### AT-HOME UTILIZATION OF CARDIOVASCULAR MEDICINES AMONG THE ELDERLY IN THUA THIEN HUE PROVINCE

Vo Thi Ngoc Dieu<sup>1</sup>, Nguyen Thi Hoa<sup>2</sup>, Nguyen Van Dat<sup>1</sup>, Nguyen Minh Tam<sup>2</sup> (1) Pasteur Institute in Nha Trang, Vietnam (2) Hue University of Medicine and Pharmacy, Vietnam

#### Abstract

Cardiovascular disease is the leading cause of death in the elderly population. Although the elderly (60 years of age and older) account for a low proportion of the population (around 12%), they use a large number of medications (about 50% of total medications consumed by all population) and a higher rate of adverse drug events than the other age groups. **Objectives**: 1. To explore the use of cardiovascular medications at home among the elderly in Thua Thien Hue Province, 2. To examine factors related to the use of cardiovascular medications at home among the elderly. Subjects and Methods: A descriptive cross-sectional study was conducted with a sample of 840 elderly. Data collected through interview using a prepared questionnaire and observations using a checklist for prescribed medicine and medicine storage. **Results:** The prevalence of cardiovascular disease in the sample was 36.9% (310/840). The proportion of elderly people using cardiovascular medicines was 90.2% with the majority being antihypertensive medicines. Among the elderly using cardiovascular medications, there was a high proportion using at the same time other classes of drugs such as musculoskeletal medicines (21.2%); vitamins and minerals (20.5%) and endocrinal medicines (17.4%). The proportion of persons using prescription medications at home was 70.5%, with 75.6% of those found to be taking the right dosage of medications, 100% using the correct route of administration and 74.6% taking their medications on time. There was a high proportion of elderly people who did not know the name of their medications (77.6%), the effects (66.7%), contraindications (96.5%) or side effects (93%). One quarter (25.9%) of elderly people did not complete a course of medications and 28.4% concurrently used other drugs besides prescription drugs. Proportion of inappropriate storage practice in the elderly was high (69.6%). There was an association between disease duration, doctor's prescription, drug information and medication adherence. Key words: Cardiovascular disease, drug, medication adherence

#### **1. BACKGROUND**

Medications play a key role in prevention and treatment as well as rehabilitation of patients. It is essential to know drug characteristics and information so as to use medications safely and properly and avoid drug abuse. Although the elderly (60 years of age and over) account for a low proportion of population (around 12%), they use a large number of medications (about 50% of total medications consumed by all population) and have a higher rate of adverse drug events than the other age groups [9]. Cardiovascular disease is the leading cause of death in the elderly and accounts for 60% of death, one third of hospitalized persons and one fourth of examined patients. A study from Brazil showed that 32% of elderly people used cardiovascular medications at home, with

antihypertensive medicines representing a high proportion of these community-based patients [9]. There were common errors of medication using in elderly persons such as: used other drugs other than prescription drugs, took under the prescribed dose or reduced the number of times of drug taking in a day and did not complete the course of prescription medicines. Several studies have shown that up to 40% of the elderly stopped using medications earlier than prescribed due to poly-pharmacy usage or drugs that need to take so many times in a day. For cases who suddenly discontinued taking antihypertensive medications, blood pressure could jump dangerously. Thus, it is important to understand the utilization, knowledge and drug-use behaviors in elderly people in community. This helps to assess new treatment

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- Corresponding author: Nguyen Minh Tam, email: dr.nmtam@gmail.com
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measures and make plans to implement better health care programs. In Vietnam, the increasing proportion of elderly people accompanied by the rise of cardiovascular diseases and cardiovascular drug utilization raised the importance of examining cardiovascular medication use at home by the elderly. This study was performed with two objectives:

*1. To explore the use of cardiovascular medications at home among the elderly in Thua Thien Hue Province.* 

2. To examine factors related to the use of cardiovascular medications at home among the elderly.

#### 2. SUBJECTS AND METHODS

#### 2.1. Subjects

Subjects of the study were elderly persons (60 years of age and older) living in Thua Thien Hue Province.

Exclusion criteria:

- People whom the research team visited twice but were not at home on either occasion.

- Older people who were unable to answer the interview due to Alzheimer's disease, language, hearing and visual impairment or severe illness.

#### 2.2. Methods

2.2.1. Study design

This is a descriptive cross-sectional study.

2.2.2. Sampling

Sample size calculation was based on the following formula [2]:

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

p= 0.45 was the proportion of elderly people with hypertension. This proportion was used in the formula and an extra 10% added to account for subjects who refused to participate in the study.

Thus, the calculated sample size was 820 older people. In practice, we chose to interview 840.

3. RESULTS

Our study employed a randomly multistaged sampling method. Randomly we selected two city wards and two communes in the same district. As a result, two wards of Hue City (Phu Hoi and Tay Loc) and two communes of Quang Dien District (Quang Phu and Quang Thanh) were chosen. The number of elderly people in those communes and wards was selected according to the following formula:

$$n_1 = \frac{n}{N} \ge N_1$$

In which:  $n_i$ =number of selected elderly people in a commune/ward.  $N_i$ = number of elderly people in a commune/ward. n =sample size. N =total number of elderly people in four investigated communes/wards.

#### 2.3. Data collection

We directly interviewed elderly people with a pre-designed questionnaire about their utilization of cardiovascular medications at home and observed with checklist to check drug information contained in prescription and drug storage.

The medication list attached with the Circular number 31/2011/TT-BYT which issued by the Minister of Health on 11 July 2011 was used to classify the drugs studied [1].

#### 2.4. Data analysis

In evaluation of knowledge of using medication, the elderly who were considered as having good knowledge of medicine use were those who answered adequately and correctly more than seven content questions in relation medicine used. The elderly who were considered as not having good knowledge of medicine use were those who answered adequately and correctly seven questions or less.

The data were entered into Epidata 3.0 and processed using SPSS 17.0. Descriptive statistics were then used to analyze the data. A  $\chi 2$  test was used to identify the association between the different groups. Results were regarded as "statistically significant" at the p < 0,05 level.

**3.1. Cardiovascular prevalence and drug use at home among elderly people Table 3.1.** Proportion of the elderly having cardiovascular disease over the past two weeks by gender

Contents	Male		Female		Total		-
	n	%	n	%	Ν	%	Р
Disease	120	37.4	190	36.6	310	36.9	
No disease	201	62.6	329	63.4	530	63.1	p>0.05
Total	321	100	519	100	840	100	

The proportion with cardiovascular disease was higher for women than for men. This difference had no statistical significance.

Age groups	60-69		70-79		≥ 80		Total		
	n	%	n	%	n	%	Ν	%	р
Disease	89	29.2	136	42.4	85	39.7	310	36.9	
No disease	216	70.8	185	57.6	129	60.3	530	63.1	p<0.05
Total	305	36.3	321	38.2	214	25.5	840	100	

**Table 3.2.** Proportion of elderly people having cardiovascular disease over the past two weeks

 by age groups over the past two weeks

In the group aged 70-79, the proportion with cardiovascular disease was 42.4%, higher than in the other age groups. This difference was statistically significant at p < 0.05.

 Table 3.3. Pharmacological class of cardiovascular drugs used at home over the past two weeks by the elderly with cardiovascular disease

Pharmacological classes	Number (n)	Proportion (%)
Antihypertensive medicines	277	89.4
Antianginal agents	44	14.2
Lipid –lowering agents	21	6.8
Antithrombotic medicines	7	2.3
Medicines used in heart failure	3	1.0
Other cardiovascular drugs	14	4.5

Antihypertensive medicines represented the pharmacological class most used by the elderly who suffer cardiovascular diseases.

**Table 3.4.** The non-cardiovascular drug groups used at home over the past two weeks by elderly people with cardiovascular disease

Drug groups	Number (n)	Proportion (%)
Antibiotics	16	5.2
Musculoskeletal medicines	62	20.0
Gastrointestinal medicines	20	6.5
Endocrine medicines	51	16.5
Medicines acting on the respiratory tract	3	1.0
Anti-allergy medicines	11	3.5
Medicines for mental and behavioral disorders	48	15.5
Vitamins and minerals	60	19.4
Herbal medicines	22	7.1

Apart from cardiovascular medicines, elderly people also used other drug groups, including musculoskeletal medicines (21.2%), vitamins and minerals (20.5%) and endocrine medicines (17.4%).

3.2. Knowledge and practice of elderly people

#### in terms of cardiovascular medicine utilization

90.2% of elderly people with cardiovascular disease were found to be using cardiovascular medicines. Among these, the rate of patients having prescription medications was 70.5%.

Understanding about drug		Yes	No		
prescription	Number (n)	Percentage (%)	Number (n)	Percentage (%)	
Number of medication types	164	81.6	37	19.4	
Name	45	22.4	156	77.6	
Effects	67	33.3	134	66.7	
Dosage	145	72.4	56	27.6	
Time	78	38.8	123	61.2	
Route	198	98.5	3	1.5	
Total days to be taken	178	88.6	23	11.4	
Contraindications	7	3.5	194	96.5	
Side effects	14	7.0	187	93.0	

Table 3.5. The proportion of elderly people with knowledge about information regarding their prescription medications

Of 201 patients who used cardiovascular medicines, most of them had a good understanding about the number of medication types (81.6%), routes (98.5%) and the total number of days that the

medication should be taken (88.6%). There were high percentages of elderly people who did not know the name of medications (77.6%), their effects (66.7%), contraindications (96.5%) or side effects (93%). 
 Table 3.8. The rate of adherence of the elderly in terms of drug use and storage

	Adl	herent	Non-adherent		
Contents	NumberPercentage(n)(%)		Number (n)	Percentage (%)	
Sufficient dose	152	75.6	49	24.4	
Correct time	150	74.6	51	25.4	
Correct route	201	100	0	0	
Completed the course of medications	149	74.1	52	25.9	
No additional drugs beside prescription drugs	144	71.6	57	28.4	
Drug storage	87	30.4	199	69.6	

There was a high percentage of medication adherence in elderly people. The proportion of elderly people who did not complete their course of prescribed medication was 25.9%. The proportion of elderly people took more medicines than those prescribed was 28.4%, and there

was 69.6% of the elderly who stored medicine inappropriately.

Note that drug storage was considered to be adherent when the elderly had: a family drugs storage box and drugs was stored in the box, kept out the reach of children and closed after used.

3.3. Factors related to use of cardiovascular medicines at home in elderly people Table 3.9. The association between disease duration and medicine utilization in elderly people

Disease duration (year)		Medication	adherence				
	Yes		No			Р	
	Number (n)	Percentage (%)	Number (n)	Percentage (%)	Number (n)	Percentage (%)	
1-5	115	81.5	26	18.5	141	70.1	
6-10	36	83.7	7	16.3	43	21.4	m < 0.05
> 10	15	88.2	2	11.8	17	8.5	p<0.05
Total	166	82.6	35	17.4	201	100	

There was an association between disease duration and medication adherence. The elderly who were considered to adhere to their prescription were those whom correctly and adequately answered questions regarding the practice of using drugs at home, including in relation to: correct dose, correct time, correct route, completion of the course of medication and appropriate drug storage.

Table 3.10. The association between doctor's prescription and medication adherence

		Medication	T ( )		Р		
Doctor's	Yes		No				
prescription	Number (n)	Percentage (%)	Number (n)	Percentage (%)	Number (n)	Percentage (%)	
Yes	129	88.4	17	11.6	146	72.6	
No	23	41.8	32	58.2	55	27.4	p< 0.05
Total	152	75.6	49	24.4	201	100	

There was positive association between of elderly people who showed adherence was having a doctor's prescription and medication higher when they had a prescription from adherence (p < 0.05). That is, the proportion doctors.

 Table 3.12. The association between knowledge on medicine use and medication adherence in elderly people

		Medication a	-	р			
Knowledge on medication	Yes		No			1	
use	Number (n)	Percentage	Number (n)	Percentage	Number (n)	Percentage	
Good	134	91.8	12	8.2	146	72.6	
Not good	16	29.1	39	70.9	55	27.4	p<0.05
Total	150	74.6	51	25.4	201	100	

There was a positive association between knowledge of medicine use and medication adherence (p<0.05),

#### 4. DISCUSSION

#### 4.1. The cardiovascular disease morbidity and cardiovascular medicine use in elderly people

The proportion of elderly people with cardiovascular diseases was 36.9%. This result is similar to the findings of a study on disease patterns in elderly people who had treatment conducted at the National Geriatric Institute[5], but it is higher than the results of Nguyen's 2011 study (28.5%) [5]. In addition, this finding affirms the increasing prevalence of cardiovascular disease in particular and non-communicable diseases in general in Vietnam. It is also consistent with results of a study on measurement of disease burden in Vietnam, in which the burden of non-communicable diseases accounted for more than two thirds of the national disease burden of the country [8].

such that the elderly who had a good knowledge of their medicine use tended to adhere to their prescription.

It can be seen from the findings that 90.2% of older people with cardiovascular diseases were using cardiovascular medicines. Among these figures the proportion of elderly people who had prescriptions was 70.5%, while the remainder did not. Antihypertensive medicines represented the pharmacological class most used by the elderly who suffered cardiovascular diseases. This is consistent with research on disease patterns in elderly people who had treatment conducted at the National Geriatric Institute[5], which showed that hypertension was the most common disease of the cardiovascular system. This study produced a higher rate than was found in a study by Nguyen My Hanh[4]. In addition, according to estimations, hypertension is the cause of 4.5% of all diseases globally, and is as prevalent in developing countries as in developed countries [11].

The study findings also identified that there was a substantial percentage of elderly people using cardiovascular medicine with other medicine classes such as musculoskeletal medicines (21.2%), vitamins and mineral supplements (20.5%) and endocrine medicines (17.4%). This finding is consistent with the fact that the elderly often suffer from several illnesses at the same time. The results of a study on health care conditions for older adults showed that on average, one elderly person suffered 2.69 diseases and frequently had to use a lot of medications in both number and class [8].

# 4.2. Knowledge and practice of elderly people in relation to use of cardiovascular medicines at home

Our research findings show that most of the elderly in this sample had a good understanding about the number of medication types (81.6%), correct usage (98.5%), dosage (75.6%), and the total days that medication should be used (88.6%). This is quite similar to the results of To's 2011 study, which showed that most older patients correctly remembered the correct usage (98.7%), dosage (91.9%), and time for taking their medication (80.1%) [7].

One noticeable finding of our research is that there was a high percent of elderly people who did not know the names of medications (77.6%), their effects (66.7%), contraindications (96.5%) and side effects (93%). This situation is concerning because if patients do not know about adverse drug reactions, they will not recognize such reactions and stop using problematic medications, or will not be confident about their doctor's prescribed treatment. This will not only impact directly on the results of treatment but also lead to other risks. Our results also show that the rate of elderly people who did not complete their prescriptions was 25.9% and the proportion of elderly people who used more medicines other than those prescribed by their doctor was 28.4%. The rate of older patients who stored their medicines incorrectly was very high (69.6%). These problems need to be emphasized in health education and health promotion for patients.

## 4.3. Factors related to cardiovascular medicine utilization at home in elderly people

Our study has shown that the period of time between when the elderly detected that they were suffering from cardiovascular disease to the time they participated in the study had an association with medication adherence; that is, adherence increased with disease duration. There was also a statistical significant association between good knowledge and medication adherence (p < 0.05). such that elderly who had good knowledge tended to have better medication adherence. This result is consistent with the results of a similar study by Nguyen [3]; it also demonstrates the importance of improving community knowledge about medicine utilization in order to promote greater efficiency in utilization. In addition, our results indicate that there was a statistically significant association between having a doctor's prescription and medication adherence among the elderly (p < 0.05). This demonstrates that the physician's role in advising patients how to use medicines properly, appropriately and effectively is critical.

#### 5. CONCLUSIONS AND RECOM-MENDATIONS

There was a large proportion of the elderly with cardiovascular disease who used cardiovascular medicines, of which 70.5% had an appropriate prescription. Most of elderly people have good knowledge on medication ultilization in the extent of the number of medication types they were taking, the route of consumption and the total days of prescribed medication use. However, it raised a big concern for doctors and all the social because there was a high percentage of elderly people who did not know the name of their medications, the effects, contraindications and side effects. Medication adherence of the elderly have a statistically significant positive association with disease duration, good knowledge and having doctor's prescription.

From the study results, it is strongly recommended that the implementation of health promotion initiatives programs on medicine utilization in the community at the primary health care level are needed. This is the role of health staff at commune health centers and clinics and that of family physicians thus it is very important to improve the capacity of these health staff. For clinical practice, physicians need to provide clear and adequate information about medication, including in relation to the effects, contraindications and side-effects of each drug listed on a prescription. There is also a need to provide advice on how to store medicine properly so that patients can use medicine safely, reasonably and effectively.

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