

Overview of cardiac arrhythmias by sex in Brazilian regions between 2020 and 2024

Ricardo Fonseca Oliveira Suruagy Motta^{1,*}, Pedro Barreto Pires Bezerra Filho², Déborah Eloyse Santos Freitas¹, Júlia Agra Silva¹, Marina Amaral Barros da Cruz Oliveira Menezes¹, Maria Clara de Souza Xavier¹, Regis Reyner Cansanção Mota Neto¹, Edvaldo Ferreira Xavier Júnior³

Background: Cardiac arrhythmias represent a highly relevant public health problem and are among the leading causes of hospitalization for cardiovascular diseases in Brazil. The behavior of these conditions may differ between sexes, with differences in clinical presentation, treatment response, and prognosis, making sex-based analysis essential for developing more equitable healthcare strategies. **Objective:** To analyze the profile of hospitalizations and in-hospital mortality due to cardiac arrhythmias among men and women across Brazilian regions between 2020 and 2024. **Methods:** This was a retrospective, descriptive ecological study based on secondary data extracted from the Hospital Information System of the Brazilian Unified Health System (SIH/SUS), accessed through the Department of Informatics of the Unified Health System (DataSUS). All hospitalizations with a primary diagnosis of conduction disorders and cardiac arrhythmias occurring between 2020 and 2024 in the five Brazilian regions were included and stratified by sex. For each year and region, the following variables were analyzed: the absolute number of hospitalizations; the number of associated in-hospital deaths; and the in-hospital mortality rate, calculated as the ratio of deaths to hospitalizations multiplied by 100. Data were organized in electronic spreadsheets and analyzed using descriptive statistics, with calculation of absolute frequencies and percentage variation. **Results:** During the study period, 347,584 hospitalizations due to cardiac arrhythmias were recorded in Brazil, of which 185,585 (53.4%) occurred in men and 161,999 (46.6%) in women. Hospitalizations increased by 55.3% among women (from 28,256 to 38,001) and by 36.6% among men (from 32,106 to 43,866). The highest burden of hospitalizations was observed in the Southeast, followed by the South and Northeast. Regarding in-hospital mortality, 45,387 deaths were recorded during the period, including 24,698 men and 20,689 women. In-hospital mortality rates were higher among men in most regions, particularly in the Central-West region (26.7% in men versus 24.9% in women). In the Southeast (13.1% in men versus 12.7% in women) and in the North (10.6% in men versus 11.0% in women), mortality rates were similar between sexes. In the South and Northeast regions, rates also remained close to 10%. The lowest mortality rate was observed in the South region, especially among women (10.1%). **Conclusion:** Between 2020 and 2024, there was a significant increase in hospitalizations due to cardiac arrhythmias across all Brazilian regions, with a predominance among men. However, the rate of increase was higher among women. In-hospital mortality was proportionally higher among men in most regions, particularly in the Central-West, while rates were similar between sexes in the remaining regions. These findings reinforce the importance of healthcare strategies that consider regional and sex-related disparities, aiming at early diagnosis, access to treatment, and reduction of lethality associated with cardiac arrhythmias.

1. Centro de Estudos Superiores de Maceió – Maceió (AL), Brazil.

2. Centro Universitário de João Pessoa – João Pessoa (PB), Brazil.

3. Santa Casa da Misericórdia de Maceió – Maceió (AL), Brazil.

*Correspondence author: ricosuruagy1@gmail.com



Table 1. Hospitalizations for Cardiac Arrhythmias by Region – Brazil (Male)

Hospital morbidity according to place of hospitalization
 ICD-10: Conduction disorders and cardiac arrhythmias
 Period: 2020–2024

Region	2020	2021	2022	2023	2024	Total
Brazil (Total)	32,106	31,862	36,924	40,827	43,866	185,585
North	1,145	1,160	1,520	1,556	1,788	7,169
Northeast	4,816	5,513	5,529	7,136	7,921	31,315
Southeast	14,919	14,821	18,050	19,634	20,890	88,314
South	7,331	6,798	7,979	8,981	9,827	40,916
Central-West	3,895	3,570	3,466	3,520	3,440	17,871

Source: Brazilian Ministry of Health – Hospital Information System of the Unified Health System (SIH/SUS).
 Note: Data covering the last six months and subject to future updates.

Table 2. Hospitalizations for Cardiac Arrhythmias by Region – Brazil (Female)

Hospital morbidity according to place of hospitalization
 ICD-10: Conduction disorders and cardiac arrhythmias
 Period: 2020–2024

Region	2020	2021	2022	2023	2024	Total
Brazil (Total)	28,256	28,379	32,130	35,233	38,001	161,999
North	883	964	1,089	1,186	1,471	5,593
Northeast	4,611	5,303	5,619	6,714	7,420	29,667
Southeast	13,105	13,234	15,573	16,699	18,005	76,616
South	6,318	5,867	6,902	7,619	8,274	34,980
Central-West	3,339	3,011	2,947	3,015	2,831	15,143

Source: Brazilian Ministry of Health – Hospital Information System of the Unified Health System (SIH/SUS).
 Note: Data covering the last six months and subject to future updates.

Table 3. Deaths by year of processing, by region (Male)

Hospital morbidity according to place of hospitalization
 ICD-10: Conduction disorders and cardiac arrhythmias
 Period: 2020–2024

Region	2020	2021	2022	2023	2024	Total
Brazil (Total)	4,763	5,056	4,985	5,073	4,821	24,698
North	153	126	158	147	174	758
Northeast	480	654	614	775	756	3,279
Southeast	1,958	2,112	2,407	2,568	2,516	11,561
South	803	818	904	861	942	4,328
Central-West	1,369	1,346	902	722	433	4,772

Source: Brazilian Ministry of Health – Hospital Information System of the Unified Health System (SIH/SUS).
 Note: Data covering the last six months and subject to future updates.

Table 4. Deaths by year of processing, by region (Female)

Hospital morbidity according to place of hospitalization
ICD-10: Conduction disorders and cardiac arrhythmias
Period: 2020–2024

Region	2020	2021	2022	2023	2024	Total
Brazil (Total)	3,907	4,237	4,244	4,200	4,101	20,689
North	113	117	112	127	146	615
Northeast	412	543	631	695	745	3,026
Southeast	1,638	1,870	2,007	2,072	2,147	9
,734	639	696	754	704750		3,543
Central-West	1,105	1,011	740	602	313	3,771

Source: Brazilian Ministry of Health – Hospital Information System of the Unified Health System (SIH/SUS).

Note: Data covering the last six months and subject to future updates.