

# LEVEL OF ANXIETY AMONG THE CARDIAC PATIENTS ATTENDING AT A SELECTED SPECIALIZED PUBLIC HOSPITAL IN BANGLADESH

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**Abstract:** *Clinicians have long recognized mental health issues in patients with heart conditions, such as those who have heart attacks, heart failure, and systemic hypertension, especially in those who are admitted to the coronary care unit. This study was designed to assess the level of anxiety among cardiac patients. This descriptive type of cross-sectional study was conducted among 238 cardiac patients attending at National Institute of Cardiovascular Diseases (NICVD), Dhaka, Bangladesh from December 2022 to January 2023. A semi-structured questionnaire was used to collect data. HADS scale was used to measure anxiety level. The mean age of the participants was 48.34 ( $\pm 7.928$ ) years. HADS measurement found that 37% of participants had diagnostic anxiety, 28% had moderate anxiety and 35% cardiac patients had no clinical symptoms of anxiety. Chi-square test analysis also revealed that eating fast-food, less physical activity, high blood pressure, blood cholesterol level, overweight and history of heart diseases were significantly associated with anxiety among cardiac patients ( $P < 0.05$ ). Mental health services should integrate with cardiac rehabilitation programs and health care workers should take extra care for cardiac patients to identify mental health disabilities among the cardiac patients.*

**Keywords:** *Anxiety, Cardiac patients, Hospital anxiety and depression scale (HADS), Public Health, Bangladesh.*

## Introduction

Mental health problems and cardiovascular diseases (CVDs) are two of the main causes of illness worldwide<sup>1</sup>. CVDs were the leading cause of mortality in 2015, accounting for 17.9 million deaths worldwide<sup>2</sup>. Patients with heart disease frequently have psychiatric morbidities such as anxiety and sadness<sup>3</sup>. According to the WHO (2012), mental illness affects more than 300 million people worldwide and is predicted to overtake all other causes of disability by the year 2030<sup>4</sup>. Similar to how depression impacted 272 million individuals in 2010, anxiety did as well<sup>5</sup>.

In CVD patients, mental illnesses are quite common, with sadness and anxiety being especially common<sup>6</sup>. The research has thoroughly shown the bidirectional relationship between these mental illnesses and CVDs<sup>7</sup>. Anxiety is common in patients with cardiovascular disease, such as coronary artery disease (CAD). Following an ACS, 20-30% of patients experience elevated levels of anxiety<sup>8,9</sup>. While post-ACS anxiety may be transient for some patients, in half of cases anxiety persists for up to 1-year post-event<sup>8</sup>, suggesting that for many patients with heart disease, anxiety is a chronic condition. Research has revealed similar prevalence rates in patients with CAD awaiting coronary artery bypass graft (CABG) surgery. In this population, 25% of patients experience elevated levels of anxiety pre-procedure, with many having a reduction in symptoms in the months following surgery<sup>10</sup>. Anxiety is also common in patients with other forms of heart disease as well. In a recent meta-analysis of 38 studies, it has been estimated that 32% of patients with heart failure (HF) experience elevated levels of anxiety, and 13% meet criteria for an anxiety disorder<sup>11</sup>.

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Anxiety is one of the established risk factors for sudden cardiac death. Anxiety has been associated with the incidence, and in some cases progression, of cardiovascular disease. In patients without existing cardiac disease, anxiety has been linked to the subsequent development of CAD. In a 2010 meta-analysis including 20 studies and nearly 250,000 patients, found that anxiety, controlling for other medical variables, when possible, led to a 26% increased risk of incident CAD<sup>12</sup>. Anxiety increases the mortality rate in patients with heart diseases by increasing the risk from ventricular arrhythmias and sudden cardiac death, consequently<sup>13</sup>. Continuation of exhibiting a high level of anxiety after the diagnosis of coronary artery disease is a significant risk factor for the development of myocardial infarction or death in these individuals<sup>14</sup>.

An increasing amount of data from prospective studies show that negative emotions such as anxiety, anger and depression are risk factors for coronary artery disease. Several mechanisms explain this finding including links between negative emotions with bad habits such as smoking, nutritional habits, reduction of physical activity. Also, emotional stress has a direct negative effect on the progression of atherosclerosis, and it reduces threshold for ventricular arrhythmias and possibly sudden cardiac death<sup>15</sup>. Anxiety increases blood coagulability during and after emotional stress, which is one of the mechanisms that may link this emotion and cardiac disease<sup>16</sup>.

The incidence of anxiety and depression among heart patients in low-income countries is little known<sup>17</sup>, including in Bangladesh. A countrywide survey found that Bangladesh has a high prevalence of mental health problems and inadequate mental health facilities<sup>18</sup>. In Bangladesh, despite a rise in their incidence, mental illnesses remain undiagnosed, evaluated, or managed, and cardiovascular disease is still the primary cause of death. Unmet mental health requirements may be a significant roadblock to optimal heart disease patient management<sup>19,20</sup>. Some studies found prevalence of depression among hospitalized heart disease patients in Dhaka, Bangladesh<sup>21</sup>, whereas very little was known about the anxiety disorders among patients with cardiac diseases. Given the gaps in knowledge and significant health consequences, the current study aims to determine the level of anxiety among cardiac patients attending at outdoor of a tertiary care hospital in Bangladesh and helps the policy makers by providing new knowledge about mental health condition of cardiac patients so that appropriate interventions can take to reduce the burden.

## **Materials & methods**

### **Study design & settings**

This descriptive type of cross-sectional study was carried out to measure level of anxiety among cardiac patients attending at National Institute of Cardiovascular Diseases (*NICVD*), Dhaka, Bangladesh from August 2022 to April 2022.

### **Study population, sample size and sampling strategy**

A total of 238 cardiac patients were selected for data collection. Purposive non-probability sampling technique was used to reach the targeted sample size. However, Participants who were very sick, talk to unable and unwilling to participate were excluded from the study.

### **Data collection procedure and quality control**

A semi-structured interview questionnaire for the face-to-face interview used to collect data. Before going for actual data collection, a pretest with questionnaire was conducted among the 15 non-sampled participants. Pretesting was done to check the validity, reliability and acceptability and sequences of the questionnaire. Level of anxiety was measured by using Hospital Anxiety and Depression Scale (HADS). The HADS scale, a self-reported assessment instrument, was applied to detect anxiety and depressive

symptoms among hospitalized admitted indoor cardiology patients using a Bengali version of the scale (Naith RP et al., 2003). This questionnaire has the HADS-A and HADS-D subscales, measuring anxiety and depressive symptoms. We used HADS-A subscale to measure anxiety level. Seven items were used to measure anxiety. Each questionnaire topic was given a severity rating based on a four-point Likert scale ranging from 0 (not at all) to 4 (intense). Scores range from 0 (no symptoms) to 21 (maximum of symptoms). A classification scheme can also be used to grade the evaluation: a score of 0–7 implies no clinical symptoms, 8–10 indicates moderate depression or anxiety, and a score of 11–21 shows diagnostic depression or anxiety.

### **Data processing and analysis plan**

All the collected data from the interview was rechecked and then coded for errors and entered into the database using SPSS software. Analysis was targeted on the study objectives and consideration of the indicators. Different statistical tests were used to find the association between variables. The p-value level of <0.05 was considered to test statistical significance. Data were cleaned, coded, captured, and analyzed using SPSS software.

### **Ethical Issues**

To comply with the ethical issues, the study protocol was submitted to the Research Ethics Committee (REC) of Faculty of Allied Health science (FAHS), DIU for review and approval of the study. Before the commencement of any interviews, the interviewers briefed the participants about the background and objectives of the study. Anonymity and confidentiality were maintained strictly.

## **Results**

### **Socio-demographic information of the respondents**

In this study most of the participants (47.5%) were belongs to age group between 41-50 years with mean age 48.34 ( $\pm 7.928$ ) years. 57.6% respondents were male and 42.4% were female. Only 6.3% participants were unmarried and rest of them (93.7%) were married. Nearly half (47.9%) of the respondents had business, 16,8% were homemaker and 35.3% were service holder. Majority of respondents (61.7%) were Muslim and 22.7% were Hindu. A number of participants (58%) had monthly income 18000-30000 taka. Half of the respondents had 4 or less family members and another half of participants had 5-6 number of family members (**table-1**).

**Table 1: Distribution of respondents by sociodemographic characteristics of the participants (n=238)**

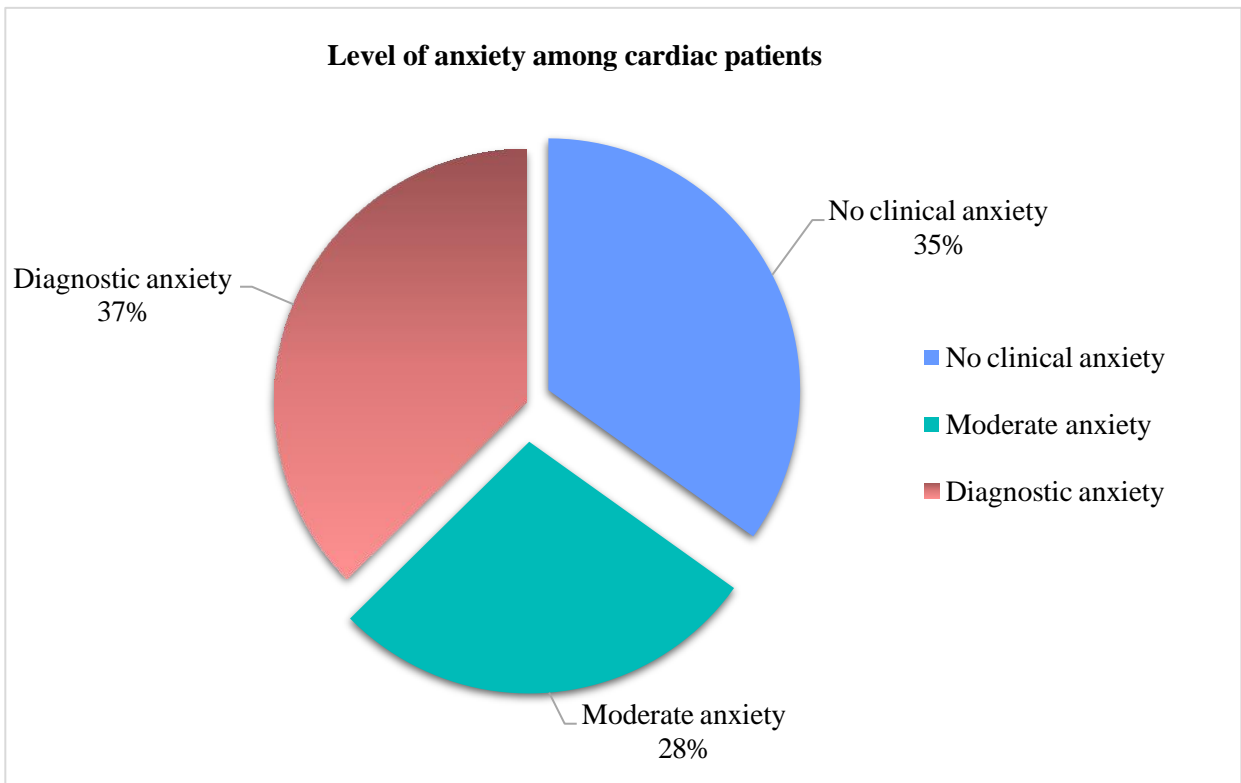
Participants' characteristics		Frequency	% Distribution
<b>Age</b>	Less than 40 years	44	18.5
	41-50 years	113	47.5
	51-60 years	72	30.3
	above 60 years	9	3.8
	<b>Mean ± SD</b>	<b>48.34±7.928</b>	
<b>Gender</b>	Male	137	57.6
	Female	101	42.4
<b>Marital status</b>	Unmarried	15	6.3
	Married	223	93.7
<b>Occupation</b>	Service	84	35.3
	Homemaker	40	16.8
	Business	114	47.9
<b>Religion</b>	Islam	145	61.7
	Hinduism	54	22.7
	Others	39	15.6
<b>Monthly family income</b>	Less than 18000 Taka	68	28.6
	18000-30000 Taka	138	58.0
	Above 30000 Taka	32	13.4
	<b>Mean ± SD</b>	<b>20932.77±7946.797</b>	
<b>Number of family members</b>	4 or less	121	50.8
	5-6 members	117	49.2

It can be seen that 57.6% participants were smoker and 42.4% were non-smoker. Around three-fourth (71.4%) of the respondents were eating street food and 62.6% were eating fact-food. More than half (59.2%) of the participants never take physical exercise and only 13% respondents do physical exercise regularly. Most of the participants were taking main meal 3 times in a day (**Table-2**).

**Table 2: Distribution of participants by their life style factors**

<b>Life style related factors</b>		<b>Frequency</b>	<b>% Distribution</b>
<b>Smoking habit</b>	Yes	137	57.6
	No	101	42.4
<b>Eating street food</b>	Yes	170	71.4
	No	68	28.6
<b>Eating fast-food</b>	Yes	149	62.6
	No	89	37.4
<b>Taking physical exercise</b>	Never	141	59.2
	Once per week	42	17.6
	2-4 times per week	24	10.1
	Every day	31	13.0
<b>Number of taking Meals in a day</b>	1 to 3 meals	191	80.3
	More than 3 meals	47	19.7

A pie chart showing prevalence of anxiety among cardiac patients. A number of participants (37%) had diagnostic anxiety and 28% had moderate anxiety. 35% cardiac patients had no clinical symptoms of anxiety (Figure-1).



**Figure 1: Level of anxiety among cardiac patients**

In **table-3** chi-square test analysis revealed that eating fast-food, less physical activity, high blood pressure, blood cholesterol level, overweight and history of heart diseases were significantly associated with anxiety among cardiac patients ( $P < 0.05$ ). However, some factors like smoking habit, blood sugar level and sleeping hour was not found significant with anxiety level among cardiac patients ( $P > 0.05$ ).

**Table 3: Association between anxiety with sociodemographic factors, lifestyle and physical health status**

Risk factors	Level of anxiety				
	No anxiety (%)	Anxiety (%)	$\chi^2$	P-Value	
<b>Age</b>	Less than 40 years	11 (4.6%)	33 (13.9%)	25.952	0.000
	41-50 years	30 (12.6%)	83 (34.9%)		
	51-60 years	33 (13.9%)	39 (16.4%)		
	Above 60 years	9 (3.8%)	0 (0.0%)		
<b>Gender</b>	Male	28 (11.8%)	109 (45.8%)	29.622	0.000
	Female	55 (23.1%)	46 (19.3%)		
<b>Smoking habit</b>	Yes	42 (17.6%)	95 (39.9%)	2.528	0.112
	No	41 (17.2%)	60 (25.2%)		
<b>Eating fast-food</b>	Yes	39 (16.4%)	110 (46.2%)	13.277	0.000
	No	44 (18.5%)	45 (18.9%)		
<b>Physical activity</b>	Never	64 (26.9%)	77 (32.4%)	38.304	0.000
	Once per week	19 (8.0%)	23 (9.7%)		
	2-4 times per week	0 (0.0%)	24 (10.1%)		
	Every day	0 (0.0%)	31 (13.0%)		
<b>Blood pressure</b>	Normal	0 (0.0%)	114 (47.9%)	122.403	0.000
	High	73 (30.7%)	41 (17.2%)		
	Low	10 (4.2%)	0 (0.0%)		
<b>Blood cholesterol</b>	Normal	24 (10.1%)	51 (21.4%)	0.398	0.528
	High	59 (24.8%)	104 (43.7%)		
<b>Blood sugar</b>	Normal	41 (17.2%)	69 (29.0%)	0.518	0.472
	High	42 (17.6%)	86 (36.1%)		
<b>Body weight</b>	Normal	30 (12.6%)	80 (33.6%)	28.965	0.000
	Over weight	39 (16.4%)	75 (31.5%)		
	Under weight	14 (5.9%)	0 (0.0%)		
<b>History of heart disease</b>	Yes	38 (16.0%)	110 (46.2%)	14.580	0.472
	No	45 (18.9%)	45 (18.9%)		
<b>Sleep per night</b>	3-6 hours	52 (21.8%)	89 (37.4%)	0.613	0.434
	More than 6 hours	31 (13.0%)	66 (27.7%)		

## Discussion

Our study found level of anxiety was high among cardiac patients. It has observed that 37.5% participants had diagnostic anxiety, 28% had moderate anxiety and 35% cardiac patients had no clinical symptoms of anxiety. These findings are similar with another study results in Bangladesh that an abnormal degree of anxiety affected 49.5%, whereas borderline anxiety affected 23.9% of the study population<sup>21</sup>. These results highlight the necessity of including mental health services into cardiac care. In our study, anxiety levels among CAD patients were marginally higher, which may be attributed to post-illness unemployment, illiteracy levels, ignorance about the prognosis of CAD, or even a lack of counseling options in a setting of developing nations.

Patients' sex was revealed to be significantly correlated with their level of anxiety, with men reporting higher levels of anxiety than women. Similar results were observed in Brazil<sup>22</sup>, while research from America<sup>24</sup> discovered that female CAD patients experienced much higher levels of anxiety than male patients. This study also found participants age between (41-50) years had more anxiety level 83 (34.9%) which is in line with study conducted in the United States<sup>23</sup>. Additionally, fast food consumption, a lack of exercise, high blood pressure, high cholesterol, being overweight, and a history of heart disease were all found to be strongly related with anxiety in cardiac patients ( $P < 0.05$ ). These results, along with the presence of the additional characteristics listed below in cardiac patients, should serve as a warning to cardiologists to take into account mental health care in cardiac practice: PTSD symptoms, low self-esteem, somatic symptoms, active smoking, physical inactivity, and longer disease duration.

As was previously noted in individuals with heart failure, a high level of resilience appears to lessen the symptoms of psychological issues<sup>25,26</sup>. Similar findings were made by another study, which indicated that those with comorbid diseases including HTN and DM were at 2.8 times higher risk than people without comorbidities<sup>21</sup>. Among patients with cardiovascular disease, anxiety disorders are common and associated with poor cardiovascular health, including the development and progression of CAD and HF<sup>27</sup>.

## Conclusion

HADS scale measurement in this study found that 37% participants had diagnostic anxiety, 28% had moderate anxiety and 35% cardiac patients had no clinical symptoms of anxiety. Study findings also revealed that eating fast-food, less physical activity, high blood pressure, blood cholesterol level, overweight and history of heart diseases were significantly associated with anxiety among cardiac patients ( $P < 0.05$ ). It is essential to incorporate mental health services into cardiac rehabilitation, as evidenced by the unexpectedly high occurrence of anxiety symptoms among cardiac patients in Bangladesh. Study findings might not be possible to generalize due to smaller sample size and sociodemographic variations which can be a great limitation of this study. Information regarding various variables were based on self-reports by the participants own which may lead to reporting bias. Besides these, the study has greater implications to guide health professionals in understanding factors contributing to anxiety and taking most effective patient management strategies for reducing anxiety's negative consequences.



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