



# The current status of hypertensive patients and medicine use at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023

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## ABSTRACT

**Objective:** To survey on the current status of hypertensive patients and the use of medicine to treat hypertension at the Geriatric - Cardiology Department - Tue Tinh Hospital.

**Research subjects and methods:** A cross-sectional, retrospective and analysis conducted research was conducted on 389 medical records diagnosed with hypertension for outpatient and inpatient treatment at the Department of Geriatrics - Cardiology - Tue Tinh Hospital from January 2023 to the end of December 2023.

**Results:** In the 389 researched medical records, the mean patient age was  $77.8 \pm 6.5$  years, with the 70–79 age group accounting for the highest proportion (43%) and those under 50 the lowest (4%). Female patients comprised 62%, higher than males (38%), and 78% had age-related risk factors. Five main classes of antihypertensive drugs were used—Angiotensin-Converting Enzyme inhibitors (ACEi), Angiotensin II Receptor Blockers (ARBs), calcium channel blockers (CCB), beta-blockers (BB), and diuretics—all consistent with national treatment guidelines. Monotherapy was more commonly prescribed than combination therapy in both initial (59.1%) and final regimens (52.7%). The rate of achieving target blood pressure was high (88%), approximately seven times greater than the failure rate (12%).

**Conclusions:** The research sample had an average age of  $77.8 \pm 6.5$  years, mainly from 70–79 years old (43%). The rate of women is 1.5 times higher than that of men. Study of 389 records with 5 groups of antihypertensive drugs. In both therapies, the rate of use of monotherapy regimens was higher than the rate of use of multitherapy regimens. Combinations of 2 to 4 drugs showed different distributions, with beta-blockers being most common in the 3-drug combination group.

**Keyword:** Medication use, hypertension.

## INTRODUCTION

Hypertension is one of the leading causes of premature death worldwide, affecting approximately 1.28 billion adults aged 30–79 years, nearly 46% of whom are undiagnosed and untreated [1]. According to the World Health Organization (WHO), two-thirds of individuals with hypertension live in low- and middle-income countries [1]. In Vietnam, the 2021 national STEPS survey reported a hypertension prevalence of 28.3% among adults aged 25–64, a significant increase from 20.3% in 2015 [2]. The rates of detection, treatment, and blood pressure control remain low; only about 43% of patients receive treatment, and just 16.5% have their blood pressure effectively controlled [2]. This increase has been associated with sedentary lifestyles, unhealthy diets, and an aging population. These figures highlight

that hypertension remains a major public health challenge, necessitating comprehensive and effective intervention strategies.

Currently, in clinical practice, the treatment of patients diagnosed with Hypertension at the Geriatric - Cardiology Department - Tue Tinh Hospital is achieving many expected results in controlling blood pressure index and risk factors for patients. In order to make it more convenient to assess the overall situation of blood pressure control as well as the current situation of using antihypertensive drugs at the department, thereby proposing solutions for safe and effective drug use for patients. The research team conducted a study on the topic "Survey of the current status of hypertensive patients and medicine use at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023" with 2 objectives:

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1. Current status of hypertensive patients at the Geriatric - Cardiology Department - Tue Tinh Hospital from January 2023 to December 2023.

2. Situation of using medicine to treat hypertension at the Geriatric - Cardiology Department - Tue Tinh Hospital from January 2023 to December 2023.

## RESEARCH SUBJECTS AND METHODS

### Research subjects

Medical records of patients diagnosed with hypertension from January 2023 to the end of December 2023 who went for outpatient or inpatient treatment.

### Selection Standard:

Patient age is from 18 years old, inpatient treatment duration is from 21 days, and regular check-ups for outpatient treatment once a month.

### Research methods

**Research design:** The research method was descriptive, cross-sectional, retrospective, and analytical.

### Sample size and sampling methods:

+ **Sample size:** Apply the formula for calculating sample size, estimate a proportion for descriptive research with absolute error, estimated proportion 50%

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

In there: n is the number of hypertension patient records to be studied

z is the reliability, taken at the threshold  $\alpha = 0.05$  (Z=1.96)

p is the estimated ratio

d is the desired absolute precision, in this study  $d = 0.05$

From there, the sample size  $n = 385$  is calculated

### + Research variables:

Evaluating the current status of hypertensive patients at the Department of Geriatrics - Cardiology - Tue Tinh Hospital

- Age, gender, medical history and patient group participating in medical examination and treatment: based on information in the medical record.

- Risk factors: Determined when the patient has one of the following factors: smoking, obesity, dyslipidemia, atherosclerosis, family history of hypertension, old age (men > 55 years old, women > 65 years old).

- Target organ damage: Determined when the patient suffers one of the damages to target organs such as heart, kidney, eye, brain.

Situation of using medicine to treat hypertension at the Geriatric - Cardiology Department - Tue Tinh Hospital

- Analysis of drug use: List of drugs for treating hypertension and Treatment therapies

### Data Processing Methods

The collected data were cleaned by removing invalid entries and analyzed using Microsoft Word 2016 and Excel 2016. Descriptive statistics were used to calculate frequencies (n), percentages (%), mean, standard deviation, maximum, and minimum values. Qualitative variables were presented as frequencies and percentages.

### ETHICS IN RESEARCH

The research was approved by the Board of Directors of Tue Tinh Hospital and the Outline Council of Tue Tinh Hospital. All patient information is confidential, encrypted and used for research purposes only.

### RESULTS

**Current status of hypertensive patients at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023**

Table 1. Patient distribution by age and gender

Category	Subgroup	Quantity (n)	Proportion (%)
Age group	< 50	15	4
	50-59	31	8
	60-69	127	33
	70-79	166	43
	≥ 80	50	13
Gender	Male	146	38
	Female	243	62
Total		389	100



The average age of the entire sample is  $77.8 \pm 65.4$  years. Patients aged 70-79 account for the highest total of 43%, hypertension is concentrated in the age group of 50-80. The proportion of people under 50 years old accounts

for the least with 4%. The remaining age proportions from 60-69, from 80, from 50 to 59 account for 33%, 13%, 8% respectively. The proportion of female patients (62%) is 1.5 times higher than the proportion of male patients (38%)

Table 2. Distribution by risk factors

Risk factors	n	%
Age (Male >55, female >65)	305	78
Physical activity	198	51
Eat mode	165	42
Smoking use	96	25
Alcohol use	83	21

Age factor accounts for the highest percentage of 78%, followed by exercise and diet, accounting for 51% and 42%

respectively. Smoking and drinking factors account for the lowest percentage of 25% and 21% respectively.

### Situation of using medicine to treat hypertension at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023

Table 3. List of antihypertensive medicine

Group of medicine to treat hypertension	Medicinal substances	Dosage form	Medicinal content
ACE inhibitors	Enalapril	Anelipra	10mg
	Ramipril	Beynit	2.5mg, 5mg
	Perindopril	Coperil	4mg
Province		4mg	
Angiotensin II Receptor Blockers	Telmisartan	Actelsar	40mg
	Losartan	Cylosart 50 FC Tablets	50mg
Calcium channel blockers	Amlodipin	Stadovas	5mg
	Nifedipin	Nifedipin T20	20mg
Beta blockers	Bisoprolol	Bisostad	5mg
	Metoprolol	Egilok	25mg
Diuretics	Indapamid	Natrilix sr	1.5mg

There are 5 groups of antihypertensive medicine corresponding to the active ingredients used in the study sample including: ACE inhibitors (Enalapril, Ramipril, Perindopril), Angiotensin II Receptor

Blockers (Telmisartan, Losartan), calcium channel blockers (Amlodipine, Nifedipine), beta blockers (Bisoprolol, Metoprolol, Atenolol), diuretics (Indapamide).

Table 4. Treatment therapies

Treatment therapy	Initial therapy		Final therapy	
	Quantity	Proportion (%)	Quantity	Proportion (%)
<b>Combination of 1 medication</b>				
ACE inhibitors	70	18	60	15.4
Angiotensin II Receptor Blockers	96	24.7	89	22.9
Calcium channel blockers	60	15.4	56	14.4
Diuretics	0	0	0	0

Beta blockers	4	1	0	0
<b>Combination of 2 medication</b>				
ACEi/ARBs + CCB	24	6.2	32	8.2
ACEi/ARBs + BB	26	6.7	19	4.9
ACEi/ARBs + Diuretics	25	6.4	34	8.7
CCB + Beta	5	1.3	5	1.3
CCB + Diuretics	13	3.3	7	1.8
BB + Diuretics	0	0.0	0	0.0
<b>Combination of 3 medication</b>				
ACEi/ARBs + BB + CCB	5	1.3	1	0.3
ACEi/ARBs + BB + Diuretics	35	9.0	47	12.1
ACEi/ARBs + CCB + Diuretics	7	1.8	12	3.1
BB + CCB + Diuretics	15	3.9	14	3.6
<b>Combination of 4 medication</b>				
ACEi/ARBs + BB + CCB + Diuretics	6	1.5	13	3.3

The rate of using monotherapy regimens is higher than the rate of using multitherapy regimens in both initial therapy (59.1% > 41.4%) and final therapy (52.7% > 47.3%) of monotherapy regimens. In monotherapy, the rates of using receptor blockers and ACE inhibitors in initial therapy as well as final therapy are highest at 42.7%, 38.3% respectively, while diuretics account for the lowest rate of 0%. The rates of using calcium channel blockers and sympathetic beta blockers in the initial and final

therapy are 15.4% - 14.4%, 1% - 0% respectively. In multitherapy regimens, the rates of using A + B in the initial and final therapy in the 2-medicine combination group are highest at 6.7% - 8.7%. In the 3-medicine combination group in the initial and final therapy, the rate of combination with beta-blockers accounted for a common rate of 10.3% - 12.4%. The 4-medicine combination group in the initial and final therapy accounted for a rate of 1.5%-3.3%, respectively.

Table 5. Treatment effectiveness

Target blood pressure	Quantity	Proportion (%)
Obtain	342	88
Not achieved	47	12
Total	389	100

The rate of achieving target blood pressure is the highest at 88%, the rate of not achieving target blood pressure is 12%.

## DISCUSSION

### Current status of hypertensive patients at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023

Analysis of hypertensive patients at the Geriatric – Cardiology Department of Tue Tinh Hospital in 2023 indicated that the mean age was 77.8 ± 6.5 years, with 96% of patients falling within the 50–80 age group. This age distribution is consistent with the natural progression of vascular aging, characterized by endothelial dysfunction, increased arterial stiffness, and reduced compliance of the vascular wall – pathophysiological changes that collectively contribute to the development and persistence of elevated blood pressure in older adults.

The higher proportion of female patients (62%) may be due to women's longer life expectancy and greater representation among the elderly. Women may also seek healthcare more often and follow treatment better, leading to higher diagnosis rates. However, further research is needed to confirm if these factors explain gender differences in hypertension care in Vietnam.

About risk factors: Among the total of 389 patients in the study sample, the age factor (male > 55, female > 65) accounted for the highest rate of 78%. This is consistent with the Joint National Committee (JNC) VII recommendation, with people over 55 years old having a 90% risk of hypertension [5]. The result is greater than the study of Thai Khoa Bao Chau (75.2%) [6]. This difference may be because the study sample of Thai Khoa Bao Chau



was inpatients, while the sample of our research group included all outpatients and inpatients.

### **Situation of using medicine to treat hypertension at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023**

In the research, treatment indications were compiled and preliminary evaluation results were obtained. There were 5 main groups of antihypertensive medicine used in the study sample (ACE inhibitors, Angiotensin II Receptor Blockers, calcium channel blockers, beta blockers, diuretics) with corresponding active ingredients (ACEi: Enalapril, Ramipril, Perindopril; ARBs: Telmisartan, Losartan; Calcium channel blockers: Amlodipine, Nifedipine; Beta blockers: Bisoprolol, Metoprolol, Atenolol, Diuretics: Indapamide). All these groups of medicine are on the list of main antihypertensive medicine according to the recommendations for treating hypertension of the Vietnam Cardiology Association in 2022 as well as the recommendations of JNC VII and European Society of Hypertension/European Society of Cardiology (ESH/ESC) 2018 [7].

In our study, monotherapy was used more than polytherapy in both initial (59.1% vs. 41.4%) and final treatments (52.7% vs. 47.3%), likely due to the high number of patients with grade 1 hypertension. Among monotherapies, calcium channel blockers were most prescribed (15.4%), alongside ACE inhibitors and ARBs, due to their low cost, ease of use, and international recommendations (JNC, American Society of Hypertension/International Society of Hypertension, American Heart Association,...). No patients received diuretics alone, despite 88% being over 60. Beta-blockers were prescribed in 4 patients but are not recommended for monotherapy due to side effects and are suggested only in combination per JNC 8 (2014). In initial polytherapy, 2-drug combinations were used in 23.9% of cases, 3-drug in 16%, and 4-drug in 1.2%. In final polytherapy, these rates increased to 24.9%, 19.1%, and 3.3%, respectively.

In the two-medicine combination regimen, the initial and final rates of A+C or A+D combinations were popularly used at 12.6% and 16.9%, consistent with the Vietnam National Heart Association (VNHA) 2022 recommendations. In addition, after A+C or A+D, the rate of combination with beta-blockers was popularly used. In addition, after A+C or A+D, the rate of combination with beta-blockers was commonly used. In the initial therapy of the two-medicine combination

group, the rate of combination with beta-blockers was 8% (initial), and in the final therapy, the rate of combination with beta-blockers was 6.2%. This can be explained by the prevalence of common cardiac comorbidities and target organ damage (39%) causing tachycardia and arrhythmias, consistent with the VNHA 2022 recommendations [8].

In the triple combination regimen, the use of group B + D combinations in initial and final therapy accounted for 12.9% and 15.7%, respectively deviating from the VNHA 2022 recommendation, which suggests using other triple therapy combinations. This may be due to the need to treat patients with high-normal blood pressure and comorbidities like atherosclerosis, Chronic Kidney Disease (CKD), diabetes, or arrhythmias, where beta-blockers are recommended. During the study, the main triple combinations used were A + B + D or C + B + D, which are not aligned with global hypertension guidelines. Group B (beta-blockers) was often necessary for blood pressure control with arrhythmias. However, due to hospital constraints, the combination B + D (e.g., Bisoprolol 5/12.5mg) was more commonly available than beta-blockers alone, explaining the deviation from guideline-recommended regimens.

The rate of using the 4-medicine combination regimen in the initial and final therapy was at least 1.5% and 3.3%, respectively. This can be explained by the fact that the rate of patients with difficult blood pressure control was not large, mostly concentrated in the group of patients with stage 1 and 2 hypertension with risk factors for arrhythmias, or heart diseases with typical symptoms.

Of the total 389 patient records studied, the majority of patients who achieved target blood pressure accounted for 88%, mostly outpatients, and the proportion who did not achieve target blood pressure accounted for 12%, mostly inpatients. The rate of achieving target blood pressure of the study group was higher than that of the Thai Khoa Bao Chau study group (2014) (67.3%) [6]. This difference is due to the fact that most of the patients participating in our study had a history of hypertension and during this outpatient treatment period, the patients were cared for and instructed by doctors and nurses, so they complied with treatment better, thereby the rate of patients achieving target blood pressure was higher than in other studies. In addition, the study sample of the Thai Khoa Bao Chau study group only selected a group of inpatients, which was different from our group.

## CONCLUSION

### Current status of hypertensive patients at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023

- The average age of the entire sample was  $77.8 \pm 65.4$  years.

- Patients aged 70-79 accounted for the highest total of 43%, hypertension was concentrated in the age group of 50-80.

- Female patients (62%) were higher than male patients (38%).

- Age was the risk factor with the highest rate of 78%, alcohol consumption had the lowest rate of 21%.

### Situation of using medicine to treat hypertension at the Geriatric - Cardiology Department - Tue Tinh Hospital in 2023

- There are 5 groups of antihypertensive medicine corresponding to the active ingredients used: ACE inhibitors (Enalapril, Ramipril, Perindopril), Angiotensin II Receptor Blockers (Telmisartan, Losartan), Calcium channel blockers (Amlodipine, Nifedipine), Beta blockers (Bisoprolol, Metoprolol, Atenolol), Diuretics (Indapamide)

- The rate of using monotherapy in the study group was higher than the rate of using polytherapy in both initial therapy ( $59.1\% > 41.4\%$ ) and final therapy ( $52.7\% > 47.3\%$ )

- Initial and final therapy: A + B was the most used 2-drug combo (6.7%–8.7%). In 3-drug regimens, combinations with beta-blockers were common (10.3%–12.4%). The 4-drug regimens accounted for 1.5%–3.3%. Target blood pressure was achieved in 88% of cases, about 7 times higher than the 12% failure rate.

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