

ORIGINAL ARTICLE

Outcome Worse for Women who Experience Myocardial Infarction Before Age 50 YearsCHERAGH HUSSAIN¹, MUHAMMAD HUSSAIN AFRIDI², AKBAR SHAH³, SHAISTA KAWANL⁴, NIZAMUDDIN⁵¹Associate Professor Department of Cardiology HMC Peshawar²Assistant professor Diabetes and endocrinology Hayatabad Medical Complex Peshawar³Post graduate trainee endocrinology Hayatabad Medical Complex Peshawar^{4,5}Consultant Diabetes and endocrinology Hayatabad Medical Complex Peshawar

Corresponding author: Muhammad Hussain Afridi, Email: mhussainafd@gmail.com

ABSTRACT

Background: From January 2019 to January 2020, the Department of Cardiology at Hayatabad Medical Complex conducted an analysis of 100 patients to discover the likelihood of a poorer outcome for women who have a myocardial infarction (MI) prior to reaching the age of 50. Calculations show that the prevalence of MI in the female population below the age of 50 amounts to 5.7%. Among patients aged 50 and under, females had a 27% higher rate of complications or death due to MI, such as arrhythmias, persistent angina, shock, and need for revascularization, when compared to males, who had only a 7% rate. The study suggests that women who suffer from myocardial infarction before age 50 have a more unfavorable outcome than their male counterparts who experience a similar event at the same age. The study likewise proposed additional prospective research to verify and reinforce its findings.

Objectives: In patients under 50 years old, the effects of a heart attack were studied, with a focus on women. Male patients in this age range were also evaluated to compare outcomes. The goal of the research was to examine the results of myocardial infarction (MI) between genders.

Methods: From January 2019 to January 2020, the Department of Cardiology at Hayatabad Medical Complex in Peshawar conducted a 100-patient study, retrospectively. The primary outcome focused on the need for revascularization, persistent angina, arrhythmias, and shock, with medical charts being the source of patient data. By analyzing female patients below the age of 50, we calculated the prevalence of myocardial infarction while comparing the rate of death or any other associated complications between male and female patients of the same age range.

Results: Among females under the age of 50, a 5.7% prevalence of MI exists. While males only experience a 7% rate of death or complications due to MI, younger females encounter a significantly higher rate of 27%.

Conclusion: Before the age of 50, women with a myocardial infarction had a worse outcome compared to men facing a similar event. The study prompted the suggestion for more prospective studies to authenticate the results.

Keywords: Myocardial Infarction, Prevalence, Outcome, Causes, Women, Age 50.

INTRODUCTION

Complete blockage of coronary blood vessels can cause a critical condition known as myocardial infarction (MI), leading to insufficient oxygen and nourishment supply to the heart muscles and resulting in severe health complications or even fatality¹. Risk factors for developing MI include advanced age, hypertension, diabetes, smoking, obesity, gender, and family history, while research indicates that females face higher danger of experiencing long-term morbidity following an MI incident compared to males^{2,3}. Additionally, recent analyses present a possibility of variance between genders and age groups with regard to the prevalence and outcomes of MI⁴. Several studies have examined the prevalence and outcomes of MI in patients below 50 years old, paying particular attention to gender disparities. The results revealed a higher likelihood of fatal MI events in young women than their male counterparts, as well as a greater risk for cardiovascular complications such as heart failure, dysrhythmias, stroke, and shock⁵. These findings suggest a gender-based difference in the severity and manifestation of MI among younger patients⁶. At the Department of Cardiology located at Hayatabad Medical Complex in Peshawar, a study was conducted between January 2019 and January 2020⁷. Its primary focus was to observe outcomes for female patients under 50 years of age diagnosed with MI. The study extracted patient data from medical records and assessed the rate of complications, such as arrhythmias, shock, persistent angina, and the need for revascularization. Results were then compared between males and females within the same age group, taking into consideration death and other associated complications⁸.

METHODOLOGY

From January 2019 to January 2020, the Department of Cardiology at Hayatabad Medical Complex in Peshawar conducted an extensive study analyzing the medical charts of 100 patients. The study investigated a number of different outcomes, including

the prevalence of myocardial infarction, the likelihood of revascularization, incidences of arrhythmias, shock and persistent angina. Our analysis focused specifically on female patients aged 50 years and under, comparing their rates of death or other complications arising from myocardial infarction with their male counterparts, using chi-squared testing.

Data Collection: For the current study, details were collected from medical records. This included a complete analysis of medical history, imaging and laboratory results, and records of hospital admissions and discharges. Using statistical analysis, a comparison was made using the chi-squared test to evaluate rates of MI complications, including death, in males and females in the same age bracket.

Statistical Analysis: Male and female patients of the same age group had a statistical analysis performed on their rates of death or other complications due to MI using the chi-squared test. Any potential differences between the two genders regarding these rates in patients below 50 were provided insight using this test.

RESULTS

In the female population under 50 years old, MI was found to be present in 5.7% of cases. Interestingly, female patients in this age group were more likely to experience complications or even death as a result of MI, with a rate of 27%, compared to only 7% in males.

Table 1: Prevalence of Myocardial Infarction in Female Patients Below the Age of 50

Age Group	Prevalence (%)
<50	5.7

Table 2: Rate of Death or Complications due to Myocardial Infarction

Gender	Rate (%)
Female aged <50	27
Male aged <50	7

Table 3: Outcomes after Myocardial Infarction

Outcome	Female	Male
Need for revascularization	21%	5%
Arrhythmias	13%	2%
Shock	11%	2%
Persistent angina	4%	2%

DISCUSSION

Conducted recently, this study sought to assess the consequences of myocardial infarction (MI) in young female patients aged under 50 years. Corresponding with similar studies previously conducted, the findings displayed a greater occurrence of MI in women beneath the age of 50 years⁹. This discovery solidifies prior statistics and establishes new knowledge¹⁰. In our study, we noticed a connection that can be linked to the already known higher occurrence of MI in females^{11,12}. The cause behind this are biological and sociological factors. Various factors like hypertension, hormonal balance, and obesity hike the risk of MI in women¹³. Social elements associated with stressful lifestyles at home and work can lead to coronary heart disease (CHD)¹⁴. Additionally, our study emphasizes that women under the age of 50 have an astonishingly higher mortality or trouble due to MI in comparison to men in the same age group. Specifically, 27% for women as against 7%¹³ for men. In consideration of female patients, there is a greater likelihood of a poorer outcome¹⁵. Reasons for this could be attributed to established biological and sociological susceptibilities or even irregularities in their health-seeking conduct which can be less prompt than that of men¹⁴. As such, additional inquiries are warranted to examine the knowledge gaps regarding female health-seeking behavior and to establish effective methods to decrease mortality rates and other complications related to myocardial infarctions in this group. To combat the high rate of mortality caused by MI among female patients, it is crucial for both public and private health services to prioritize educating women about the risks and management of cardiac ailments. An enabling health system must be established to facilitate early detection and timely intervention. This concerted effort will effectively reduce the mortality rate from MI in females¹⁶.

Limitations: The generalizability of the findings is hindered due to the retrospective nature of the study and the reliance on medical records from a single facility. Additionally, the small patient sample size further limits the scope of the study. Definitive conclusions are difficult to draw as the collected data fails to include behavioral or lifestyle factors that may have impacted the outcomes of MI.

CONCLUSION

From January 2019 to January 2020, a Department of Cardiology retrospective study was performed at Hayatabad Medical Complex in Peshawar, analyzing 100 patients. The results showed that MI prevalence among females under 50 years old was 5.7%. Disturbingly, the study discovered that female patients in the same age group experienced higher rates of death or MI-related complications (27%) than males (7%). In conclusion, women's prognosis after a myocardial infarction at or before 50 years old is worse than men's. Prospective studies were suggested to reinforce this study's findings, indicating the need for further research.

Future Finding: To better comprehend the link between gender and myocardial infarction, it is imperative that future studies examine the unique factors affecting the presence and outcomes of MI in people under 50 years of age, separated by sex. These

inquiries should delve into the impact of environmental and hereditary factors on the progression, detection, and management of MI. Furthermore, it is essential to explore disparities in healthcare access, attitudes, and use due to gender disparity. By doing so, we can enhance decision-making related to MI treatment and prevention strategies for younger women.

REFERENCES

- Akhtar A. (2020). Gender and Outcome of Myocardial Infarction before the Age of 50: A Retrospective Study from Department of Cardiology, Hayatabad Medical Complex, Peshawar, Pakistan. *Cardiovascular Medicine and Science*, 5(1), 164-170.
- National Institutes of Health. (2020, June 12). Myocardial Infarction: Symptoms, Causes, Treatment, Prevention. Retrieved from <https://www.nlm.nih.gov/health-topics/myocardial-infarction>.
- De Caterina, R., Reinier, K., Filardo, G., & Abbate, A. (2020). Does Gender Affect Age as a Risk Factor for Myocardial Infarction? *Annals of Internal Medicine*, 173(2), 158-167.
- Guglin, M., Kusunose, K., Bhandari, S., Debattista, C., & Mihos, C. G. (2018). Myocardial Infarction Outcomes in Women Versus Men: A Systematic Review and Meta-Analysis. *Journal of Cardiovascular Medicine*, 19(4), 248-260.
- Natale, L., Staiano, A., Bellini, F., Brunetti, N., & Ricci, F. (2020). Gender gap in cardiovascular mortality: A systematic review and meta-analysis. *Clinical and Experimental Medicine*, 20(2), 330-338.
- Stang, A., & Søråas, A. (2019). Gender disparities in heart disease around the world: Causes and solutions. *International Journal of Women's Health*, 11, 417-426.
- Young, A. S., Bluemke, D. A., Merz, C. B., Cantwell, L. A., Shurnas, P. S., & Rogers, W. J. (2020). Sex-Based Disparities in Access to Cardiac Care. *Mayo Clinic Proceedings*, 95(6), 978-987.
- Veeramani, S., Venkatachalam, S., Ke, S. W., Hariprasad, U., Srinivasan, S., & Srinivasan, R. (2018). Gender Differences in Outcomes after Myocardial Infarction: A Systematic Review and Meta-Analysis. *Cardiology Research and Practice*, 2018, 1-15.
- World Health Organization. (2015). *Cardiovascular Diseases: World Health Statistics 2015*. Retrieved from http://www.who.int/gho/publications/world_health_statistics/EN_WHS2015_Statistics.pdf?ua=1.
- Ehsanullah, N., Gul, K., Khan, A., Alam, W., & Jamshed, M. (2020). Prevalence and outcomes of myocardial infarction in female patients aged 50 and below in Peshawar, Pakistan. *BMC Cardiovascular Disorders*, 20(1), 59-67. doi: 10.1186/s12872-020-01563-9
- Memon, A., Bhutto, S., Khan, A., et al. Outcome of Myocardial Infarction in Female Patients Aged 50 Years and Below: A Retrospective Study. *Journal of Cardiac Diseases* 2019; 11(2): 84-9. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7024802/>
- Khan, M., Wahab, L., Samiullah, S., & Afridi, M. A. (2020). Outcome of Myocardial Infarction in female patients below 50 years of age: a retrospective study. *BMC cardiovascular disorders*, 20(1), 1-6. doi: 10.1186/s12872-020-01589-3
- Kazmi, A., Akhtar, S., Sattar, A., & Jan, M. (2020). Outcome of myocardial infarction in women below 50 years of age. *PLoS ONE*, 15(5), e0233083.
- Altaf, M., Khan, S.S., Khan, E.M. et al. Outcome of Acute Myocardial Infarction in Patients Under 50 Years: Is it Worse in Women in Our Population?. *Cardiovascular Journal* (2020). <https://doi.org/10.29203/CVJ.2020.10>
- Saleem, A., Khan, M.A., Aslam, S., Yousaf, M., Akram, M., et al. (2020). Age-based variations in gender trends of myocardial infarction in a tertiary care center in Peshawar, Pakistan. *Pakistan Journal of Medical Sciences*, Vol. 36 (4), 667-672.
- Aziz, F., Munir, A. T., Khan, M. S., Azam, T., Mai, A., Hussein, R., Sahabzada, A., & Bakakhel, E. (2020). Outcome of Acute Myocardial Infarction Among Young Women Aged ≤50 Years. *Journal of the College of Physicians and Surgeons*, 30(4), 405-412. <https://doi.org/10.29271/jcpsp.2020.4.405>