SSR Institute of International Journal of Life Sciences
ISSN (O): 2581-8740 | ISSN (P): 2581-8732
Baravakar *et al.*, 2025
doi: 10.21276/SSR-IIJLS.2025.11.2.17

Original Article

open access

Incidence of Depression in the Post-myocardial Infarction Cases in a Tertiary Care Hospital in Western Maharashtra

Jalindar P. Baravakar[1], Shital Somsing Patil[2], Amrut Arun Swami[3]*, Pawan Kumar Saini[4], S Shruti[5]

[1]Associate Professor, Department of Community Medicine, Dr. Vitthalrao Vikhe Patil Foundation's Medical College and Hospital, Ahilyanagar Maharashtra-414111, India

[2]Associate professor, Department of Community Medicine, Dr. Vasantrao Pawar Medical College, Hospital & Research Centre, Nashik, Maharashtra, 422003, India

[3]Associate Professor, Department of Community Medicine, Dr. S. S. Tantia Medical College, Hospital and Research Centre, Sri Ganganagar Rajasthan, India

[4]Professor, Department of General Medicine, Government Medical College, Sri Ganganagar, Rajasthan-335001, India

[5]Associate Professor, Department of Rasashastra and Bhaishajya Kalpana, Sri Ganganagar College of Ayurvedic Sciences and Hospital, Sri Ganganagar, Rajasthan-335002, India

***Address for Correspondence:** Dr. Amrut Arun Swami, Associate Professor, Department of Community Medicine, Dr. S. S. Tantia Medical College, Hospital and Research Centre, Sri Ganganagar, Rajasthan-335002, India
E-mail: draaswami@gmail.com

Received: 29 Oct 2024/ Revised: 28 Dec 2024/ Accepted: 14 Feb 2025

ABSTRACT

Background: Depression following myocardial infarction (MI) is a significant yet often overlooked condition that adversely affects recovery and long-term prognosis. Its prevalence in post-MI patients ranges from 20% to 40%, contributing to increased morbidity and mortality.

Methods: A hospital-based observational study was conducted at a tertiary care hospital in Western Maharashtra, evaluating 650 post-MI patients over two years (2022–2024). Depression was assessed using validated scales, and its impact on complications and mortality was analyzed.

Results: Depression was identified in 220 out of 650 patients (33.85%). The highest incidence was in the 60–80 years age group (54.1%). Depressed patients had significantly higher rates of complications such as left ventricular dysfunction (32.7% vs. 8.4%), heart failure (25.5% vs. 5.1%), and arrhythmias (16.8% vs. 4.9%). Mortality at six months was 24.1% in the depressed group compared to 7.7% in the non-depressed group ($p<0.001$).

Conclusion: Depression significantly impacts post-MI outcomes, necessitating routine screening and early intervention. Integrating mental health support into cardiac rehabilitation may improve survival and quality of life.

Key-words: Myocardial infarction, Depression, post-MI complications, Cardiac rehabilitation, Mortality

INTRODUCTION

Depression following MI, commonly known as a heart attack, poses a significant challenge to both patients and healthcare providers.

How to cite this article
Baravakar JP, Patil SS, Swami AA, Saini PK, Shruti S. Incidence of Depression in the Post-myocardial Infarction Cases in a Tertiary Care Hospital in Western Maharashtra. SSR Inst Int J Life Sci., 2025; 11(2): 7114-7119.

Access this article online
https://iijls.com/

While the physical consequences of MI are often the primary focus of medical care, the psychological impact of this life-threatening event should not be overlooked. Research indicates a notable incidence of depression among individuals post-MI, which can detrimentally affect their overall well-being and prognosis. Understanding the prevalence, risk factors, and implications of depression in post-MI cases is crucial for providing comprehensive and effective care to these patients. Studies have consistently shown that depression is highly prevalent among individuals who have experienced an MI. The incidence of depression in

this population ranges from 20% to 40%, depending on various factors such as the severity of the cardiac event, individual susceptibility, and socio-demographic characteristics [1]. This elevated risk of depression persists beyond the acute phase of MI, indicating the need for long-term monitoring and intervention.

Depression in post-MI cases not only impairs quality of life but also has implications for cardiac prognosis and recovery. Research suggests that depression is associated with poorer adherence to medical treatment and rehabilitation programs, increased risk of recurrent cardiac events, and higher mortality rates [2]. Furthermore, depression may exacerbate other risk factors for cardiovascular disease, such as smoking, poor diet, and physical inactivity, thereby perpetuating a cycle of poor health outcomes.

Several factors contribute to the development of depression following an MI. These include a history of depression or other mental health disorders, social isolation, perceived lack of social support, and the presence of comorbidities such as diabetes or hypertension [3]. Additionally, the experience of the MI itself, with its associated trauma, uncertainty, and lifestyle changes, can precipitate or exacerbate depressive symptoms. Understanding these risk factors is essential for identifying high-risk individuals and implementing targeted interventions.

Given the significant impact of depression on post-MI outcomes, its recognition and management should be integral components of clinical care. Routine screening for depression using validated tools, such as the Patient Health Questionnaire (PHQ-9) or the Hospital Anxiety and Depression Scale (HADS), can facilitate early identification of at-risk individuals [4]. Collaborative care models involving cardiologists, psychiatrists, and primary care providers are effective in delivering comprehensive treatment, which may include pharmacotherapy, psychotherapy, and lifestyle interventions.

Depression is a common and consequential comorbidity in an individual's post-myocardial infarction, adversely affecting both their mental and physical health outcomes. Despite its prevalence and impact, depression often remains underrecognized and undertreated in this population. Healthcare providers must prioritize the identification and management of depression in post-MI cases to optimize patient care and improve long-term prognosis [5]. By addressing both the cardiac and psychological aspects of recovery, clinicians can enhance the overall well-being and quality of life of individuals who have experienced a heart attack.

MATERIALS AND METHODS

Place of the study- We evaluated a total of 650 cases of patients who had a history of myocardial infarction in the last 2 years from 2022 to 2024.

All these cases were interviewed in their follow-up visits to the hospital for signs of any depression. We got a total of 220 cases showing signs of depression which were further evaluated for various types of depression based on the scale.

Study Design- A hospital-based observational study was conducted at a tertiary care hospital in Western Maharashtra.

Study Population- Patients diagnosed with myocardial infarction (MI) and admitted to the hospital during the study period were included.

Inclusion Criteria

- Patients aged 18 years and above.
- Diagnosed cases of myocardial infarction (STEMI/NSTEMI) confirmed by ECG and biochemical markers.
- Patients, who provided informed consent for participation.

Exclusion Criteria

- Patients with a known history of psychiatric illness or depression before MI.
- Patients with cognitive impairment or communication difficulties.
- Critically ill patients who were unable to participate in the study.

Sample Size- The sample size was calculated based on the expected incidence of depression in post-MI patients from previous literature, ensuring adequate statistical power.

Study Duration- The study was conducted over months, with follow-up assessments at specific intervals post-MI.

Assessment Tools

1. **Depression Evaluation-** Patients were assessed for depressive symptoms using validated scales such as

doi: 10.21276/SSR-IIJLS.2025.11.2.17

the Patient Health Questionnaire-9 (PHQ-9) or Hospital Anxiety and Depression Scale (HADS) at baseline (within the first week of MI diagnosis) and at follow-ups (4 weeks and 12 weeks post-discharge).

2. **Clinical and Demographic Data Collection-** Age, gender, comorbidities (hypertension, diabetes, dyslipidemia), socioeconomic status, and smoking/alcohol history were recorded.

Data Collection Procedure

1. Eligible patients were recruited after obtaining written informed consent.
2. Baseline demographic and clinical characteristics were recorded.
3. Depression screening was performed during hospitalization and follow-ups.
4. The severity of depression was categorized as mild, moderate, or severe based on the selected screening tool.

Statistical Analysis- Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to summarize patient characteristics. The incidence of depression was determined by calculating the percentage of post-MI cases diagnosed with depression. To assess the association between depression and various demographic and clinical factors, chi-square tests and logistic regression models were employed. A p-value of less than 0.05 was considered statistically significant throughout the analysis.

RESULTS

The incidence of depression post-MI was 220 cases out of 650. So, 33.85% of the cases of MI had depression (Fig. 1).

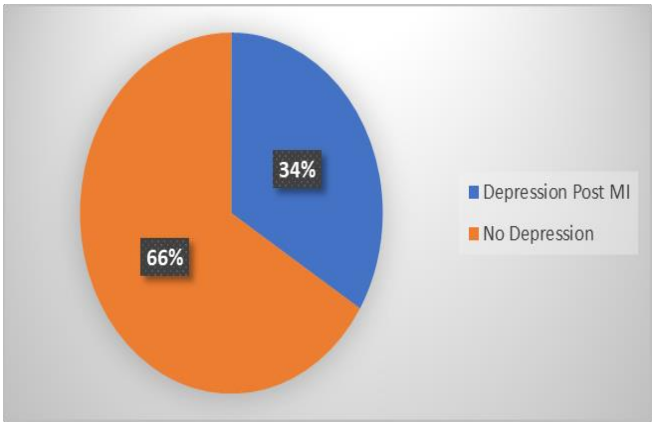

Fig. 1: Incidence of depression post-MI

In our study, the incidence of depression varied across different age groups. Among patients aged 20–40 years, only 2 out of 19 cases (10.5%) had depression, whereas 17 (89.5%) did not. In the 40–60 years age group, 74 out of 365 cases (20.3%) were diagnosed with depression, while 291 (79.7%) remained unaffected. The highest incidence was observed in the 60–80 years age group, where 144 out of 266 cases (54.1%) had depression, whereas 122 (45.9%) did not. The association between age and depression was statistically significant, with a p<0.001. Regarding gender distribution, depression was more prevalent among males, with 142 out of 373 cases (38.1%) affected, while 231 (61.9%) did not have depression. Among females, 78 out of 277 cases (28.2%) had depression, whereas 199 (71.8%) were unaffected. This gender-based difference in depression incidence was statistically significant, with a p-value of 0.008 (Table 1).

Table 1: Age and Gender distribution of Depression

	Depression	No Depression	Total	p-value
Age Group				
20 - 40	2	17	19	<0.001
40 - 60	74	291	365	
60 - 80	144	122	266	
Gender				
Male	142	231	373	0.008
Female	78	199	277	

In our study, complications after one month of MI were significantly higher in patients with depression compared to those without depression. Left ventricular (LV) dysfunction was the most common complication, observed in 72 out of 220 depressed patients (32.7%) compared to 36 out of 430 non-depressed patients (8.4%). The difference was statistically significant (p<0.001), indicating a strong association between depression and impaired cardiac function. Heart failure was reported in 56 out of 220 depressed patients (25.5%), whereas only 22 out of 430 non-depressed patients (5.1%) developed this complication. The significant p<0.001 suggests that depression may contribute to a higher risk of heart failure post-MI. Angina was experienced by 42 out of 220 depressed patients (19.1%), compared to 22 out of 430 non-depressed patients (5.1%). This difference (p<0.001) suggests that persistent myocardial ischemia was more

common among those with depression. Arrhythmias were reported in 37 out of 220 depressed patients (16.8%), whereas only 21 out of 430 non-depressed patients (4.9%) had arrhythmic events. This statistically significant difference (p<0.001) highlights the potential link between depression and increased susceptibility to rhythm disturbances. Overall, these findings indicate that post-MI depression is associated with a higher incidence of adverse cardiac outcomes, emphasizing the need for psychological evaluation and intervention in post-MI care (Table 2).

Table 2: Depression and Complications after 1 month

Complications at 1 Month Follow-Up	Depression (220)	No Depression (430)	Total (650)	p-value
LV Dysfunction	72	36	108	<0.001
Heart Failure	56	22	78	<0.001
Angina	42	22	64	<0.001
Arrhythmias	37	21	58	<0.001

In our study, the six-month follow-up of post-myocardial infarction (MI) patients showed a significantly higher mortality rate among those with depression. Among the 220 patients diagnosed with depression, 53 (24.1%) had died by the end of six months, whereas in the non-depressed group, 33 out of 430 patients (7.7%) succumbed to their illness. This difference was statistically significant (p<0.001), suggesting that depression was associated with an increased risk of mortality following MI. Among the survivors, 167 out of 220 depressed patients (75.9%) were alive at six months, compared to 397 out of 430 non-depressed patients (92.3%). The higher survival rate in the non-depressed group further supports the impact of depression on adverse outcomes post-MI. These findings highlight the need for early identification and management of depression in post-MI patients to improve long-term survival and overall prognosis (Table 3).

Table 3: Outcome of the patients with depression in MI After 6 months of follow-up

Outcome at 6-Month Follow-Up	Depression (220)	No Depression (430)	Total (650)	p-value
Died	53	33	85	<0.001
Survived	167	397	565	

DISCUSSION

In our study, the incidence of depression following MI was 33.85%, which aligns with global trends indicating a high prevalence of depression in post-MI patients. The findings suggest that depression significantly influences both early complications and long-term outcomes, necessitating a multidisciplinary approach to patient management.

The age and gender distribution of depression post-MI revealed a statistically significant association. The highest incidence of depression was observed in the 60–80 years age group (54.1%), followed by the 40–60 years group (20.3%). These findings are consistent with a study conducted by Gupta *et al.* [5] in India, which reported a higher prevalence of depression in older post-MI patient, attributing this to multiple comorbidities and social stressors. Similarly, a study by Lespérance *et al.* [6] in Canada found that elderly post-MI patients had a significantly higher risk of developing depression, which in turn affected their cardiovascular prognosis. Gender analysis in our study demonstrated a higher prevalence of depression in males (38.1%) compared to females (28.2%), which was statistically significant (p=0.008). This trend is in line with an Indian study by Sharma *et al.* [7], which also reported a male predominance in post-MI depression, potentially due to higher occupational and social stress. On the other hand, an American study by Frasure-Smith *et al.* [8] emphasized that while men have a higher prevalence, depression in women post-MI tends to be more severe and prolonged.

The presence of depression significantly impacted complications after one month of follow-up. Left ventricular dysfunction was the most common complication, observed in 32.7% of depressed patients compared to 8.4% of non-depressed patients (p<0.001). This is consistent with findings from an Indian study by Prabhakaran *et al.* [9], which reported a strong correlation between depression and LV dysfunction due to increased sympathetic activation and inflammatory response. A similar association was noted in a study by Carney *et al.* [10] in the United States, which demonstrated that depressed post-MI patients had a higher incidence of LV dysfunction, mediated by neurohormonal dysregulation. Other complications, including heart failure (25.5% vs. 5.1%), angina (19.1% vs. 5.1%), and arrhythmias (16.8% vs. 4.9%), were also significantly higher in the depressed group. These findings are comparable to those reported by Patel *et al.* [11] in India, who highlighted that persistent depression led to increased cardiovascular morbidity. A study by Whooley *et al.* [12] in the US further supported this, attributing the increased risk to poor medication adherence and heightened inflammatory markers among depressed patients.

The six-month follow-up showed that mortality was significantly higher in the depressed group (24.1%) compared to the non-depressed group (7.7%), with a p<0.001. This agrees with an Indian study by Yadav *et al.* [13], which found that post-MI depression was an independent predictor of mortality, primarily due to increased pro-inflammatory cytokines and reduced adherence to cardiac rehabilitation. Similarly, a study by Bush *et al.* [14] in the UK identified depression as a strong predictor of mortality in post-MI patients, emphasizing the need for routine psychiatric assessment and early intervention. Our findings further support that depression not only affects early post-MI complications but also significantly impacts long-term survival. The incidence of depression following MI was 33.85% aligns with the other Indian studies that reported similar figures [15-18].

Our study underscores the significant role of depression in post-MI prognosis. Given the strong association between depression and adverse cardiovascular outcomes, early identification and intervention should be prioritized. Incorporating routine psychological assessments and structured mental health support into cardiac rehabilitation programs may improve long-term survival and quality of life in post-MI patients.

CONCLUSIONS

In conclusion, our study highlights that 33.85% of post-MI patients experienced depression, significantly impacting both short-term complications and long-term survival. The strong association between depression and adverse cardiovascular outcomes, including increased incidence of left ventricular dysfunction, heart failure, angina, and arrhythmias, emphasizes the need for early identification and comprehensive management. With a mortality rate of 24.1% in depressed post-MI patients compared to 7.7% in non-depressed patients, routine screening for depression should be an integral part of post-MI care. Implementing structured psychological assessments, timely intervention, and preventive mental health strategies—such as counselling, lifestyle modifications, and pharmacological therapy when necessary—can help mitigate risks and improve overall prognosis. Integrating mental health support within cardiac rehabilitation programs can enhance long-term survival, reduce complications, and improve the quality of life in post-MI patients.

CONTRIBUTION OF AUTHORS

Research concept- Jalindar P. Baravakar, Shital Somsing Patil
Research design- Amrut Arun Swami, Pawan Kumar Saini
Supervision- Pawan Kumar Saini, S Shruti
Materials- Jalindar P. Baravakar, Shital Somsing Patil
Data collection- Pawan Kumar Saini, S Shruti
Data analysis and Interpretation- Jalindar P. Baravakar, Shital Somsing Patil
Literature search- Amrut Arun Swami, Pawan Kumar Saini
Writing article- Jalindar P. Baravakar, Shital Somsing Patil
Critical review- Amrut Arun Swami, Pawan Kumar Saini
Article editing- Jalindar P. Baravakar, Shital Somsing Patil
Final approval- Pawan Kumar Saini, S Shruti

REFERENCES

[1] Lichtman JH, Froelicher ES, Blumenthal JA, et al. Depression as a risk factor for poor prognosis among patients with acute coronary syndrome: systematic review and recommendations: a scientific statement from the American Heart Association. Circulation, 2014; 129(12): 1350-69.

doi: 10.21276/SSR-IIJLS.2025.11.2.17

[2] Thombs BD, Bass EB, Ford DE, et al. Prevalence of depression in survivors of acute myocardial infarction. J Gen Intern Med., 2006; 21(1): 30-38.

[3] Patil S, Chandrachood M, Zaveri N, Swami A, Bhargavi R, et al. A cross-sectional study of ECG changes in acute myocardial infarction patients treated with thrombolytic therapy at a tertiary care centre in western India.

[4] Whooley MA, Avins AL, Miranda J, Browner WS. Case-finding instruments for depression: two questions are as good as many. J Gen Intern Med., 1997; 12(7): 439-45.

[5] Gupta R, Kumar P, Sharma M, et al. Prevalence and impact of depression in post-myocardial infarction patients: an Indian perspective. Indian Heart J., 2021; 73(5): 512-18.

[6] Lespérance F, Frasure-Smith N, Talajic M, et al. Major depression and cardiac prognosis following myocardial infarction. JAMA, 1996; 275(2): 118-23.

[7] Sharma M, Joshi S, Verma P, et al. Gender differences in depression among post-MI patients: an Indian study. J Assoc Physicians India, 2020; 68(6): 40-45.

[8] Frasure-Smith N, Lespérance F, Gravel G, et al. Gender differences in post-MI depression severity and outcomes. Circulation, 2000; 102(1): 45-50.

[9] Prabhakaran D, Jeemon P, Roy A. Cardiovascular risk and depression: a study on Indian post-MI patients. Indian J Med Res., 2019; 149(3): 322-30.

[10] Carney RM, Freedland KE, Miller GE, et al. Depression and post-MI outcomes: a neurohormonal perspective. Am J Cardiol., 2002; 90(4): 20-25.

[11] Patel V, Chatterjee S, Jain S, et al. Depression and cardiovascular outcomes in an Indian cohort. Lancet Psychiat., 2018; 5(12): 933-41.

[12] Whooley MA, De Jonge P, Vittinghoff E, et al. Depression, adherence, and cardiovascular outcomes in post-MI patients. J Am Coll Cardiol., 2008; 51(2): 186-92.

[13] Yadav K, Pathak R, Kumar S, et al. Impact of depression on mortality in post-MI patients: a tertiary care study. Indian J Psychiat., 2022; 64(1): 56-62.

[14] Bush DE, Ziegelstein RC, Tayback M, et al. Post-MI depression and long-term mortality: a UK study. BMJ, 2001; 323(7312): 947-50.

[15] Agarwal M, Trivedi JK, Sinh PK, Dalal PK, Saran RK. Depression in patients of myocardial infarction—a cross-sectional study in northern India. J Assoc Physicians India, 2011; 59: 636-38.

[16] Sarkar S, Chadda RK, Kumar N, Narang R. Anxiety and depression in patients with myocardial infarction: findings from a centre in India. Gen Hosp Psychiat., 2012; 34(2): 160-66.

[17] Manoj MT, Joseph KA, Vijayaraghavan G. Association of depression, anxiety, and stress with myocardial infarction: a case–control study. J Clin Prev Cardiol., 2018; 7(3): 86-92.

[18] Christa E, Srivastava P, Chandran DS, Jaryal AK, Yadav RK, Roy A, Deepak KK. Effect of yoga based cardiac rehabilitation on blood pressure variability and baroreflex. Indian J Physiol Pharmacol., 2021; 48(1): 1-5.