

Original Article

Psychological Stress and Acute Myocardial Infarction among Cardiac Patients at Khwaja Yunus Ali Medical College Hospital, Sirajganj

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Abstract

Background: : Acute myocardial infarction (AMI) remains a major cause of morbidity and mortality worldwide. Psychological stress has been increasingly recognized as an important factor among cardiac patients, particularly in low- and middle-income countries. Understanding the distribution of stress levels alongside clinical characteristics of AMI patients is essential for comprehensive cardiac care.

Objective(s): To describe the sociodemographic characteristics, psychological stress levels, risk factors, severity, and outcomes of acute myocardial infarction among cardiac patients admitted to Khwaja Yunus Ali Medical College Hospital, Sirajganj.

Materials and methods: A descriptive cross-sectional study was conducted among 300 cardiac patients diagnosed with acute myocardial infarction at Khwaja Yunus Ali Medical College Hospital, Sirajganj. Data were collected using a structured questionnaire covering sociodemographic variables, psychological stress levels, and established risk factors of AMI. Clinical information regarding AMI severity and patient outcomes was obtained from medical records. Data were analyzed using descriptive statistics and presented in tables and figures.

Results: The age of the participants ranged from 35 to 73 years, with a mean age of 50.95 ± 10.43 years. The largest proportion belonged to the 35-45-year age group (37.3%). Males constituted 72.0% of the study population, and 85.3% were married. Regarding education, 38.0% had secondary-level education, while 20.7% had no formal education. Salaried employment was the most common occupation (32.7%). In terms of psychological stress, 61.3% of the patients experienced moderate stress, while 25.6% had high stress levels. Hypertension was the most prevalent risk factor (61.3%), followed by smoking (53.3%) and diabetes mellitus (52.0%). Moderate AMI severity was observed in 58.7% of patients, whereas 26.7% had severe AMI. Regarding outcomes, 73.3% of patients showed clinical improvement, while mortality was recorded in 26.7% of cases.

Conclusion: The study findings reveal that the majority of AMI patients were middle-aged males with moderate psychological stress and multiple conventional cardiovascular risk factors. Moderate severity of AMI and favorable clinical outcomes were observed in most patients. These findings highlight the importance of comprehensive assessment, including psychological stress, in the management of patients with acute myocardial infarction.

Key words: AMI, Stress, Hypertension, Risk factor, Mortality

KYANCJ 2026; 07 (01): 1-5

DOI: <https://doi.org/10.3329/kyancj.v7i1.94167>

Introduction

Acute myocardial infarction (AMI) is a major public health concern and a leading cause of hospitalization, disability, and mortality worldwide. In cardiac care settings, nurses play a vital role in early recognition,

continuous monitoring, and holistic management of patients with AMI. Although traditional risk factors such as hypertension, diabetes mellitus, dyslipidemia, smoking, and obesity are routinely assessed in nursing practice, psychological stress has long been recognized as

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an important but often under-addressed contributor to acute coronary events. Evidence from large international studies has demonstrated that psychological stress, depression, and major life events significantly increase the risk of AMI, independent of conventional cardiovascular risk factors.^{1,2} From a nursing perspective, psychological stress influences both physiological and behavioral responses in cardiac patients. Stress activates the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis, leading to increased heart rate, elevated blood pressure, endothelial dysfunction, inflammation, and platelet aggregation, which together contribute to plaque rupture and thrombus formation resulting in AMI.^{3,4} In addition, psychological stress may negatively affect health behaviors, including medication adherence, dietary habits, physical activity, and smoking cessation, thereby worsening cardiovascular outcomes. Nurses are frequently the first healthcare professionals to identify emotional distress, anxiety, and depressive symptoms in hospitalized cardiac patients, emphasizing the importance of psychosocial assessment as an integral part of nursing care.³ In the context of Bangladesh, cardiac patients often face multiple psychosocial stressors such as financial hardship, family responsibilities, occupational pressure, and limited access to mental health services, which may exacerbate cardiovascular risk and delay recovery. Despite this, nursing assessments in many tertiary care settings remain largely focused on physical parameters, with insufficient emphasis on stress screening and stress-management counseling. Recent clinical studies have shown a significant association between perceived stress, anxiety, depression, and the occurrence of AMI, highlighting the need for stress-focused nursing interventions.⁵ Therefore, this study aims to assess the association between psychological stress and acute myocardial infarction among cardiac patients at Khwaja Yunus Ali Medical College Hospital, Sirajganj, with the goal of strengthening holistic, patient-centered nursing practice and improving cardiac care outcomes.

This study aims to examine the relationship between psychological stress and acute myocardial infarction (AMI) among cardiac patients attending Khwaja Yunus Ali Medical College Hospital, Sirajganj, by assessing stress levels, identifying stress-related factors, and exploring their association with the severity of AMI across different demographic groups, with the ultimate goal of informing holistic nursing assessment and stress-management interventions in routine cardiac care.

Materials and methods

A cross-sectional descriptive study was conducted to examine the relationship between psychological stress and acute myocardial infarction (AMI) among cardiac patients at the cardiology department of Khwaja Yunus Ali Medical College & Hospital (KYAMCH), Sirajganj, Bangladesh. The study was carried out over a one-year period from January 2024 to December 2024, with academic support from the Institute of Biological Sciences, University of Rajshahi. A total of 300 cardiac patients who experienced AMI were selected using a convenience sampling technique based on predefined inclusion and exclusion criteria. Patients who were clinically stable, receiving conservative treatment, able to communicate, and willing to provide written informed consent were included, whereas severely ill, mentally unstable, non-cooperative patients, those unable to speak or hear, or those without consent were excluded. Data were collected through face-to-face interviews using a semi-structured questionnaire consisting of three sections: informed consent, sociodemographic characteristics, and assessment of psychological stress using a five-point Likert scale. Although the questionnaire was developed in English, interviews were conducted in Bengali for better comprehension. Psychological stress levels were measured using Perceived Stress Scale (PSS-10) on a 0-40 scale, where scores of 0-13 indicated low stress, 14-26 moderate stress, and 27-40 high perceived stress. Data collection was conducted between August and November 2024 at KYAMCH, ensuring confidentiality, ethical compliance, and voluntary participation throughout the study.

Results

Table 1 opines sociodemographic characteristics of the 300 cardiac patients included in the study. The participants' ages ranged from 35 to 73 years, with a mean age of 50.95 ± 10.43 years. The largest age group was 35-45 years (37.3%), followed by 46-55 years (30.0%), 56-65 years (20.7%), and 66-75 years (12.0%). A majority of the respondents were male (72.0%), while females accounted for 28.0% of the study population. Most participants were married (85.3%), with smaller proportions being single (8.0%) or widowed/divorced (6.7%). Regarding educational attainment, 38.0% had completed secondary education, 26.0% had primary education, 15.3% had tertiary education, and 20.7% had no formal education. The occupational profile showed that 32.7% of respondents were engaged in salaried jobs,

Table I: Sociodemographic characteristics of the patients (n=300)

Variable	Frequency	Percentage
Age (year)		
35-45	112	37.3
46-55	90	30.0
56-65	62	20.7
66-75	36	12.0
Mean $\pm$ SD: 50.95 $\pm$ 10.43, Minimum: 35, Maximum: 73		
Sex		
Male	216	72.0
Female	84	28.0
Marital Status		
Married	256	85.3
Single	24	8.0
Widowed / Divorced	20	6.7
Education		
Primary	78	26.0
Secondary	114	38.0
Tertiary	46	15.3
No Education	62	20.7
Occupation		
Salaried job	98	32.7
Business	46	15.3
Unemployed	20	6.7
House wife	44	14.7
Farmer	12	4.0
Driver	10	3.3
Laborer	16	5.3
Others	54	18.0

15.3% were involved in business, 14.7% were housewives, 6.7% were unemployed, 5.3% were laborers, 4.0% were farmers, 3.3% were drivers, and 18.0% were engaged in other occupations.

Figure 1 shows the distribution of the patients by stress level. Among the total patients studied (n =300), 13.1% (n = 42) had low stress, 61.3% (n = 196) experienced moderate stress, and 25.6% (n =82) were suffering from high stress.

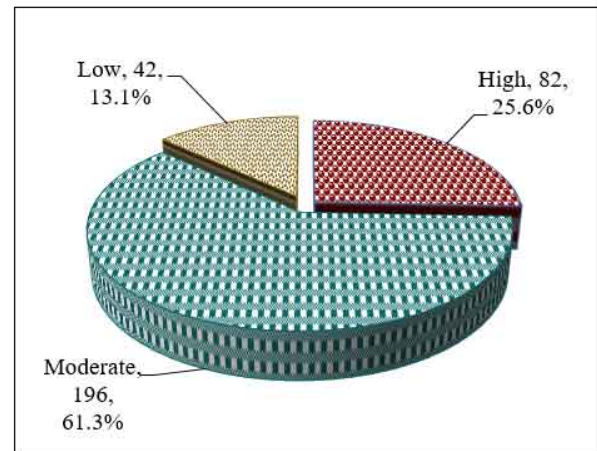
**Figure 1:** Stress level of the patients

Table II shows the distribution of the patients by risk factors of acute myocardial infarction (AMI). Among the 300 patients studied, hypertension was the most common risk factor, present in 61.3% (n=184) of the patients. Smoking and diabetes mellitus were also highly prevalent, affecting 53.3% (n=160) and 52.0% (n=156) of the patients, respectively. A family history of coronary artery disease (CAD) was reported by 35.3% (n=106) of the patients. Hypothyroidism was observed in 17.3% (n=52) of the patients, while dyslipidemia was the least common risk factor, present in 9.3% (n=28) of the patients.

Table II: Distribution of the patients by risk factors of AMI (n=300)

Risk factors	Frequency	Percentage
Hypertension	184	61.3
Diabetes mellitus	156	52.0
Smoking	160	53.3
Dyslipidemia	28	9.3
Family history of CAD	106	35.3
Hypothyroidism	52	17.3

Multiple responses

Figure 2 shows the distribution of the patients according to the severity of acute myocardial infarction (AMI). Out of the total 300 patients, the majority had moderate AMI, accounting for 58.7% (n=176). Severe AMI was observed in 26.7% (n=80) of the patients, while 14.7% (n=44) had mild AMI.

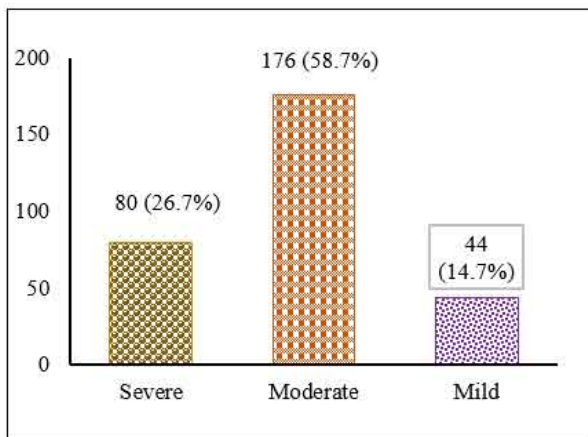


Figure 2: Distribution of the patients by severity of AMI (n=300)

Figure 3 shows the distribution of the patients according to the outcome of acute myocardial infarction (AMI). Among the 300 patients studied, 73.3% (n=220) showed improvement in their condition, while 26.7% (n=80) resulted in mortality.

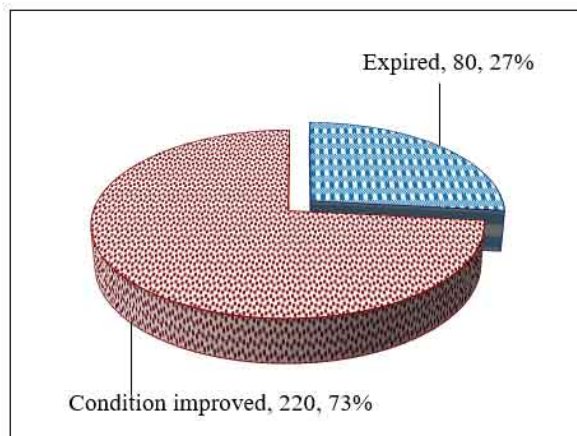


Figure 3: Distribution of the patients by AMI outcome (n=300)

Discussion

The present study explored the relationship between psychological stress and acute myocardial infarction (AMI) among cardiac patients admitted to Khwaja Yunus Ali Medical College Hospital, Sirajganj. The findings provide important insights into the sociodemographic profile, stress levels, conventional cardiovascular risk factors, severity of AMI, and patient outcomes.

In this study, the mean age of the respondents was 50.95 ± 10.43 years, with the highest proportion belonging to the 35-45-year age group. This relatively younger age

distribution is consistent with observations from South Asian countries, where coronary artery disease tends to manifest at an earlier age compared to Western populations.¹ Early exposure to multiple risk factors, including psychosocial stress, unhealthy lifestyle behaviors, and limited preventive care, may contribute to this trend. The predominance of male patients (72.0%) aligns with previous studies reporting a higher incidence of AMI among males, potentially due to greater exposure to smoking, occupational stress, and other behavioral risk factors.⁶ However, the substantial proportion of female patients underscores the growing burden of cardiovascular disease among women, particularly in low- and middle-income countries.

A striking finding of this study was the high prevalence of psychological stress among the participants. More than three-quarters of the patients experienced moderate to high stress, with 25.6% suffering from high stress levels. These findings support existing evidence that psychological stress is highly prevalent among cardiac patients and may act as an independent trigger for AMI.² Chronic stress has been shown to activate the hypothalamic-pituitary-adrenal axis and sympathetic nervous system, leading to increased catecholamine release, endothelial dysfunction, platelet activation, and inflammatory responses that can precipitate acute coronary events.³ The predominance of moderate stress suggests that stress may often go unrecognized or untreated, despite its significant cardiovascular implications.

Regarding conventional risk factors, hypertension emerged as the most common risk factor (61.3%), followed by smoking and diabetes mellitus. This pattern is consistent with earlier studies conducted in Bangladesh and neighboring countries, where hypertension and smoking remain the leading contributors to AMI.⁷ The coexistence of psychological stress with these traditional risk factors may have a synergistic effect, further increasing the risk of adverse cardiovascular events. The relatively lower prevalence of dyslipidemia observed in this study may reflect underdiagnosis or limited routine screening rather than a true lower burden.

The severity distribution showed that the majority of patients had moderate AMI, while more than one-quarter suffered from severe AMI. Previous research suggests that psychological stress not only increases the risk of AMI occurrence but may also influence infarct severity by exacerbating ischemic injury through heightened inflammatory and neurohormonal responses.⁸ Patients experiencing high stress levels are more likely to present late, have poor treatment adherence, and experience complications, which may explain the observed proportion of severe cases.

In terms of outcomes, nearly three-quarters of the patients showed clinical improvement, while the mortality rate was 26.7%. Although improvement rates were encouraging, the relatively high mortality highlights the seriousness of AMI in this setting. Studies have demonstrated that elevated psychological stress is associated with poorer prognosis, increased risk of recurrent events, and higher mortality following AMI.⁹ These findings emphasize the need to integrate psychological assessment and stress-management interventions into routine cardiac care to improve survival and long-term outcomes.

Overall, the findings of this study reinforce the critical role of psychological stress as an important and potentially modifiable factor in the development, severity, and outcome of acute myocardial infarction. Addressing stress alongside traditional cardiovascular risk factors may contribute significantly to reducing the burden of AMI in hospital-based and community settings.

Conclusion

This study shows that psychological stress is common among patients admitted with acute myocardial infarction at Khwaja Yunus Ali Medical College Hospital. Most patients experienced moderate to high levels of stress, alongside a high burden of traditional cardiovascular risk factors such as hypertension, smoking, and diabetes mellitus. The majority of cases presented with moderate severity of AMI, and although most patients improved with treatment, a considerable proportion resulted in mortality. These findings highlight the importance of recognizing psychological stress as a prominent feature among cardiac patients. Incorporating routine stress assessment and supportive psychological care into the management of patients with acute myocardial infarction may contribute to more comprehensive and patient-centered cardiac care.

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