Farmer	315	157	49,8	1,3 (1,0 – 1,7)	0,067
	Different	83	32	38,6		
Education level	Illiterate	46	29	63	1,4 (1,1 – 1,8)	0,025
	Primary level and above	352	160	45,5		
Economic conditions	Poor	31	20	64,5	1,4 (1,1 – 1,9)	0,048
	Not poor	367	169	46		
Smoking	Yes	128	72	56,3	1,3 (1,1 – 1,6)	0,016
	No	270	117	43,3		
Alcohol consumption	Yes	162	88	54,3	1,3 (1,0 – 1,6)	0,024
	No	236	101	42,8		
Salty food intake	Yes	123	69	56,1	1,3 (1,0 – 1,6)	0,021
	No	275	120	43,6		
Physical activity	No	111	63	56,8	1,3 (1,0 – 1,6)	0,021
	Yes	287	126	43,9		
Family history of hypertension	Yes	100	61	61	1,4 (1,2 – 1,7)	0,002
	No	298	128	43		
Waist circumference	Large	89	52	58,4	1,3 (1,1 – 1,6)	0,019
	Normal	309	137	44,3		
BMI	Overweigh /obese	169	89	52,7	1,2 (1,0 – 1,5)	0,076
	Normal	229	100	43,7		

The ethnic minority group has a 1.27 times higher risk of hypertension compared to the Kinh ethnic group, with prevalence rates of 48.9% and 47.1% respectively. The difference in hypertension prevalence rates may be due to the influence of customs, traditions, and lifestyles of ethnic minority groups, which have more risk factors leading to hypertension.

The study revealed that the agricultural occupation group has a 1.29 times higher risk of hypertension compared to other occupational groups. On the other hand, a study by Ngoc Thanh Nguyen showed that the intellectual labor group has a 1.8 times higher prevalence of hypertension compared to the manual labor group [6]. This difference may be due to the fact that 79.1% of the subjects in this study were farmers.

People who are illiterate have a 63% prevalence of hypertension, with a 1.39 times higher risk compared to those with at least primary education. The lower the education level, the higher the risk of hypertension, which may be related to factors such as lack of knowledge and understanding for disease prevention and treatment.

Economic conditions are related to the prevalence of hypertension in this study, with a higher prevalence rate in the poor compared to those with normal economic conditions (64.5% vs 46%).

People who smoke have a 56.3% prevalence of hypertension, with a 1.3 times higher risk compared to non-smokers. Smoking is a cause of death for over 40,000 people in Vietnam each year [16]. Therefore, stronger measures should be taken to prevent and control smoking.

Alcohol consumption is associated with a 1.27 times higher risk of hypertension compared to non-drinkers in our study. Other studies have also found similar results: Hung Van Hoang (1.426 times) [4], Thanh Thi Tran (1.9 times) [8], Binh Thanh Nguyen (1.77 times) [1].

People who consume salty food have a 56.1% prevalence of hypertension, which is higher than the group without this habit (43.6%). Similarly, Tien Xuan Bui found that the prevalence of hypertension in people who consume salty food was 2.24 times higher than in those who do not [7].

People who do not engage in physical activity have a 56.8% prevalence of hypertension, with a 1.3 times higher risk compared to those who engage in physical activity. This is lower than the study by Hoang Vu Dinh, which found a 4.4 times higher risk [3]. A sedentary lifestyle is considered a risk factor for hypertension [17].

The group with a family history of hypertension has a 1.42 times higher risk compared to the group without a family history of hypertension. Other studies have also found similar results, such as Khanh Nam Do (4.2 times) [15], Hoang Vu Dinh (2.3 times) [3], Binh Thanh Nguyen (1.44 times) [1].

People with a large waist circumference have a 58.4% prevalence of hypertension, which is higher than the group with a normal waist circumference (44.3%). A study by Binh Thanh Nguyen in Giong Rieng, Kien Giang, also found a higher prevalence of hypertension in people with large waist circumference (47.8%) compared to those with normal people (28%) [1].

BMI index is related to the risk of hypertension. Overweight and obese individuals have a 1.2 times higher risk of developing hypertension compared to normal individuals. This finding is consistent with other studies such as Khoi Van Doan (2.03 times) [5], Quynh Chi Thi Tran (2.74 times) [2], Xuyen The Pham (3.05 times) [13].

V. Conclusions

A. Prevalence of hypertension among people whom were 40 years old and older in Cu Sue commune, Cu M'gar district, Dak Lak province in 2023

The prevalence of hypertension in people whom were 40 years old and older in Cu Sue commune is quite high (47.5%). Among them, the prevalence of stage 1, stage 2, and stage 3 hypertension is 41.2%, 6.3%, and 0% respectively.

B. Factors related to the prevalence of hypertension among people whom were 40 years old and older in Cu Sue commune, Cu M'gar district, Dak Lak province in 2023

Some factors related to the prevalence of hypertension in this community are: age, gender, ethnic, occupation, education level, family economic status, smoking, alcohol consumption, salty food intake, physical activity, family history of hypertension, waist circumference, and BMI with $p < 0.05$.

VI. Recommendations

We need to strengthen the monitoring, management, and prevention of hypertension in the community of Cu Sue commune, Cu M'gar district, Dak Lak province.

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Enhance educational communication methods for the community on hypertension prevention.

Intensify management and treatment for hypertensive patients to achieve target blood pressure.

There is a need for broader research in Dak Lak province to develop more effective strategies for disease prevention.

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