



CARDIAC ANXIETY, DEPRESSION, AND STRESS AMONG THE PATIENTS WITH MYOCARDIAL INFARCTION IN A TERTIARY CARE CENTER - A CROSS-SECTIONAL STUDY

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ABSTRACT

Non-communicable diseases (NCD) are common global public health issues and among all the NCDs, cardiovascular diseases, Ischemic heart disease, cardiac anxiety, depression, and stress are major health problems. This study was aimed to identify the cardiac anxiety, depression, and stress among the patients with myocardial infarction (MI). A cross-sectional study was chosen to measure cardiac anxiety, depression, and stress among the patients with coronary artery disease admitted to the coronary care department of a tertiary care hospital in Bhubaneswar, India. The purposive sampling method included the study samples. Among the 111 participants, the majority after the acute event of MI had extremely severe depression (35.1%) and moderate levels of stress (27.9%). Anterior wall myocardial infarction and inferior wall myocardial infarction (28.8% each) were more prevalent type of MI among the participants. The mean value of cardiac anxiety was 39.83 (9.01), 24.38 (7.2) for depression, and 23.93 (8.1) for stress. Hence psychiatric morbidity assessment is critical among patients with myocardial infarction and should pan to provide need-based intervention to reduce further mortality and for a speedy recovery rate.

Keywords: Cardiac anxiety, coronary heart disease, depression, myocardial infarction, stress

INTRODUCTION

Coronary artery disease (CAD) is a serious condition mainly prevalent in developed and developing countries. Myocardial infarction (MI) is the severe presentation of CAD. This pathological problem may include ST segment elevated MI (STEMI) or non-ST elevated MI (NSTEMI). Unstable angina is a vital feature in developing MI (Salari *et al.*, 2023). The prevalence of MI in 1960 in urban areas of India was 2%, and it increased to 14% by 2013 (Dorairaj *et al.*, 2016), while in rural India, the prevalence rate was 1.7% in 1970 which increased to 7.4% by 2013. Psychological morbidity among the patients suffering MI adversely affect the prognosis of the disease. A study conducted among 168 patients after the incidence of coronary artery disease revealed that 27.4% respondents had anxiety while 23.8% had depression (Sharma *et al.*, 2018). The prevalence of anxiety among the patients who underwent trans-radial coronary angiography was 53.5% (Fernandez *et al.*, 2021). In a cohort study of 1007 coronary heart disease patients, around one-third had clinically significant cardiac anxiety (Hohls *et al.*, 2020).

The patients with MI exhibit substantial distress, anxiety and depression after acute event. Lack of emotional control, uncertainty, and helplessness in their life negatively affects prognosis and recovery among the patients (Xu *et al.*, 2017). About 18% acute coronary syndrome patients have shown acute stress disorder, which alters the patient's quality of life (Wu *et al.*, 2022). The present study was aimed to assess the cardiac anxiety, depression, and stress among the myocardial infarction patients and find the relationship between these variables.

MATERIALS AND METHODS

A descriptive cross-sectional study design was adopted to measure the cardiac anxiety, depression, and stress in the patients with myocardial infarction admitted to the Coronary Care Department of IMS and SUM Hospital in Bhubaneswar, Odisha (India). The data was collected from February 2022 to February 2023. After obtaining the informal consent from the subjects, the non-probability purposive sampling method was followed to include the samples. The study was approved by the Institute's Ethical Permission Committee vide their communication No: IEC/IMS.SH/SOA/2021/215.

The inclusion criteria included the patients, diagnosed with coronary heart disease, had angina or myocardial infarction, the patients who were on pharmaco-therapy or underwent percutaneous transluminal coronary intervention (PTCI), aged more than 18 years, both male and female, had primary education of reading as well as were able to respond to the questionnaire, able to talk, and emotionally ready to answer the questions. The exclusion criteria were: the patients with mental illness, cancer, dementia, patients in long-term care facilities, suffering from severe physical problems, and had acute mental disorders. The patient's sociodemographic data was collected through sociodemographic proforma. Cardiac anxiety was measured by 18-item cardiac anxiety questionnaire (CAQ) (Georg *et al.*, 2000). This is a five-point Likert-type scale, scoring from 0 (never) to 4 (always). The scale has three subscales; fear, avoidance, and attention. The higher scores indicate more significant heart-focused anxiety. The depression and stress were assessed by the modified depression, anxiety, and stress scale (DASS-21) (Lovibond *et al.*, 1995). The anxiety part in this questionnaire was deleted and modified for this study. The depression and stress had seven items and scores on a rating scale from 0-3. The total score was multiplied by two to get the actual score. If the score ranged from 0-9 it indicated normal, 10-13 as mild depression, 14-20 as moderate depression, 21-27 as severe depression, and > 28 as extremely severe depression. In stress, 0-14 was normal, 15-18 as mild, 19-25 as moderate, 26-33 as severe, and > 34 as extremely severe.

The data was entered into the Excel data sheet and arranged by coding. After data validation the data sheet was transferred into the SPSS ver 25. The data analysis was performed by descriptive statistics and inferential statistics (Wu *et al.*, 2022). The descriptive statistics included the mean, standard deviation, frequency and percentage. The inferential statistics was calculated through correlation, chi square test and linear regression analysis of depression and stress to cardiac anxiety. The significant level was set as 5%.

RESULTS AND DISCUSSION

The sociodemographic distribution of participants revealed that among the participants, the mean age was 57.13 ± 6.29 years. The majority of respondents were male (78.4%) and all were married. (Table 1). Similarly, 38.7% had received primary education, 57.7% had a family history of hypertension. Smoking history revealed that 64.9% were non-smokers, and 79.3% were non-alcoholic. The majority

Table 1: Sociodemographic distribution of participants (N = 111)

Variables		No. of participants (%)
Gender	Female	24 (21.6)
	Male	87 (78.4)
Marital status	Married	111 (100)
Education	Primary	43 (38.7)
	Matriculation	32 (28.8)
	Higher Secondary	14 (12.6)
	Graduation	16 (14.4)
	Post-graduation	6 (5.4)
Family members having BP	Yes	64 (57.7)
	No	47 (42.3)
Work status	Not working	11 (9.9)
	Housewife	22 (19.8)
	Government job	6 (5.4)
	Private job	18 (16.2)
	Business	22 (19.8)
	Labor work	14 (12.6)
	Agriculture	12 (10.8)
	Vehicle driver	6 (5.4)
Smoking history	Non-smoker	72 (64.9)
	Smoker	39 (35.1)
Alcohol use	No	88 (79.3)
	Occasionally	14 (12.6)
	Yes	9 (8.1)
Sleeping hours (h)	<6	33 (29.7)
	6-8	75 (67.6)
	>8	3 (2.7)

of participants (67.6%) had sleeping hours of 6 to 8 h day⁻¹. Around 9.9% participants were non- working, and 19.8% were doing business.

The study on ECG changes in participants revealed that AWMi and IWMI (28.8% each) were prevalent type of MI (28.8% each) among the participants, followed by non ST elevated myocardial infarction {23.4%} (Table 2).

The cross sectional study indicated among the patients with MI, the mean value of cardiac anxiety, depression, and stress score was 39.83, 24.38 and 23.93, respectively (Table 3). The majority of participants after acute MI had extremely severe depression (35.1%) and moderate levels of stress (27.9%). [Fig. 4]. The participants level reported that only 0.9%, and 17.1% of them were not reported any depression or stress, respectively. The relation

between cardiac anxiety, depression, and stress among patients with myocardial infarction is given in Table 4. The correlation analysis revealed that cardiac anxiety with depression ($P = 0.02$) and fear ($P = 0.04$) had a weak positive correlation. The linear regression analysis of depression and stress to cardiac anxiety presented in Table 5. It revealed that the depression predicts cardiac anxiety ($P = 0.01$) with an adjusted R^2 of 0.04.

Among the participants, only gender has a significant association with stress ($P < .05$). There was no significant association between depression and sociodemographic variables. Among 111 participants, the majority of participants after acute event of MI had extremely severe depression (35.1%) and moderate levels of stress (27.9%). The findings are supported by Dhital *et al.* (2018) who in a similar study on 168 patients found that 27.4% had anxiety, and 19.6% had moderate anxiety.

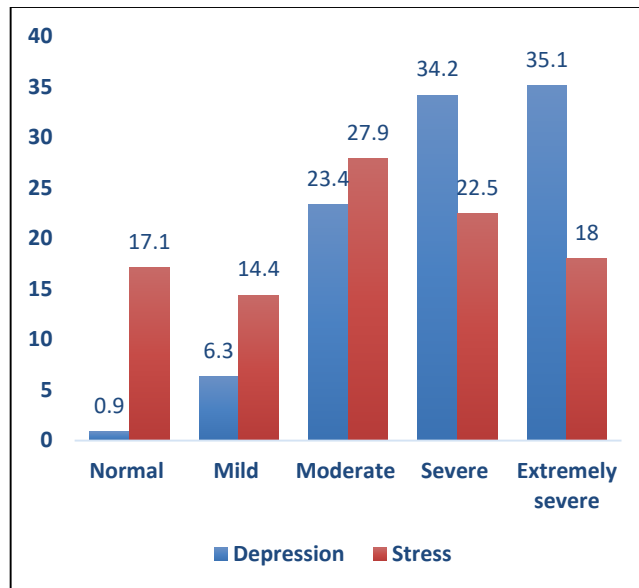
Table 2: Distribution of the participants based on ECG changes (N = 111)

ECG changes	Frequency (f)	Percentage (%)
Anterior wall myocardial infarction (AWMI)	32	28.8
Inferior wall myocardial infarction (IWMI)	32	28.8
Lateral wall myocardial infarction (LWMI)	6	5.4
Non ST Elevated myocardial infarction (NSTEMI)	26	23.4
Posterior wall myocardial infarction (PWMI)	1	0.9
Unstable angina	14	12.6

Table 3: Cardiac anxiety, depression, and stress among patients with myocardial infarction (N = 111)

Variables	Mean score value
Cardiac anxiety	39.83 (9.01)
Fear	19.01 (5.4)
Avoidance	12.54 (4.1)
Heart focused attention	8.28 (3.9)
Depression	24.38 (7.2)
Stress	23.93 (8.1)

Another prevalence study reported 23.2% post-traumatic stress and 29.5% depression cases after MI (Dollenberg *et al.*, 2021). A longitudinal cohort study reported that the depression, anxiety, and stress was 18, 28, and 13%, respectively (Rao *et al.*, 2020). A study conducted to assess depression and anxiety after percutaneous transluminal coronary angioplasty (PTCA) showed that 64.9%

**Fig. 1: Percentage (%) distribution of level of stress and depression among patients with myocardial infarction****Table 4: Relation between cardiac anxiety, depression, and stress among patients with myocardial infarction (N = 111)**

Variables	Depression r(P)	Stress r(P)
Cardiac anxiety	0.22 (0.02)*	0.05 (0.61)
Fear	0.19 (0.04)*	0.02 (0.79)
Avoidance	0.05 (0.54)	-0.12 (0.28)
Heart focused attention	0.17 (0.07)	0.03 (0.74)

Table 5: Regression analysis of depression and stress to cardiac anxiety (N = 111)

Variable	B [#]	P
Depression	2.3	0.01*
Stress	-0.93	0.15

beta coefficient; *P value<0.05

had depression and anxiety among the study participants (Shetty *et al.*, 2017).

The reporting rate of anxiety and depression in first 12 months after a cardiac problem reported anxiety around 43, 28, and 27% at the time of the event, early and late recovery period, while depression levels were 22, 17, and 15%,

respectively (Murphy *et al.*, 2020). In a similar study to assess anxiety disorders and post-traumatic stress disorder in patients with coronary disease conducted, the 12-month prevalence for any anxiety problem was 11.2% for men and 24.8% for women, and 12-month stress was 1.1 and 5.2%, respectively (Beer *et al.*, 2020). Among the 1,024 patients with coronary disease, 12% showed a clinical form of depression, and 45% belonged to subclinical type depression (PHQ-9 score ≥ 5) at the beginning (Kuhlmann *et al.*, 2019).

Conclusion: Cardiac anxiety, depression, and stress are more prevalent among patients with myocardial infarction. The study shows that the cardiac anxiety and depression had a significant positive relation, and depression predicted cardiac anxiety. Therefore, the study emphasizes that decisive intervention needs to be carried out among MI patients.

Ethical statement: The study was conducted with approval from the Institute's Ethical Committee issued vide No: IEC/IMS.SH/SOA/2021/215 dated 11 October 2021.

Conflict of interest: There is no conflict of interest among the authors

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