Mortality and Hospitalizations Due to Cardiovascular Diseases: Implications for Primary Health Care in São José dos Campos (SP), 2013–2023

Mortalidade e Internações por Doenças Cardiovasculares: Implicações para a Atenção Primária à Saúde Em São José dos Campos (SP), 2013–2023

Mortalidad e Internaciones por Enfermedades Cardiovasculares: Implicaciones para la Atención Primaria de Salud en São José dos Campos (SP), 2013–2023

RESUMO

Objetivo: Analisar a evolução da mortalidade e internações por doenças cardiovasculares (DCV) em São José dos Campos (SP), entre 2013 e 2023. **Métodos:** Estudo ecológico de série temporal, utilizando dados do Sistema de Informações sobre Mortalidade (SIM) e do Sistema de Informações Hospitalares do SUS (SIH/SUS). Foram incluídos os códigos ICD-10: I21, I25, I63-I64 e I70. Calcularam-se taxas de mortalidade e internação por 100 mil habitantes e a razão mortalidade/internação (RMI). **Resultados:** A mortalidade passou de 37,1 para 72,2/100 mil hab. no período (+94,4%). As internações cresceram de 225,3 para 435,3/100 mil hab. (+93,2%). A RMI permaneceu estável, variando de 0,104 a 0,166. **Conclusão:** Observou-se aumento expressivo da carga de DCV, com manutenção da eficiência hospitalar, mas falhas nas ações de prevenção primária e secundária. O fortalecimento da Atenção Primária à Saúde e políticas intersetoriais são essenciais para enfrentar o problema.

DESCRITORES: Doenças cardiovasculares; Mortalidade; Internações hospitalares; Atenção Primária à Saúde; Epidemiologia.

ABSTRACT

Objective: To analyze the evolution of mortality and hospitalizations due to cardiovascular diseases (CVD) in São José dos Campos (SP) between 2013 and 2023. **Methods:** Ecological time-series study using data from the Mortality Information System (SIM) and the Hospital Information System of SUS (SIH/SUS). ICD-10 codes I21, I25, I63-I64, and I70 were included. Mortality and hospitalization rates per 100,000 inhabitants and the mortality-to-hospitalization ratio (MHR) were calculated. **Results:** Mortality increased from 37.1 to 72.2/100.000 (+94.4%), and hospitalizations from 225.3 to 435.3/100.000 (+93.2%). The MHR remained stable (0.104–0.166). **Conclusion:** There was a marked increase in the CVD burden, with preserved hospital efficiency but shortcomings in primary and secondary prevention. Strengthening Primary Health Care and intersectoral policies is crucial to address this issue.

DESCRIPTORS: Cardiovascular diseases; Mortality; Hospital admissions; Primary Health Care; Epidemiology.

RESUMEN

Objetivo: Analizar la evolución de la mortalidad y de las internaciones por enfermedades cardiovasculares (ECV) en São José dos Campos (SP), entre 2013 y 2023. **Métodos:** Estudio ecológico de serie temporal con datos del Sistema de Información sobre Mortalidad (SIM) y del Sistema de Información Hospitalaria del SUS (SIH/SUS). Se incluyeron los códigos CIE-10: I21, I25, I63-I64 e I70. Se calcularon las tasas de mortalidad y hospitalización por 100 mil habitantes y la razón mortalidad/internación (RMI). **Resultados:** La mortalidad aumentó de 37,1 a 72,2/100 mil hab. (+94,4%) y las internaciones de 225,3 a 435,3/100 mil hab. (+93,2%). La RMI permaneció estable (0,104–0,166). **Conclusión:** Se observó un aumento significativo de la carga de ECV, con mantenimiento de la eficiencia hospitalaria, pero deficiencias en la prevención primaria y secundaria. El fortalecimiento de la Atención Primaria de Salud y de las políticas intersectoriales es esencial para enfrentar el problema.

DESCRIPTORES: Enfermedades cardiovasculares; Mortalidad; Hospitalizaciones; Atención Primaria de Salud; Epidemiología.

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INTRODUCTION

Cardiovascular diseases (CVD) are the leading cause of death in Brazil and worldwide, responsible for approximately 400,000 deaths annually in the country, according to the Brazilian Society of Cardiology (SBC) and the Ministry of Health. It is estimated that approximately 80% of these deaths could be avoided through adequate prevention and treatment. Data from Vigitel Brasil 2022 indicate high prevalences of hypertension (24%), overweight (57.4%), and diabetes (9.1%), confirming the magnitude of risk factors in the country.

Globally, the World Health Organization (WHO) estimates that CVD causes 17.9 million deaths per year, representing 32% of all deaths. In middle-income countries, such as Brazil, the impact is even more pronounced due to inequalities in access to health services and the control of risk factors.

The municipality of São José dos Campos (SP), with approximately 700,000 inhabitants and a high degree of urbanization, constitutes a favorable setting for the analysis of cardiovascular morbidity and mortality trends. Evaluating the evolution of mortality and hospitalizations due to CVD in this context can provide important input for local and state policies.

METHOD

An ecological time-series study was conducted covering the period from 2013 to 2023, with the objective of analyzing the evolution of mortality and hospitalizations due to cardiovascular diseases (CVD) in São José dos Campos (SP). The data sources used were the Mortality Information System (SIM), responsible for death records, and the SUS Hospital Information System (SIH/SUS), which compiles hospitalizations. The codes from the International Classification of Diseases – 10th Revision (ICD-10) corresponding to I21 (acute myocardial infarction), I25 (chronic ischemic heart disease), I63-I64 (ischemic stroke, unspecified), and I70 (atherosclerosis) were included.

The variables of interest were mortality and hospitalization rates per 100,000 inhabitants, as well as the mortality/hospitalization ratio (MIR). The rates were calculated based on annual population estimates provided by the Brazilian Institute of Geography and Statistics (IBGE). Temporal trends were analyzed descriptively, with tabular and graphical organization of the data in Microsoft Excel® spreadsheets, considering the percentage variation over the study period.

Limitations include the use of secondary data, which are subject to underreporting and registration inconsistencies, as well as the absence of stratification by sex, age, or socioeconomic factors. Additionally, the COVID-19 pandemic may have significantly impacted the mortality and hospitalization indicators analyzed.

RESULTS

Between 2013 and 2023, there was a significant increase in mortality and hospitalization rates due to cardiovascular diseases (CVD) in São José dos Campos. The mortality rate increased from 37.1 to 72.2 per 100,000 inhabitants, representing a growth of 94.4% during the period. Similarly, hospitalizations due to CVD increased from 225.3 to 435.3 per 100,000 inhabitants, corresponding to an increase of 93.2%.

The mortality/hospitalization ratio (MHR) varied between 0.104 and 0.166, remaining relatively stable throughout the analyzed time series. These results indicate that, despite the substantial growth in the burden of cardiovascular diseases in the municipality, hospital capacity and efficiency remained proportional to demand (Table 1).

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Table 1 – Trends in mortality rates, hospital admissions, and mortality-to-admission ratio (MAR) due to cardiovascular diseases in São José dos Campos (SP), 2013–2023.

Year	Mortality (/100,000)	Hospitalizations (/100,000)	MIR
2013	37,13	225,3	0,165
2014	40,82	281,6	0,145
2015	36,74	351,6	0,104
2016	45,98	356,9	0,129
2017	47,35	392,5	0,121
2018	42,72	394,7	0,108
2019	51,53	424,1	0,122
2020	63,58	422,3	0,151
2021	61,30	377,5	0,162
2022	71,56	435,9	0,164
2023	72,17	435,3	0,166

DISCUSSION

The results obtained are consistent with national and international trends. In Brazil, mortality from CVD remains high, largely due to insufficient control of risk factors. The increase in hospitalizations reflects the persistence of these problems and the expansion of hospital access.

The stability of the MHR suggests that the municipality's hospital network maintained relative efficiency in treating severe cases. However, this performance does not replace the need for effective prevention policies. Vigitel 2022 showed increasing prevalences of obesity and diabetes, factors directly related to the increase in hospitalizations and deaths.

International studies in middle-income countries, such as Mexico and India, point to similar patterns: a high burden of CVD associated with epidemiological transition and accelerated urbanization.

The limitations of this study include the use of secondary data and the absence of stratified analyses by population groups, which could reveal internal inequalities. The COVID-19 pandemic may also have influenced mortality and hospitalization records.

Despite these limitations, the findings reinforce the need to strengthen Primary Health Care (PHC), expand prevention and control programs for hypertension, diabetes, and dyslipidemia, and integrate intersectoral policies aimed at encouraging healthy habits.

CONCLUSION

The study identified a significant increase in mortality and hospitalization rates due to CVD in São José dos Campos between 2013 and 2023, with stability in the MHR. This scenario reveals the maintenance of hospital efficiency, but exposes failures in primary and secondary prevention.

Urgent measures are needed to intensify actions to promote health and control risk factors, in line with the guidelines of the Brazilian Society of Cardiology and the Ministry of Health. The local experience can support strategies in other medium and large-sized municipalities in Brazil.

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