

An epidemiological analysis of underlying diseases and heart diseases in a private cardiology clinic

Uma análise epidemiológica das doenças de base e as cardiopatias numa clínica particular de cardiologia

Análisis epidemiológico de las comorbilidades y las cardiopatías en un centro privado de cardiología.

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RESUMO

Introdução: O estudo relaciona um grupo de doenças, denominadas doenças de base, ao desenvolvimento de doenças cardiovasculares em uma clínica particular. As principais doenças associadas às cardiopatias incluem hipertensão arterial sistêmica, diabetes, obesidade, arteriosclerose e etilismo crônico. A fisiopatologia dessas doenças está diretamente ligada às cardiopatias, sendo diagnóstico e tratamento fundamentais para a melhora dos problemas cardiovasculares, atualmente a principal causa de morte no mundo. Métodos: Foram analisados dados de 69 pacientes, extraídos apenas de plataformas públicas, caracterizando o estudo como ecológico. Para análise, utilizaram-se softwares descritos no trabalho, com dados coletados em uma clínica de Paracatu-MG. Objetivos: Capturar a incidência de doenças de base relacionadas às cardiopatias, com foco na hipertensão arterial sistêmica, buscando corroborar evidências da literatura. Resultados: A hipertensão arterial sistêmica foi a doença de base mais prevalente, presente em mais de 80% dos pacientes. A diabetes também foi significativa, acima de 13% em ambos os sexos. Os dados obtidos permitem traçar metas para reduzir essas doenças, contribuindo para a diminuição da incidência de cardiopatias associadas às doenças de base estudadas.

Descritores: Doenças crônicas, cardiopatias, doenças cardiovasculares.

ABSTRACT

Introduction: The study examines the relationship between a group of diseases, referred to as underlying conditions, and the development of cardiovascular diseases in a private clinic. The main conditions associated with cardiopathies include systemic arterial hypertension, diabetes, obesity, arteriosclerosis, and chronic alcohol use. The pathophysiology of these conditions is directly linked to cardiopathies, making both diagnosis and treatment essential to improving cardiovascular outcomes, which remain the leading cause of death worldwide. Methods: Data from 69 patients were analyzed, extracted only from public platforms, characterizing the study as ecological. Software tools described in the study were used for analysis, with data collected in a clinic located in Paracatu-MG, Brazil. Objectives: To capture the incidence of underlying conditions related to cardiopathies, with a focus on systemic arterial hypertension, aiming to corroborate evidence reported in the literature. Results: Systemic arterial hypertension was the most prevalent underlying condition, observed in over 80% of patients of both sexes. Diabetes was also significant, exceeding 13% in both sexes. The findings provide a basis to establish strategies for reducing these conditions, thereby contributing to a decrease in the incidence of cardiopathies associated with the studied underlying diseases.

Descriptors: Chronic diseases, cardiopathies, cardiovascular diseases.

RESUMEN

Introducción: El estudio analiza la relación entre un grupo de enfermedades, denominadas condiciones subyacentes, y el desarrollo de enfermedades cardiovasculares en una clínica privada. Las principales condiciones asociadas con las cardiopatías incluyen hipertensión arterial sistémica, diabetes, obesidad, arteriosclerosis y consumo crónico de alcohol. La fisiopatología de estas condiciones está directamente relacionada con las cardiopatías, siendo fundamentales tanto el diagnóstico como el tratamiento para mejorar los resultados cardiovasculares, que continúan siendo la principal causa de muerte en el mundo. Métodos: Se analizaron datos de 69 pacientes, extraídos únicamente de plataformas públicas, caracterizando el estudio como ecológico. Se utilizaron softwares descritos en el estudio para el análisis, con datos recolectados en una clínica ubicada en Paracatu-MG, Brasil. Objetivos: Capturar la incidencia de condiciones subyacentes relacionadas con las cardiopatías, con énfasis en la hipertensión arterial sistémica, buscando corroborar la evidencia reportada en la literatura. Resultados: La hipertensión arterial sistémica fue la condición subyacente más prevalente, presente en más del 80% de los pacientes de ambos sexos. La diabetes también fue significativa, superando el 13% en ambos sexos. Los resultados permiten establecer estrategias para reducir estas condiciones, contribuyendo así a la disminución de la incidencia de cardiopatías asociadas con las enfermedades subyacentes estudiadas.

Descritores: Enfermedades crónicas, cardiopatías, enfermedades cardiovasculares.

ORIGINAL

Introduction

Cardiovascular diseases (CVD) are modifications in the functioning of the cardiac system, responsible for transporting oxygen and nutrients that cells need to perform their functions in the human body. These diseases are recognized as a major public health problem, as they are the leading cause of death worldwide and in Brazil, especially in populations living in large urban centers¹. Among the most common cardiovascular diseases are coronary heart disease (CHD), heart failure, angina, acute myocardial infarction, valvular disease, arrhythmias, and hypertensive diseases². There are several risk factors associated with the development of cardiovascular diseases, which may or may not be modifiable. Modifiable risk factors include hyperlipidemia, smoking, alcoholism, hyperglycemia, obesity, a sedentary lifestyle, poor diet, and contraceptive use. Non-modifiable risk factors include family history of cardiovascular disease, age, sex, and race.

The incidence of cardiovascular disease in Brazil is a long-standing complication that people ignore and, in most cases, are unwilling to make any changes to their lifestyle habits. Approximately 300,000 individuals suffer acute myocardial infarction (AMI) each year, with death occurring in 30% of these cases. Thus, it is estimated that throughout Brazil, approximately 14 million people have some form of cardiovascular disease, and that at least 400,000 die each year, corresponding to approximately 30% of all Brazilian deaths³.

This estimate continues to grow over the years and it can be observed that the highest proportion of deaths occurred in the white race due to atherosclerosis (62.14%), followed by the mixed race (28.38%) and the black race (5.87%), with the greatest incidence in the elderly population, mainly in the southeast region of Brazil, where Minas Gerais is the third Brazilian state with the highest number of deaths due to cardiovascular diseases, led by the states of São Paulo and Rio de Janeiro, with an average of 85 deaths per day in Minas Gerais⁴.

A study conducted in a Coronary Intensive Care Unit in northwestern Rio Grande do Sul collected data on the prevalence of cardiovascular risk factors in patients diagnosed with AMI. It was observed that 91.7% of patients were sedentary, representing the greatest risk factor. Subsequently, systemic arterial hypertension was reported in 63.8% of individuals, and stress and altered abdominal circumference were both reported in 50%. Other underlying factors include family history, smoking, overweight, obesity, dyslipidemia, diabetes mellitus, and alcoholism, with rates of 43.7%; 41.7%; 35.5%; 33.4%; 23%; 20.8%; and 12.5%, respectively. This data reveals the high prevalence of antecedent risk factors in patients with acute myocardial infarction, highlighting the relationship between underlying diseases and heart disease⁵.

The development of heart disease is closely related to underlying diseases. The mechanisms of action of these diseases can lead to a series of cardiac pathologies, acting differently depending on the pre-existing condition before actually causing cardiac damage. Hyperglycemia is one of the most common cases associated with cardiovascular disease, and the prolonged metabolic state causes myocardial cells to develop insulin resistance mechanisms. Studies have also reported a higher incidence of systolic dysfunction in adult patients with type 1 diabetes⁶.

Other pathologies have a more pronounced clinical relationship: obesity and hypertension have a damaging association frequently observed over the past five years. Even in patients with controlled diabetes mellitus and hypertension, obesity alone is a significant risk factor, as adipose tissue produces inflammation-causing substances called adipokines, such as IL-6, TNF, and resistin. This physiology poses a

risk for cardiovascular disease and, when combined with hypertension and diabetes, contributes to the development of these diseases, often associated with atherosclerosis due to hyperlipidemia⁶.

Hypertension is another critical factor, as high blood pressure requires greater force for the heart to contract, increasing heart rate and impairing physiological function in the medium and long term⁷. The prevalence of heart disease is similar in significance to the major endemic diseases of the last century. Collecting, analyzing, and processing data is essential to mitigate the risk factors that predate heart disease, including obesity, diabetes mellitus, high blood pressure, and genetics. A preventive approach is crucial for planning appropriate therapeutic treatment⁸.

Therefore, it is necessary to establish a close link with data analysis, as recommended by the Brazilian Society of Cardiology (BSC)⁹, ensuring effective heart disease treatment. Cardiovascular diseases are a reflection of increased life expectancy and prolonged exposure to noncommunicable chronic diseases (CNCD) such as diabetes, high blood pressure, and obesity¹⁰.

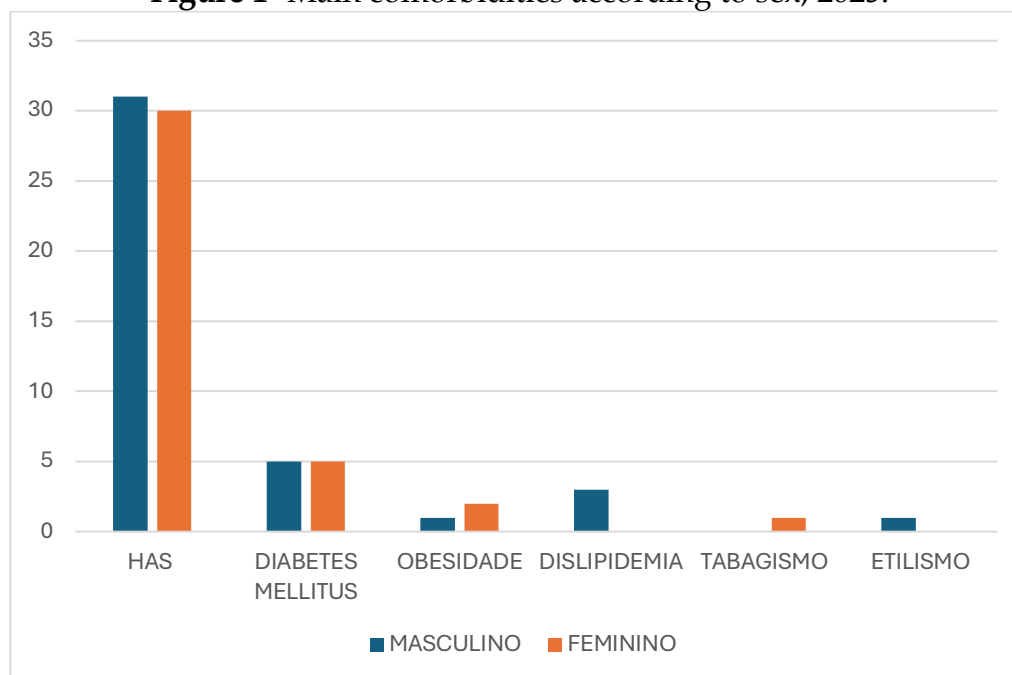
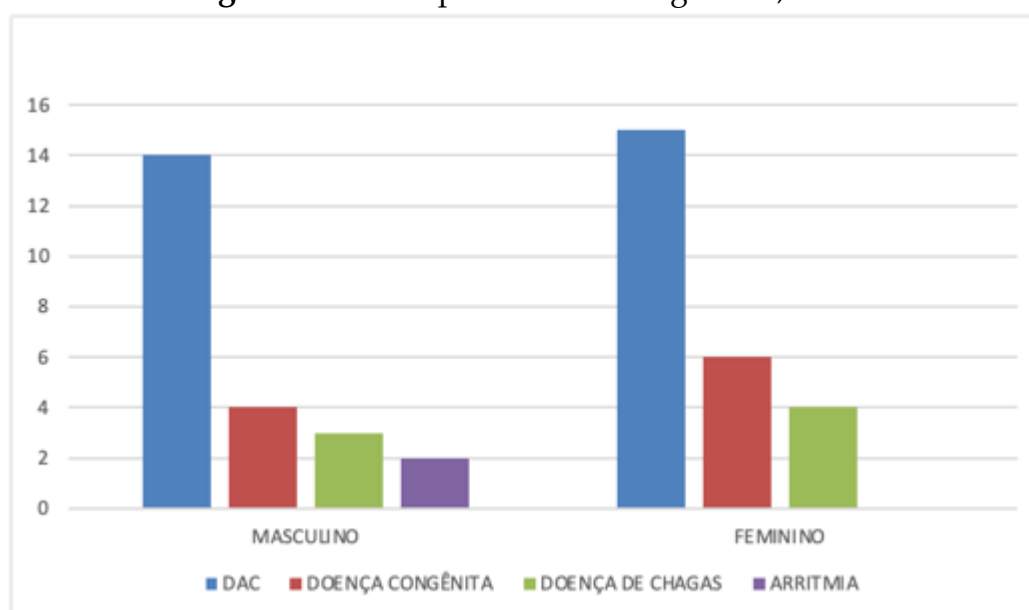
The current study seeks to relate underlying diseases with cases of heart disease in a Medical Specialties Center in Paracatu, Minas Gerais, Brazil, demonstrating how these factors act on the physiology and pathophysiology of various heart diseases.

Methods

This is an ecological study, with descriptive and quantitative research, analyzing 69 primary data points obtained at the health unit in May 2024. This clinic was chosen due to the higher prevalence of underlying heart disease-related conditions, such as systemic arterial hypertension, diabetes mellitus, and obesity. Data summarization and the creation of tables and graphs were performed in Excel. The theoretical part was conducted using articles from PubMed, SciELO, BVS, and Google Scholar, searching for health descriptors related to the topic.

Results and Discussion

Among the 69 patients, there was a predominance of males (53.62% = 37/69), mean age of 47.4 years; females (46.37% = 32/69), mean age of 55.5 years. Coronary artery disease occurred in 46.87% of women and 37.8% of men; congenital diseases in 18.75% of women and 10.81% of men; Chagas disease in 12.5% of women and 8.11% of men; arrhythmia in 5.4% of men. Systemic arterial hypertension (SAH) was observed in 93.7% of women and 83.7% of men, representing 51% of the total analyzed. Diabetes mellitus occurred in 15.6% of women and 13.5% of men; obesity in 6.25% of women and 2.7% of men; dyslipidemia in 8.1% of men and absent in women. Smoking and alcoholism had an incidence of 1% each^{6,7}.

Figure 1- Main comorbidities according to sex, 2025.**Figure 2 –** Cardiopathies according to sex, 2025.

According to the BSC's 2021 Cardiovascular Statistics, 17 million deaths from CNCs worldwide are attributed to CVD, corresponding to approximately one-third of NCD deaths in Brazil¹¹. Globally, 17.9 million people died from CVD in 2016, 31% of all death causes¹².

Even with low incidence, smoking and alcohol consumption are important risk factors for CVD¹³. Obesity and dyslipidemia represent a significant risk for cardiovascular disease^{14, 15}. Diabetes mellitus doubles the risk of CVD in males and triples it in females¹⁶. Congenital diseases and Chagas disease are not directly related to underlying diseases but can be aggravated by comorbidities¹⁷. Hypertension was the main finding, present in 88.4% of patients¹⁸.

Final Considerations

The presence of underlying diseases, especially hypertension and diabetes, is a risk factor for heart disease. Even in private clinics, most patients present with these conditions. Early diagnosis, appropriate treatment, and prevention are essential to reduce cardiovascular complications. Alcoholism, although less prevalent, should be monitored. Appropriate intervention highlights the importance of preventive policies and efficient clinical management.

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