

# *Hypertension Among “The Cham Ethnic Minorities People Living In Ninh Thuan, Vietnam”: Prevalence, Awareness, And Its Associated Risk Factors*

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## Abstract

**Background:** The aim of this study was to determine the prevalence of hypertension among the Cham ethnic minority people Living in Ninh Thuan, Vietnam, and related factors.

**Methods:** A cross-sectional study was conducted on 384 participants, which was located in An Hai, Phuoc Hai Commune, Ninh Phuoc District, Ninh Thuan Province, Vietnam. They were selected through randomly sampling from January 2020 to March 2020. Univariate and multivariate logistic regression were used to determine the prevalence of hypertension by gender, age, education, and occupation with random variations for surveyed.

**Results:** A total of 384 participants, 215 males and 169 females aged 25-65. Prevalence of hypertension was more among male (24.5%), aged 45-55 years (17.4%) with secondary school education (13.8%), farmer (12.8%).

**Conclusion:** This is the first study to show the rate of increased blood pressure among the Cham ethnic minorities in Ninh Thuan. We have observed the differences in the rate of hypertension by a number of factors in terms of gender, age group, education level, and occupation. This difference shows that the surveyed area has inadequate economic conditions, rate of awareness, treatment, and control of hypertension.

**Keywords –** Hypertension, Prevalence, The Cham, Ninh Thuan.

## I. INTRODUCTION

Hypertension is an increasingly common disease and becoming a serious public health problem worldwide. One of the leading risks of cardiovascular disease based on country aggregate data, Kearney et al. [1] have projected an estimated 1.56 billion people with hypertension by 2025. Although there are treatments for hypertension with low cost. However, hypertension is getting younger, the rate of hypertension of Vietnamese people has continuously increased since 2001 - 2009 [2]. Thus, this is also the reason that nearly 60% of people with high blood pressure in Vietnam have not been detected and over 80% have not been treated. While hypertension is the leading the cause of death for millions of people each year, it is also a cause of heart failure and brain stroke.

In Vietnam, there have been studies in each region, each different subject with hypertension [3], [4], [5]. As reported by Do Nam Khanh et al. [6], there are differences in morbidity and risk factors for hypertension among Kinh, Thai, Nung, Mong, and Muong ethnic groups in the provinces. mountainous areas of Vietnam. Ninh Thuan has a Cham ethnic population of about 72,000 people, accounting for 40.9% of the total number of Cham people in Vietnam. Difficult economic conditions, low education level, inadequate for knowledge about health care, especially people with unhealthy living habits: salty eating, smoking, pipe tobacco,

drinking too much alcohol sedentary, obesity, hyperglycemia, etc. are high risk factors leading to high blood pressure in the elderly and the disease develops slowly, silently difficult to detect. Therefore, when infected, many diseases will occur at the same time, causing rapid health loss [7].

Control of hypertension in developing countries can be achieved through community-based programs and upgrading the primary healthcare system for the population. In 2015, Vietnam approved a national strategy for the prevention of non-communicable diseases (2015-2025) to limit the incidence of hypertension below 30%. While the medical station system, the team of medical doctors and doctors has not met the needs of the people for health examination. Therefore, the investigation of epidemiological parameters on the incidence of hypertension as well as related issues is necessary. The study was carried out with the expectation of contributing to prevention and intervention strategies in the treatment of hypertension in the Cham ethnic group in Ninh Thuan, Vietnam. Besides, promoting propaganda to raise awareness of the community about high blood pressure as well as the close relationship between hypertension disease with diseases of heart and brain, the most dangerous is myocardial infarction. and cerebral infarction. Both are caused by high blood pressure and can lead to death, paralysis or partial function, directly affecting the patient's life, placing a heavy burden on family and society.

## **II. METHODS**

### **2.1. Preparation of sampling and sample size**

This study was conducted between January 2020 to March 2020, which was located in An Hai, Phuoc Hai Commune, Ninh Phuoc District, Ninh Thuan Province, Vietnam. The sample size using the single proportion population formula is given below (1) [8].

$$n = Z_{1-\frac{\alpha}{2}}^2 \frac{p(1-p)}{d^2}$$

Where: n = required sample size ; Z = the value from the standard distribution ( $Z_{1-\frac{\alpha}{2}} = 1.96$ ) with  $\alpha=0.05$ ;  $p = 0.473$  ( $\geq 25$  years, which was hypertension prevalence among Vietnam population) [6];  $d = 0.1$ , which was an absolute error of precision. The calculated sample size was 339. However, we adding 10% no-response rate the final total sample size was 384.

### **2.2. Data analysis**

All statistical tests were performed by using a  $p < 0.05$  level of significance. EpiData was used for data entry. Data analyses were conducted using the complex sample package for SPSS 16 (IBM, Armonk, NY, USA) [9].

### **2.3. Research ethics**

The research is conducted on the basis of ensuring the principles:

- Subject voluntarily participated in research
- The research is only conducted when the subjects have been clearly explained about the research objectives and the purpose of using research results.
- All participant's personal information is kept confidential and encrypted.
- For all individuals diagnosed at increased risk of hypertension during the study, the researcher made a list of subjects. Then send the list to the ward health station to manage, communicate and educate about health, early detection examination and treatment, and prevention of complications.

## **III. RESULTS AND DISCUSSION**

### **3.1. Sociodemographic characteristic of participants' in the study**

The data summarizing some demographic characteristics from Table 1 show that with a total of 384 participants, 215 males and 169 females, in which, the percentage of men participating in the study more than women is 56 and 44%, respectively. There is not

much difference in sex distribution between men and women participating in the abovementioned study. In terms of age, the age group from 35 to <55 years old participates the most, the age from 55 to 65 years old participates the least. Regarding educational attainment, over about 15% of study participants have high school or lower levels. Participants with lower levels of college, university and postgraduate education with 5.4 and 4.7%, respectively. As for the occupational group, over a quarter of the study subjects are still engaged in farming. Some other occupations of the research subjects such as housework, retirement, office account for a very small proportion (<10%) in the study.

Table 1. Demographic parameter of participants' in the study

| Variables         | n - Sample size | % - percentage |
|-------------------|-----------------|----------------|
| Gender            |                 |                |
| Male              | 215             | 56.0           |
| Female            | 169             | 44.0           |
| Age group         |                 |                |
| 25 - < 35         | 66              | 17.2           |
| 35 - < 45         | 121             | 31.5           |
| 45 - < 55         | 137             | 35.7           |
| 55 - 65           | 60              | 15.6           |
| Education         |                 |                |
| Illiteracy        | 70              | 18.2           |
| Less than Primary | 57              | 14.8           |
| Primary           | 58              | 15.1           |
| Secondary         | 83              | 21.6           |
| High              | 77              | 20.1           |
| University        | 21              | 5.5            |
| After university  | 18              | 4.7            |
| Occupation        |                 |                |
| Farming           | 110             | 28.6           |
| Trade             | 60              | 15.6           |
| Employee          | 77              | 20.1           |
| Worker            | 35              | 9.1            |
| Housewife         | 37              | 9.6            |
| Retire            | 19              | 4.9            |
| Unemployment      | 9               | 2.3            |
| Officer           | 29              | 7.6            |
| Others            | 8               | 2.1            |

### 3.2. Prevalence, Awareness, and Its Associated Risk Factors

In the study, 24.5% of male patients had a history of their hypertension. Besides, 31.5% (male gender) and 20.1% (female sex) do not know their history of hypertension. The rate of hypertension in men is higher than in women and this may be because men often drink alcohol and smoke. The incidence of hypertension by sex in this study is higher than the result (47.6%) published by Bui Van Nhon [10] et al. and (23.3%) in the study by Ha Anh Duc et al. [3] . However, the rate of hypertension in the study of Do Khanh Nam et al (59.9%) [6] is higher than our study (48.4%). This may be due to differences in geographic location, subject matter, and sample count. In addition, An Hai and Phuoc Hai communes of Ninh Thuan province are two communes with economic difficulties, medical services as well as lack of equipment. Besides, the Cham are ethnic minorities, there are still backward customs in the way of life that may be a factor in the formation of the disease.

Table 2. The prevalence of hypertension via gender

| Gender | History of hypertension |       |             | Total |
|--------|-------------------------|-------|-------------|-------|
|        | Yes                     | No    | Do not know |       |
| Male   | 94                      | 95    | 26          | 215   |
|        | 24.5%                   | 24.7% | 6.8%        | 56.0% |
| Female | 92                      | 59    | 18          | 169   |
|        | 24.0%                   | 15.4% | 4.7%        | 44.0% |
| Total  | 186                     | 154   | 44          | 384   |
|        | 48.4%                   | 40.1% | 11.5%       | 100%  |

The analysis results in Table 3 showed that participants > 45 years old (27.1%) had a higher incidence of hypertension than the other two age groups 35-<45 years (14.3%) and 25-<35 years old (7.0%). Thereby, it shows that age is statistically related with the incidence of hypertension by age group. At this age, men often smoke cigarettes and drink a lot. According to a published study [11] found a significant relationship between smoking and increased blood pressure. Medications are one of the leading causes of hypertension and cardiovascular diseases [12], [13]. In addition, for women, passive smoking is also a high risk of high blood pressure [14].

Table 3. The prevalence of hypertension via age group

| Age group | History of hypertension |       |             | Total |
|-----------|-------------------------|-------|-------------|-------|
|           | Yes                     | No    | Do not know |       |
| 25 - < 35 | 27                      | 35    | 4           | 66    |
|           | 7.0%                    | 9.1%  | 1.0%        | 17.1% |
| 35 - < 45 | 55                      | 53    | 13          | 121   |
|           | 14.3%                   | 13.8% | 3.4%        | 31.5% |
| > 45      | 104                     | 66    | 27          | 197   |
|           | 27.1 %                  | 17.2% | 7 %         | 51.3% |
| Total     | 186                     | 154   | 44          | 384   |
|           | 48.4%                   | 40.1% | 11.5%       | 100%  |

Table 4. The prevalence of hypertension via education level

| Academic level    | History of hypertension |              |             | Total       |
|-------------------|-------------------------|--------------|-------------|-------------|
|                   | Yes                     | No           | Do not know |             |
| Illiteracy        | 27<br>7.0%              | 30<br>7.8%   | 13<br>3.4%  | 70<br>18.2% |
| Less than Primary | 24<br>6.2%              | 24<br>6.2%   | 9<br>2.3%   | 57<br>14.8% |
| Primary           | 29<br>7.6%              | 21<br>5.5%   | 8<br>2.1%   | 58<br>15.1% |
| Secondary         | 53<br>13.8%             | 25<br>6.5%   | 5<br>1.3%   | 83<br>21.6% |
| High              | 42<br>10.9%             | 28<br>7.3%   | 7<br>1.8%   | 77<br>20.1% |
| University        | 5<br>1.3%               | 16<br>4.2%   | 0<br>0%     | 21<br>5.5%  |
| After university  | 6<br>1.6%               | 10<br>2.6%   | 2<br>0.5%   | 18<br>4.75% |
| Total             | 186<br>48.4%            | 154<br>40.1% | 44<br>11.5% | 384<br>100% |

In this study, patients with different education levels had different rates of disease. The incidence of hypertension was significantly lower in those with higher education (Table 4), with rates of between 1.3 and 1.6%. Therefore, there is a relationship between educational attainment and hypertension. This result is consistent with previous studies on the relationship between education level and perception of hypertension [15]. In terms of occupation, the results from Table 5 show that farmers suffering from hypertension account for the highest proportion (12.8%), followed by hired labor, trade and housewife. This may be due to the fact that patients often use more salt in their diets. Salty foods are considered the main cause of high blood pressure [16]. Research in Turkey [17], Brazil [18], Cameroon [19] have demonstrated a correlation between high blood pressure and salty diet. These dietary interventions are considered the primary preventive measure against hypertension. Besides helping to prevent cardiovascular diseases. In addition, out of 384 subjects participating in the study, 110 people (accounting for 28.6%) suffered from high blood pressure and diabetes and 92 relatives (24.0%) also suffered from hypertension. according to diabetes. The coexistence between diabetes and hypertension has been reported [20]. Therefore, people need an effective blood glucose and blood pressure screening to prevent cardiovascular disease events.

Table 5. The prevalence of hypertension via profession

| Profession | History of hypertension |    |             | Total |
|------------|-------------------------|----|-------------|-------|
|            | Yes                     | No | Do not know |       |
| Framing    | 49                      | 42 | 19          | 110   |

|              | 12.8% | 10.9% | 4.9%  | 28.6% |
|--------------|-------|-------|-------|-------|
| Trade        | 28    | 27    | 5     | 60    |
|              | 7.3%  | 7.0%  | 1.3%  | 15.6% |
| Employee     | 36    | 33    | 8     | 77    |
|              | 9.4%  | 8.6%  | 2.1%  | 20.1% |
| Worker       | 12    | 19    | 4     | 35    |
|              | 3.1%  | 4.9%  | 1.0%  | 9.1%  |
| Housewife    | 27    | 8     | 2     | 37    |
|              | 7.0%  | 2.1%  | 0.5%  | 9.6%  |
| Retire       | 17    | 2     | 0     | 19    |
|              | 4.4%  | 0.5%  | 0.0%  | 4.9%  |
| Unemployment | 2     | 4     | 3     | 9     |
|              | 0.5%  | 1.0%  | 0.8%  | 2.3%  |
| Officer      | 15    | 12    | 2     | 29    |
|              | 3.9%  | 3.1%  | 0.5%  | 7.6%  |
| Other        | 0     | 7     | 1     | 8     |
|              | 0.0%  | 1.8%  | 0.3%  | 2.1%  |
| Total        | 186   | 154   | 44    | 384   |
|              | 48.4% | 40.1% | 11.5% | 100%  |

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### Conclusions

Hypertension remains an important public health issue. Research has shown that, out of a total of 384 participants, the rate of hypertension was higher in men (24%) than in women (24%). The age group 45-55 years old shows the highest rate of hypertension in 3 years old with the rate of 17.4%. Meanwhile, in the group of qualifications and occupations, the lower secondary education and agricultural occupations account for a high proportion with 13.8% and 12.8%, respectively. One alarming data is that between the ages of 25-35 years old are still suffering from hyperemia. Effective treatment and control of high blood pressure remain low. Effective treatment and control of high blood pressure remain low. Therefore, early detection, awareness-raising, and better treatment of hypertension are very important in improving the quality of life and reducing the burden of pressure on the health sector. Moreover, it is necessary to adjust lifestyle including smoking, drinking alcohol, eating salty foods, and exercising healthily with suitable sports for each person's conditions, helping to prevent hypertension.

##### Recommendations

From the research results, the following has been recommended:

1. The ward medical station organizes periodic hypertension screening for early detection and regularly propagates in various forms of organizing talks, propaganda, loudspeakers, leaflets for people to reduce the habits used to smoke, alcohol, eat salty food, eat a inadequate for vegetables, increase physical activity enough to reduce the risk of obesity, overweight. Organize screening examination for hypertension, especially for the elderly.

2. For health workers/members, it is necessary to measure blood pressure for all people who come for medical examination at medical facilities, give recommendations/consultant on the risk of hypertension for people, guide changes to lifestyle, behavior, and guidance. treatment and use of drugs for people already suffering from high blood pressure.

3. Health education should be repeated periodically, with a quality life effectively reducing the risk of hypertension, and equipping patients with knowledge for prevention and treatment.

#### **AUTHOR’S CONTRIBUTIONS**

N.T.N. Phuong, N.T. Nu, and T.T. Trung contributed to the design and implementation of the research, to the analysis of the results. All authors discussed the results and commented on the manuscript. The author T. T. Trung edited and revised the final manuscript. All authors have read and agreed to the final manuscript.

#### **COMPETING INTERESTS STATEMENT**

Authors declare no conflicts of interest regarding the publication of this article.

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