

Difference in Treatment Response Between Men and Women with Acute Myocardial Infarction with ST-segment Elevation Even When Following Well-established Protocols

João Manoel Theotonio dos Santos

Cardiovale – Instituto de Cardiologia do Vale do Paraíba, São José dos Campos, SP – Brazil

Editorial referring to the article: Comparison of Clinical and Epidemiological Profiles Between Men and Women with ST-Elevation Myocardial Infarction in Salvador from 2021 to 2023

The study “Comparison of Clinical and Epidemiological Profiles Between Men and Women with ST-Elevation Myocardial Infarction in Salvador from 2021 to 2023” provides an important contribution by demonstrating that, even in a setting supported by a well-structured ST-elevation myocardial infarction (STEMI) protocol, relevant differences in clinical profiles between men and women persist. Although treatment strategies were homogeneous between sexes—a noteworthy finding in a country where healthcare inequities are often the rule—the observation that women present later, are older at the time of the event, and more frequently receive potent antiplatelet agents reinforces the need to understand acute coronary syndrome in women according to their specific pathophysiological and clinical characteristics.¹

In recent years, increasing evidence has challenged the concept that myocardial infarction in women is simply “the same infarction, occurring later.” Contemporary data indicate that mechanisms such as coronary microvascular dysfunction, plaque erosion, and spontaneous coronary artery dissection are more prevalent among women, demanding greater diagnostic precision and tailored therapeutic strategies.^{2,3} In parallel, atypical symptom presentation and lower perceived cardiovascular risk contribute to delays in seeking care—a phenomenon consistently observed worldwide, including in high-income countries.⁴

Notably, this study differs from large international cohorts in not identifying significant sex-based differences in door-to-ECG or door-to-reperfusion times. This finding highlights an emerging concept in modern cardiology: when protocols are rigorously implemented, historical disparities can be attenuated. The local experience suggests that systematic team training and clearly defined care pathways may effectively reduce the longstanding “gender gap” in STEMI management.

Nevertheless, the finding that women experience myocardial infarction almost a decade later than men—while maintaining a similar prevalence of traditional cardiovascular risk factors—underscores the importance of sex-specific preventive strategies. Recent literature has consistently demonstrated that underrecognition and underdiagnosis of cardiovascular risk in women remain persistent and systemic problems across different healthcare systems.⁵⁻¹⁰

Although the limited sample size precludes detection of subtle differences in clinical outcomes, the central message of this study is unequivocal: equity in STEMI care is not an unattainable ideal but rather a direct consequence of organization, continuous training, and vigilant monitoring of care processes. By demonstrating that standardized care delivery can neutralize sex-based disparities, this work reinforces the urgency of extending such protocols to less-resourced settings, where female mortality from STEMI remains unacceptably high.

References

1. Moraes HGM, Carneiro MGB, Dracoulakis MDA. Comparison of Clinical and Epidemiological Profiles Between Men and Women with ST-Elevation Myocardial Infarction in Salvador from 2021 to 2023. *Int J Cardiovasc Sci.* 2026; 39:e20250094. doi: doi.org/10.36660/ijcs.20250094.
2. Sawano M, Lu Y, Caraballo C, Mahajan S, Dreyer R, Lichtman JH, et al. Sex Difference in Outcomes of Acute Myocardial Infarction in Young Patients. *J Am Coll Cardiol.* 2023;81(18):1797-806. doi: 10.1016/j.jacc.2023.03.383.

Keywords

ST Elevation Myocardial Infarction; Women; Time-to-Treatment

Mailing Address: João Manoel Theotonio dos Santos •

Cardiovale – Instituto de Cardiologia do Vale do Paraíba, São José dos Campos, SP – Brazil. Avenida 9 de Julho, 95, Cj 13, Vila Ady’Anna.
Postal code: 12.243-000. São José dos Campos, SP – Brazil
E-mail: joao.theotonio@gmail.com

DOI: <https://doi.org/10.36660/ijcs.20260023>

3. Riehle L, Gothe RM, Ebbinghaus J, Maier B, Bruch L, Röhnisch JU, et al. Implementation of the ESC STEMI Guidelines in Female and Elderly Patients Over a 20-Year Period in a Large German Registry. *Clin Res Cardiol.* 2023;112(9):1240-51. doi: 10.1007/s00392-023-02165-9.
4. Brush JE Jr, Chaudhry SI, Dreyer RP, D'Onofrio G, Greene EJ, Hajduk AM, et al. Sex Differences in Symptom Complexity and Door-to-Balloon Time in Patients with ST-Elevation Myocardial Infarction. *Am J Cardiol.* 2023;197:101-7. doi: 10.1016/j.amjcard.2023.03.009.
5. Mehta LS, Beckie TM, DeVon HA, Grines CL, Krumholz HM, Johnson MN, et al. Acute Myocardial Infarction in Women: A Scientific Statement from the American Heart Association. *Circulation.* 2016;133(9):916-47. doi: 10.1161/CIR.0000000000000351.
6. Byrne RA, Rossello X, Coughlan JJ, Barbato E, Berry C, Chieffo A, et al. 2023 ESC Guidelines for the Management of Acute Coronary Syndromes. *Eur Heart J Acute Cardiovasc Care.* 2024;13(1):55-161. doi: 10.1093/ehjacc/zuad107.
7. Mensah GA, Fuster V, Murray CJL, Roth GA; Global Burden of Cardiovascular Diseases and Risks Collaborators. Global Burden of Cardiovascular Diseases and Risks, 1990-2022. *J Am Coll Cardiol.* 2023;82(25):2350-473. doi: 10.1016/j.jacc.2023.11.007.
8. Martin SS, Aday AW, Almarazooq ZI, Anderson CAM, Arora P, Avery CL, et al 2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association. *Circulation.* 2024;149(8):347-e913. doi: 10.1161/CIR.0000000000001209
9. La S, Beltrame J, Tavella R. Sex-Specific and Ethnicity-Specific Differences in MINOCA. *Nat Rev Cardiol.* 2024;21(3):192-202. doi: 10.1038/s41569-023-00927-6.
10. Maas A, Cenko E, Vaccarino V, Göttgens I, Bergami M, Manfrini O, et al. Changing Clinical Perspectives on Sex and Healthcare Disparities in Ischaemic Heart Disease. *Lancet Reg Health Eur.* 2025;56:101370. doi: 10.1016/j.lanepe.2025.101370.



This is an open-access article distributed under the terms of the Creative Commons Attribution License