

# Prevalence of Depression and Anxiety among Patients of Cardiovascular Diseases

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## ABSTRACT

**Objective:** To determine the prevalence of anxiety and depression among the patients having cardiovascular conditions.

**Study Design:** Cross sectional Study

**Place and Duration of Study:** This study was conducted at Chaudhry Muhammad Akram Teaching Hospital / Azra Naheed Medical & Dental College, Lahore for a duration of six months from February 2020 to July 2020.

**Materials and Methods:** One hundred and forty-two patients of cardiovascular disease were selected. Patients' detailed demographics including age, sex, marital status, socioeconomic status, profession and education were recorded after taking written consent. Patients were issued with a questionnaire. These patients were selected randomly with the help of hospital administration. AKUADS questionnaires were used to estimate the prevalence of anxiety and depression among CVD patients. Patients who scored 19 or above were considered as suffering from anxiety and depression. Data was analyzed by using SPSS-24.0 software

**Results:** The mean (SD) age of the patients was 45.4 (8.1) years. Female patients were in majority (58.5%). 96 (67.06%) had depression and anxiety. Patients with family history of anxiety and depression were 29%. Most of the CVD patients belonged to the middle socio-economic class. Majority were suffering from dysfunctional behavior, agoraphobia, and obsessive-compulsive disorder.

**Conclusion:** It is concluded that depression and anxiety are strongly linked with cardiovascular diseases such as Hypertension, Ischemic heart Disease and Heart Failure. These risks must be identified by the treating physician and hence appropriate interventions be taken for managing these symptoms. The awareness of mental stress and conditions needs improving and addressed accordingly as is often forgotten while prioritizing cardiovascular illness.

**Key Words:** Depression, Anxiety, Cardiovascular disease, Hypertension, Ischemic heart Disease, Heart failure.

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## INTRODUCTION

Enormous studies have been done on the impact of depression and anxiety in patients with heart diseases and the aggravation of mental health issues concomitantly with cardiovascular conditions<sup>1,2</sup>. Cardiovascular disease promotes depression and anxiety and their coexistence may affect the QoL (quality of life) of patients and may cause mortality. Previous several researches have confirmed that the patients of early forties and fifties were diagnosed with cardiovascular disease.<sup>3</sup>

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The patients with CVD showed significant impact of depression and anxiety on their efficacy towards treatment and prognosis.<sup>4</sup> Approximately 1 out of every 5 patients with CVD has major Depressive Disorder (MDD).<sup>5</sup> In 2002, it was revealed that MDD was the 4<sup>th</sup> major cause of worldwide disability and by 2030 it is anticipated to become the 2<sup>nd</sup> major cause of worldwide disability.<sup>6</sup> It is observed that post-myocardial depression increasingly prevailed in younger population.<sup>7</sup> Depression and anxiety causes behavioral and physical changes which promotes the occurrence of CVD and these may facilitate and progress to disturb the neuroendocrine and autonomic nervous system, which ultimately leads to disturbance in cardiac rhythm regularities.<sup>8,9,10</sup>

Depression may play as a catalyst between CVD and psychosocial factors as it may cause smoking as well as other substance misuse. Further it may reduce physical activity, improper diet, and failure to act in accordance with medical advice. Mental disorders like depression and anxiety mostly occur in long running and chronic cardiovascular diseases as they are related to an increased risk of hospitalization and as a result of this the overall mortality increases.<sup>11,12</sup>

There is need to focus more on the recognition of such mental disorders with their interventions so that the patients with CVD may be provided with good care leading to better outcomes for both physical as well as mental health.

### MATERIALS AND METHODS

This cross-sectional study was done at Chaudhry Muhammad Akram Teaching Hospital/ Azra Naheed Medical & Dental College. Lahore for duration of six months from 1<sup>st</sup> February 2020 to 31st July 2020. A self-administered questionnaire was given to the patients. These patients were selected randomly with the help of hospital administration. Current research was conducted with the approval of the head of the department. Full consent was taken from the patients for this study. AKUADS (Agha Khan University Anxiety and Depression Scale) was used to access the anxiety and depression levels.<sup>13,14</sup> Patients who scored 19 or greater were considered as suffering from anxiety and depression. AKUADS has specificity of 81%, sensitivity of 74%, a positive predictive value of 63%, and negative predictive value of 88%<sup>13</sup> at a cut off score of 19 points.<sup>[14]</sup> All data was analyzed by using SPSS-21. Addition questions were also included in this study to examine the correspondence between socio-demographic characteristics and the frequency of depression and anxiety. It was made possible to ensure the full confidentiality of the identity of the respondents as they were asked not to write any identifying explanations on the questionnaires. To investigate the distribution of our data, descriptive analysis was made.

### RESULTS

**Table No.1: Descriptive Characteristics of Patients**

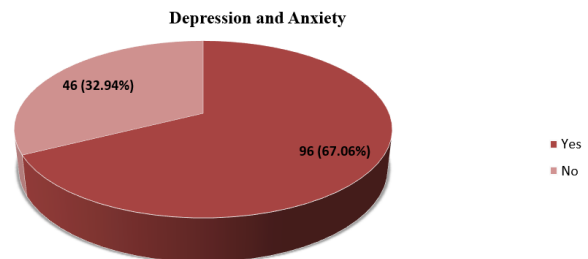
Characteristic	frequency n	%
Mean age (SD)	45.4±8.1	-
Age:		
30-40	25	17.6
41-50	45	31.6
51-60	72	50.7
Marital Status		
Married	133	93.7
Unmarried	9	6.3
Gender		
Male	59	41.5
Female	83	58.5
Socio-economic Status		
Low	46	32.39
Middle	62	43.67
High	34	23.94
Education		
Literate primary	55	38.7
High school	66	46.4
Intermediate	24	14.79
Family History of CVD		
Yes	38	26.76

No	104	73.24
Disease Duration		
<10 years	46	32.39
>10 years	96	67.61

**Tale No 2: Risk Factors Associated with Depression and Anxiety**

Charact-eristic	Frequ-ency	Depression and anxiety Yes	Depression and anxiety No	P-value
Age:				0.03
30-40	25	9 (36)	16 (64)	
41-50	45	21 (46.67)	25 (55.56)	
51-60	72	66 (91.67)	6 (8.33)	
Marital Status				N/S
Married	133	89 (66.92)	44 (33.08)	
Unmarried	9	7 (77.77)	2 (22.23)	
Gender				0.032
Male	59	30 (50.85)	29 (49.15)	
Female	83	66 (79.52)	17 (20.48)	
Socio-economic Status				0.028
Low	46	40 (86.96)	6 (13.04)	
Middle	62	37 (59.68)	25 (40.32)	
High	34	19 (55.88)	15 (44.12)	
Education				0.002
Literate primary	55	45 (81.82)	10 (18.18)	
High school	66	40 (60.61)	26 (39.39)	
Intermediate	24	11 (45.83)	13 (54.17)	
Family History of CVD				0.01
Yes	38	33 (86.84)	5 (13.16)	
No	104	63 (60.58)	41 (39.42)	
Disease Duration				0.001
<10 years	96	54 (56.25)	42 (43.75)	
>10 years	46	42 (91.30)	4 (8.70)	

Depression and anxiety were found in 96 (67.06%) patients while 46 (32.94%) patients had no depression and anxiety. (Figure 1).



**Figure No 1: Frequency of Depression and Anxiety**

Out of 142 patients, 59 (41.5%) were male while 83 (58.5%) were females. 25 (17.6%) patients were in between 30 to 40 years of age, 45 (31.6%) patients were in between 41 to 50 years and 72 (50.70%) patients were in between 51 to 60 years, mean age of patients was 45.4±8.1 years. 133 (93.7%) patients were married while 9 (6.3%) were unmarried. 46 (32.39%) patients

had low socio-economic status, 62 (43.67%) had middle and 34 (23.94%) patients had high socio-economic status. 55 (38.7%) patients had primary level education, 66 (46.4%) had high school and 21 (14.79%) had intermediate. Different levels of anxiety and depression were noted after the careful evaluation and calculations of all the variables. Low socio-economic status, low education, older age, disease duration, female gender, and family history of CVD were the significant risk factors for depression and anxiety with p-value <0.05. (table 2)

## DISCUSSION

CVD is often followed by anxiety disorders and is often inevitable as cardiac functional syndromes. Depression induces behavioral and physiological changes that can lead to and accelerate the development of CVD<sup>[13, 14]</sup>. Smoking, alcohol and substance misuse, physical activity reduction, an inappropriate diet and compliance to medical advice cannot be accommodated immediately due to depression. Factors including autonomic nervous system activation and hormone disturbances, metabolic disorders and inflammation can be the trigger due to psychosocial factors with CVD. These factors may then result in an increased accumulation of platelets as well as endothelial dysfunction.

In present study 59 (41.5%) were male while 83 (58.5%) were females. 25 (17.6%) patients had ages of 30 to 40 years, 45 (31.6%) patients were having ages 41 to 50 years 72 (50.70%) patients had ages 51 to 60 years, mean age of patients was 45.4±8.1 years. 133 (93.7%) patients were married while 9 (6.3%) were unmarried. 46 (32.39%) patients had low socio-economic status, 62 (43.67%) had middle and 34 (23.94%) patients had high socio-economic status. 55 (38.7%) patients had primary level education, 66 (46.4%) had high school and 21 (14.79%) had intermediate. These results were comparable to many of previous studies<sup>[15-16]</sup>.

We found that 96 (67.06%) patients had depression and anxiety (alone or combined) while 46 (32.94%) had no symptoms of depression and anxiety. A study conducted by Dhital PS et al<sup>[17]</sup> regarding depression and anxiety in cardiac patients and they reported depression found in 23.8% patients and anxiety found in 27.4% patients.

The findings and the results after the analysis of all the data from 142 patients with cardiovascular disease proves that the frequency of depression and anxiety increased as the disease progressed. In this study, we observed the risk factors like age, sex, marital status, family history of CVD, education, low socio-economic status and low education were correlated with the frequency of anxiety and depression among the patients of cardiovascular diseases.

These results were comparable to many of previous studies [18-19]. It is found that participation in social activities and patient's quality of life plays key role in prevention from depression and anxiety. The significant impact of depression and anxiety on quality of life and its potential relation to mortality has been reported. An expert working group of the National Heart Foundation of Australia that reviewed the evidence had mixed findings. They concluded that there is an independent causal association between depression, its etiology, and prognosis of CVD, but did not find such a strong relationship with anxiety disorders/panic disorder<sup>[20]</sup>. On the other hand, Kawachi et al<sup>[21]</sup> showed an increase risk of sudden cardiovascular death among patients with panic and phobic symptoms. Many studies point toward an increased risk of sudden cardiac death in patients with depression as well<sup>[22-23]</sup>.

Many observational studies suggest that the lack in social support play a key role in delaying the complete prognosis of cardiovascular diseases in depression patients<sup>[24]</sup>. For the improvement of depressive symptoms, exercise interventions can be more effective as pharmacotherapy<sup>[25-26]</sup>. However, it is difficult particularly for the depressed individuals to achieve motivation to begin and sustain behavioral change. It is need of the hour to focus on how these patients could be engaged and motivated in behavioral change plans and how to get support for these patients from health care providers, family, and social networks<sup>[27-28]</sup>.

More studies are however needed to support the link between the socioeconomic factors and chronic cardiovascular conditions. Individual risk factors and their association to the CVS conditions, if done, will support our study.

Moreover, cardiovascular conditions with grave outcomes or lesser survival years might as well be linked to more psychological adverse outcomes. This requires a separate research.

## CONCLUSION

There is a close association between anxiety and depression with the increased risk of cardiac-related events and morbidity and mortality in patients with CVD. Depression and anxiety prevailed among the cardiovascular disease patients particularly in the chronic disease patients. There was the lack of acceptance of psychological diseases by the patients and hence, they had less response towards the interventions. Low socio-economic status and low literacy rate of patients were the major reasons behind the increased prevalence of anxiety and depression among cardiovascular patients.

### Author's Contribution:

Concept & Design of Study: Javaria Khan  
Drafting: Hena Athar

Data Analysis: Marryam Riaz  
 Revisiting Critically: Javaria Khan, Hena Athar  
 Final Approval of version: Javaria Khan

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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