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Original Article

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# Reality of secondary prevention pharmacological therapy of cardiovascular diseases in the city of Embu-Guaçu/SP

## *P*revenção secundária farmacológica de doenças cardiovasculares em população rural assistida por unidades básicas de saúde do município de Embu-Guaçu/SP

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**Resumo**

**Introdução:** A prevenção secundária das doenças cardiovasculares, incluindo farmacoterapia, é importante não apenas para diminuir a morbidade e mortalidade das doenças cardiovasculares (DCV), mas também porque tem impacto na qualidade de vida. **Objetivos:** O objetivo desse trabalho foi avaliar a prevenção secundária medicamentosa em pacientes que apresentaram eventos cardiovasculares, frequentadores das Unidades saúde da família do município de Embu-Guaçu. **Casuística e Métodos:** Foi realizado um estudo observacional e transversal, com 68 pacientes que apresentaram pelo menos um evento cardiovascular e que responderam a um questionário contemplando dados sociodemográficos, identificação do evento cardiovascular, medicações prescritas, prescritores e o local de acompanhamento. **Resultados:** Dentre os eventos cardiovasculares, o Acidente Vascular Encefálico - AVE foi o mais prevalente (p< 0,0001) seguido de Infarto Agudo do Miocárdio - IAM. Apenas 21% das prescrições estavam adequadas; em sua grande maioria, os participantes eram acompanhados pelo cardiologista. Dos pacientes acompanhados pela atenção primária à saúde, apenas 26% estavam com a prescrição adequada. **Conclusões:** A prevenção secundária medicamentosa dos pacientes estudados nessas UBS no município de Embu-Guaçu está longe de ser considerada ideal, pois apenas 26% dessas prescrições encontram-se adequadas segundo as diretrizes sobre prevenção secundária medicamentosa das DCV, e aquém de alguns estudos que chegam a ser 90%.

**Palavras-chave:** fármacos cardiovasculares; doenças cardiovasculares; prevenção secundária

**Abstract**

**Introduction:** Secondary prevention of cardiovascular disease, including pharmacotherapy, is important not only to decrease cardiovascular disease (CVD) morbidity and mortality, but also because it has an impact on quality of life. **Objectives:** The aim of this study was to evaluate secondary prevention drug therapy in patients with cardiovascular events who attend the Family Health Units of Embu-Guaçu. **Patients and Methods:** An observational, cross-sectional study was conducted with 68 patients who had experienced at least one cardiovascular event and who answered a questionnaire including socio-demographic data, cardiovascular event identification, prescribed medications, prescribers, and place of follow-up. **Results:** Among the cardiovascular events, stroke was the most prevalent (p <0.0001) followed by Acute Myocardial Infarction - AMI. Only 21% of prescriptions were adequate; the majority of the participants were accompanied by the cardiologist. Of the patients followed by primary healthcare,

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only 26% received the appropriate prescription. **Conclusions:** Secondary prevention drug therapy of patients studied at these Basic Health Units in the municipality of Embu-Guaçu is far from being considered ideal, as only 26% of the prescriptions were adequate according to the guidelines on secondary prevention drug therapy for CVD, and below some studies that report up to 90%.

**Keywords:** cardiovascular agentes; cardiovascular diseases; secondary prevention

## Introduction

Cardiovascular diseases (CVD) are the leading cause of death in the world[1-4] and are responsible for approximately 20% of all deaths in individuals over the age of 30.[4] According to the World Health Organization (WHO), the effective reduction in cardiovascular mortality should be based on three points: 1- surveillance (mapping and epidemiological monitoring of CVD), 2- prevention (reduction in exposure to risk factors), 3- management (equitable health care for people with CVD).[5] The identification of risk factors with a higher population prevalence has enabled well-conducted cardiovascular prevention programs in several countries, such as the United States, Canada, Finland, United Kingdom, Australia, and Japan, to significantly reduce mortality from cardiovascular disease.[6]

Secondary prevention of CVD aims to reduce the risk of a new cardiovascular event and death, thus improving the survival of patients who have suffered a cardiovascular event. It is therefore used to treat very high-risk patients.[7,8] Preventive measures, including pharmacotherapy, are important not only to reduce CVD morbidity and mortality, but also because they have an impact on quality of life.[9,10] According to international guidelines for the secondary prevention of CVD, lifelong drug treatment with platelet antiaggregates (aspirin), beta blockers, statins, and angiotensin-converting enzyme (ACEI) inhibitors is recommended.[10-13]

With the increased use of this treatment for secondary prevention, for every 10,000 patients, more than 104 lives could be saved and 191 recurrent ischemic events could be avoided if the majority of these chronic disease patients were treated in Primary Care. In view of the impact caused by CVD on world health and considering that it is the first cause of mortality in the region studied, the current study aims to understand how primary care is carrying out secondary prevention of these diseases, especially with regard to drug therapy, aimed at understanding the factors that still lead to high levels of these diseases.

## Casuistry and methods

This is an observational, cross-sectional, and analytical study. All individuals who had already suffered a cardiovascular event, enrolled in the following Basic Family Health Units in the municipality of Embu-Guaçu, state of São Paulo, were studied: BHU Sapateiro, BHU Recanto Lagoa Grande, and BHUS Penteado.

Embu-Guaçu currently has 17 Family Health Teams (FHT), covering 90% of the population. The three teams mentioned were chosen because they have similar territorial characteristics, as they are in rural areas.

A questionnaire was used as a research instrument to collect data on the drug treatment necessary for the secondary prevention of CVD. The following factors were evaluated; whether the prescription drugs were in accordance with the current guidelines of the Brazilian Society of Cardiology [6] and according to their medication class (platelet antiaggregates, beta blockers, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and statins); which and how many cardiovascular events the studied patients had suffered, including: Acute Myocardial

Infarction, hospitalization for angina, Stroke, Revascularization surgery, and Peripheral obstructive arterial disease; the origin of the first post-event prescription (hospital, BHU, specialty clinic), and where the patient's medical follow-up is currently carried out (BHU, hospital, specialty clinic); and finally, the place where the participants collect their medication: Pharmacy at BHU, Pharmacy that is part of the Popular, Pharmacy scheme, Normal Pharmacy.

The questionnaire was applied by the Community Health Agents (CHA), who are familiar with their community and can identify and locate individuals who present a CVD. The collection was performed by the CHAs, individually, at the patient's home during home visits. The CHA were previously trained by the researcher, so that there was uniformity in the collection of information.

The study was submitted to the Ethics Committee of the Universidade Santo Amaro CAAE 58809916.2.0000.0081 under Opinion Number: 1,695,918 and authorization from the Municipal Health Secretariat of Embu-Guaçu, with a favorable opinion. All participants signed the Free and Informed Consent Form before the beginning of the interviews.

For data analysis, the Chi-square test or Fisher's exact test was applied to study possible associations between studied variables. The Kruskal-Wallis analysis of variance was used to assess the ages between different cardiovascular events, and the Cochran G test to study the concomitance of cardiovascular events for both women and men and for the FHU. The level of significance was set at 0.05 or 5%.

## Results

Of the three family health units that participated in the study, 68 patients had cardiovascular events (Table 1). The studied population was over 18 years old and had experienced at least one cardiovascular event, which corresponded to 1.34% of the total population. There was homogeneous distribution between women and men, with no significant differences in terms of sex (Table 2). The median ages of the patients who participated in the study were 66.5, 63.5, and 66 years, at the Penteado, Recanto, and Sapateiro health units, respectively, and there was no significant difference by the Kruskal-Wallis test (p=0.3652).

**Table 1 –** Cardiovascular events presented by the patients studied in the three basic family health units

| AMI | Angina | CVA/EVA | POAD |
|---|---|---|---|
| ∑ = 24 | ∑ = 15 | ∑ = 27 | ∑ = 2 |
| % = 28.2 | % = 17.6 | % = 31.7 | % = 2.3 |

Calculated Cochran's G = 38.333; p< 0.0001 (CVA/EVA higher than all).
AMI: Acute Myocardial Infarction; CVA/AVE: Cerebrovascular accident/Encephalic Vascular accident; POAD: Peripheral Obstructive Arterial Disease

**Table 2-** Presence of the cardiovascular event, according to sex

| Event Cardiovascular | Female % Yes | Male % Yes | Chi-square test Fisher's exact test |
|---|---|---|---|
| AMI | 29 | 26.4 | p = 0.8885 (N.S.) |
| Angina | 19.3 | 17 | p = 0.9382 (N.S.) |
| CVA/EVA | 32.3 | 32.1 | p = 0.9290 (N.S.) |
| POAD | 0 | 3.8 | p = 0.5332 (N.S.) |

AMI: Acute Myocardial Infarction; CVA/AVE: Cerebrovascular accident/Encephalic Vascular accident; POAD: Peripheral Obstructive Arterial Disease

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The results regarding the cardiovascular events presented by the patients studied in the three basic family health units showed that CVAs (31%) predominate over AMIs (28%), and both over angina (17%) and chronic obstructive disease (2.3%) (Table 1).

There were no significant differences between the cardiovascular events evaluated between women and men (Table 2).

With respect to drug prescription, according to the mechanism of action, and to the cardiovascular event presented, the ACEIs/ARBs were the most prescribed (88.1%), followed by statins (67.8%), acetylsalicylic acid - ASA (64.3%), and finally, the beta blockers (59.2%) (Table 3).

**Table 3 –** Prescribed drugs, according to the mechanism of action, based on the cardiovascular event presented

| **Events** | **Medication group** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Platelet antiaggregates | | Statins | | Beta blockers | | ACEI/ARB | |
| | N | % | N | % | N | % | N | % |
| AMI (23) | 15 | 65 | 14 | 61 | 17 | 74 | 18 | 78 |
| Angina (15) | 9 | 60 | 12 | 80 | 10 | 66.7 | 15 | 100 |
| CVA/AVE (27) | 16 | 59 | 18 | 66.7 | 9 | 33.4 | 23 | 85 |
| POAD (2) | 1 | 50 | 1 | 50 | 1 | 50 | 1 | 50 |
| **TOTAL (84)** | 41 | 64.3 | 57 | 67.8 | 50 | 59.2 | 74 | 88.1 |

AMI: Acute Myocardial Infarction; CVA/EVA: Cerebrovascular accident/Encephalic Vascular accident; POAD: Peripheral Obstructive Arterial Disease; ACEI/ARB: Angiotensin-Converting Enzyme Inhibitor/Angiotensin Receptor Blockers

Of the 68 patients evaluated, only 20.9% presented drug prescriptions containing one representative from each recommended class, considered an adequate prescription. There were no significant differences between the three units (Table 4).

**Table 4 –** Patients with prescriptions that contain at least one medication from each class of recommended medications, according to the Basic Health Unit (BHU)

| BHU | Appropriate prescriptions | | | | Total Yes | |
|---|---|---|---|---|---|---|
| | Yes | | No | | | |
| | **N** | **%** | **N** | % | **N** | **%** |
| Penteado | 6 | 42.8 | 20 | 29.8 | 26 | 23.1 |
| Recanto | 3 | 21.5 | 17 | 25.3 | 20 | 15 |
| Sapateiro | 5 | 35.7 | 16 | 23.9 | 21 | 23.8 |
| **Total** | 14 | 100 | 53 | 100 | 67 | 20.9 |
| | Fisher's exact test | | p= 0.7396 (N.S.) | | | |

As shown in Table 5, the majority of patients were followed up by the cardiologist (45.9%) and only 39% by primary care (BHU). Of the patients followed up exclusively by primary care, only 26.5% had an adequate drug prescription (Table 6).

**Table 5 –** Medical specialty of the professional accompanying the studied patients

| BHU | CARDIOLOGY | HOSPITAL | NEUROLOGY |
|---|---|---|---|
| ∑ = 34 | ∑ = 40 | ∑ = 06 | ∑ = 07 |
| % = 39.0 | % = 45.9 | % = 6.9 | % = 8.0 |

Calculated Cochran's G = 53.9573; p<0.0001
CARDIOLOGIST higher than all

**Table 6 –** Patients monitored exclusively in the primary care service, who presented prescriptions containing one medication for each class of recommended medications

| Basic Health Unit (BHU) | Adequate Prescription | | | | Total Yes | |
|---|---|---|---|---|---|---|
| | Yes | | No | | | |
| | **N** | % | **N** | % | **N** | **%** |
| Penteado | 4 | 44.4 | 10 | 40 | 14 | 28.5 |
| Recanto | 2 | 22.2 | 6 | 24 | 8 | 25.0 |
| Sapateiro | 3 | 33.4 | 9 | 36 | 12 | 25.0 |
| **Total** | 9 | 100 | 25 | 100 | 34 | 26.5 |

Chi-square test $X^2$= 0.05; p= 0.9734 (N.S.)

## Discussion

The current study, carried out in the municipality of Embu-Guaçu, with the purpose of evaluating the reality of secondary prevention drug therapy for CVD, revealed that only 21% of patients received the proper prescription.

CVDs are the leading cause of death in almost the entire world, and most of these deaths are preventable through measures in both primary and secondary prevention.[1]

Bhatnagar and collaborators,[14] in an epidemiological study carried out in the United Kingdom in 2014, showed that the prevalence of AMI in men was three times higher than in women; angina twice as prevalent in men; and stroke 2.53% in men and 1.99% in women. In our study, there were no significant differences in the distribution between the sexes under these conditions.

The *Epidemiological studies of CHD and the evolution of preventive cardiology*[15] showed that ischemic heart disease is the predominant manifestation of CVD, and causes 46% of CV deaths in men and 38% in women. Cerebrovascular disease is the form of CVD with the second highest mortality - 34% in men and 37% in women, contradicting our study that found that stroke (31%) predominated over AMI (29%).

Currently, the European guidelines for cardiovascular prevention in patients with established coronary disease, as well as the V Guideline of the Brazilian Society of Cardiology on the Treatment of Acute Myocardial Infarction with ST Segment Elevation,[6] recommend the use of antiplatelet therapy, lipid-lowering agents, a beta blocker, and additional BP-reducing agents in the case of a systolic BP above 140 mmHg (preferably ACE inhibitors and ARBs). [5,6] The benefits established in secondary prevention provide an indication for the use of ASA in all patients with AMI with ST elevation for an undetermined period of time.[6] In our study, only 64% of patients who suffered an event used platelet antiaggregates.

Regarding beta-blockers, the V Guideline of the Brazilian Society of Cardiology on the Treatment of Acute Myocardial Infarction with ST Segment Elevation [6] showed unequivocally, the action of beta-adrenergic blocking agents in reducing cardiovascular ischemic events, such as death and reinfarction. In addition, beta blockers should be used indefinitely in all patients with AMI, except in the presence of absolute or relative contraindications. Although this is a drug with proven efficacy, which prevents the recurrence of events, it was found that only 59% of the patients evaluated used beta

blockers. This fact occurs worldwide, as shown by the European study on secondary prevention, through the intervention to reduce events - EUROASPIRE, which revealed that the prevention of cardiovascular diseases in clinical practice is inadequate in countries where more effective management is needed in relation to drug prescription.[16]

Regarding the use of ACE inhibitors and ARBs, there are arguments for their use in all patients after AMI, due to their anti-ischemic, anti-atherosclerotic action, and the consequent decrease in the recurrence of ischemic events, already evidenced in several studies. Among the drug classes in question, the most commonly used in the current study were ACE inhibitors and ARBs, used by 88% of all patients and 100% of patients with angina.

The benefits of using statins in secondary prevention are proven and randomized clinical studies have also indicated the benefit of early use with a highly potent statin.[6] Despite the proven benefits of statins, only 67% of patients used them in the present study; 67% of patients who suffered a stroke used statins, and only 61% of infarction patients.

PREMISE[17] found that in low- or middle-income countries, less than 40% of patients with AMI received ACE inhibitors and only 20% received statins. The PURE urban prospective rural epidemiological study[18] confirmed that adherence to drugs for secondary prevention in patients with established CVD was generally low and worse in low-income countries: with more than 80% receiving none of the necessary treatments in South Asia.

Of the 68 patients evaluated, only 20.9% had drug prescriptions containing one representative from each recommended class. Even considering that some may have contraindications for some classes, the percentage is still far below what was expected. There was no significant difference between the three units, which makes us reflect on the primary care service that coordinates the care of these patients. In a longitudinal study carried out in the United Kingdom, *the UK National Health Service – delivering equitable care across the spectrum of coronary disease*,[19] where prescriptions from primary care physicians for patients with AMI were analyzed, between 1999 and 2007, it was found that the use of aspirin increased from 43% to 64%, ACEI and ARB from 22% to 59%, beta blockers from 33% to 55 %, and statins from 38% to 72%.

Primary care is the level of healthcare that, in addition to being the gateway to the primary healthcare system, is where integrality, longitudinality, and coordination of care must be absolute, in accordance with guidelines for the care of patients. In the case of chronic diseases, these guidelines are irrevocable. In Brazil, with the family health strategy, care and monitoring of patients with chronic non-communicable diseases should be performed 100% in primary care; even when monitoring by secondary care is required, the coordination of care is the responsibility of primary care.

Much of the responsibility for secondary prevention and management of effective long-term problems associated with CVAs lies with primary care teams. Family doctors are well positioned to implement secondary prevention for these patients. However, the main deficiencies in the distribution of secondary prevention after stroke were seen in the primary care settings.

Some studies have shown that primary care is extremely important in the care of patients with CVD, both in primary and secondary prevention, and that after training health teams, there was significant improvement in relation to secondary prevention, as pointed out by the CAGE and CHAMP.[3,7,8,10,20,21]

## Conclusion

Secondary prevention drug therapy for patients studied in these BHU in the municipality of Embu-Guaçu is far from

being considered ideal, since only 26% of these prescriptions are adequate according to the guidelines on secondary prevention drug therapy for CVD, and below some studies that report up to 90%.

Contradicting what was expected, since all patients should be monitored by primary health care, the majority of patients are monitored by the cardiologist (49%), followed by BHUs, with 32%. In addition, training, qualification, and permanent education must be part of the daily routine of health professionals.

Limitations of the study

The current study presents some limitations that should be taken into account when analyzing the results. Despite being a population-based sample, the participating individuals were limited to those seen in only three of the 17 teams of the Family Health Strategy existing in the municipality, which may affect the generalization of the results. Thus the study should be extended, to expand the sample and include the participation of individuals assisted in other units.

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