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Depression and Anxiety Symptoms in Coronary Artery Disease

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ABSTRACT

Background: Psychiatric morbidity such as depression and anxiety are common among patients with CHD. One study indicated that 32.5%and 17.5%of patients with CHD have depression and anxiety symptoms, respectively. Most studies showed depression as an important disorder that leads to an increase in cardiovascular events, readmission to hospital, and CHD mortality. The coexistence of physical and psychiatric morbidity negatively affects the course and outcome of both the conditions resulting in increased over all burden of disease. Identification of psychiatric disorders (anxiety and depression) in CAD patients has shown to improve prognosis and quality of life of patients with CAD. Patients treated for their depression and anxiety might better adhere to risk factor modifications, prescribed medications, and rehabilitation programs.

Materials and methods: Descriptive cross-sectional research study design was used to find out the anxiety and depression of patients with CAD attending Tertiary care Teaching Hospital. The nonprobability, purposive sampling technique was used to select the required sample size. Researcher identified the sample from OPD by verbally asking the patients about their age and purpose of visit to OPD. Then medical file was reviewed to confirm the information given by patient. Semistructured interview schedule for the sociodemographic variables, disease related variables, behaviour related variables, and support system was developed by researcher based on extensive literature review.

Result: Table 1 shows that, out of 90 respondents, 50% were between the ages of 40-60 years. The mean age of the respondents was 55.03±15.99 years. Similarly, 66.7% were male, 96.4% were married, and 77.8% were living with their spouse. Our study shows that two-thirds (66.7%) of the respondents were diagnosed with myocardial infraction followed by angina pectoris (20%) and ischemic heart failure (13.3%).Regarding mode of treatment, more than two-thirds (70%)of the respondents had surgery. Likewise, half of the respondents (50.0%) had other comorbid conditions.

Conclusion: There was a high level of depression and anxiety in this sample of cardiac patients. The results point to characteristics of patients in particular need for mental health screening and suggest possible targets for intervention such as strengthening of social support and of physical activity. The integration of mental health services into cardiac rehabilitation in Palestine and comparable cultural settings is warranted from the time of first diagnosis and onward.

Keywords: Depression, Anxiety, Cardiovascular diseases, Predictors, Prevalence, Cardiac rehabilitation

INTRODUCTION

Psychiatric morbidity such as depression and anxiety are common among patients with CHD. One study indicated that 32.5%and 17.5%of patients with CHD have depression and anxiety symptoms, respectively. [1] Most studies showed depression as an important disorder that leads to an increase in cardiovascular events, readmission to hospital, and CHD mortality. [2] The coexistence of physical and psychiatric morbidity negatively affects the course and outcome of both the conditions resulting in increased over all burden of disease. [3]

Depression is highly prevalent in patients with cardiovascular disease (CVD) and portends adverse cardiovascular outcomes and increased health care costs. One in 5 patients with coronary artery disease or heart failure is depressed, a prevalence that is at least 3 times greater than in the general population. [4] An even greater proportion of stroke survivors—nearly 1 in 3—is depressed after stroke. Coronary heart disease (CHD) and heart failure patients with depressive symptoms are more likely to have physical limitations and poor quality of life, even after accounting for objective measures of cardiac function. [5] Patients with comorbid CVD and depressive symptoms are also at increased risk for recurrent cardiovascular events and mortality. [6] For example, depressed patients with acute coronary syndrome have double the risk of future major adverse cardiovascular events, a level similar to conventional risk factors such as reduced left ventricular ejection fraction and diabetes. [7]

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This is true whether depression is defined by a clinical diagnosis (i.e., major depressive disorder) or by a self-report symptom severity measure. [8] Prior studies also show a dose-response relationship between depressive symptoms and cardiac events in patients with CHD, with even mildly elevated depressive symptoms associated with poor prognosis. [9] The cardiotoxic effects of depressive symptoms have been consistently observed despite the continual improvement in cardiovascular interventions, medications, and care. [10] Based on the strength of the evidence linking depression with poor prognosis after acute coronary syndrome, the American Heart Association issued a 2014 Scientific Statement recommending that depression be elevated to the status of a risk factor in acute coronary syndrome survivors. [11]

Noncommunicable diseases (NCDs) are the common public health problem worldwide. They cause 70% of deaths globally. Almost three quarters of all NCD deaths and 82% of the 16 million people who died prematurely, or before reaching 70years of age, occur in low- and middle-income countries. [12] Among all NCDs, cardiovascular disease (CVD) is the leading global cause of death globally. [13] Majority of CVD cases were hypertension (47%) followed by cerebrovascular accident (16%), congestive cardiac failure (11%), ischemic heart disease (7%), rheumatic heart disease (5%), and myocardial infarction (2%). [14]

The general objective of the study was to find out anxiety and depression among patients with coronary artery disease.

MATERIALS AND METHODS

Descriptive cross-sectional research study design was used to find out the anxiety and depression of patients with CAD attending Tertiary care Teaching Hospital. The nonprobability, purposive sampling technique was used to select the required sample size. Researcher identified the sample from OPD by verbally asking the patients about their age and purpose of visit to OPD. Then medical file was reviewed to confirm the information given by patient.

Semistructured interview schedule for the sociodemographic variables, disease related variables, behaviour related variables, and support system was developed by researcher based on extensive literature review. Hospital Anxiety and Depression Scale (HADS), developed by Zigmond and Snaith in 1983 and validated was used to assess anxiety and depression. It had 7 items related to anxiety and 7 items related to depression.

Statistical Analysis

The data was edited, coded, and entered in EpiData3.1 and then exported to IBM SPSS 25 program for analysis. Data was analyzed using descriptive statistics, i.e., frequency, percentage, mean, and standard deviation to describe the patient's demographic variables, anxiety, and depression. Chi square test was used to determine association between different selected variables with level of anxiety and level of depression. Spearman's correlation coefficient test was used to find out the relationship between anxiety and depression of the patients with CAD.

RESULTS

Table 1 shows that, out of 90 respondents, 50% were between the ages of 40-60 years. The mean age of the respondents was 55.03±15.99 years. Similarly, 66.7% were male, 96.4% were married, and 77.8% were living with their spouse.

Table 1: Sociodemographic variables of there spondents n=90.

Socio-demographic Variables	Frequency	Percentage
Age group (in years)		
19-39	17	18.9
40-64	45	50
65 above	28	31.1
Mean ± SD=55.03±15.99 Min:20 Max:79		
Sex		
Male	60	66.7
Female	30	33.3
Living with		
Spouse	70	77.8
Single	20	22.2
Type of family		
Nuclear	58	64.4
Joint	32	35.6
Educational status		
Literate	55	61.1
Illiterate	35	38.9

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Employment status after illness		
Employed	50	55.6
Unemployed	40	44.4
If employed, occupation(n= 106)		
Housework	27	30
Agriculture	18	20
Service	20	22.2
Business	25	27.8

Table 2: Disease related variables of there spondents n=90.

Variables	Frequency	Percent
Type of CAD		
Angina pectoris	18	20
Myocardial infraction	60	66.7
Ischemic heart failure	12	13.3
Mode of treatment		
Medical	27	30
Surgical	63	70
Presence of co-morbidities		
Yes	45	50.0
No	45	50.0
Family history of CAD		
Yes	10	11.1
No	80	88.9

Table 2 shows that two-thirds (66.7%) of the respondents were diagnosed with myocardial infraction followed by angina pectoris (20%) and ischemic heart failure (13.3%). Regarding mode of treatment, more than two-thirds (70%) of the respondents had surgery. Likewise, half of the respon-dents (50.0%) had other comorbid conditions.

Table 3: Level of anxiety and depression of there spondents n=90.

Level	Frequency	Percentage
Anxiety		
No anxiety (0-7)	49	54.4
Borderline anxiety (8-10)	17	18.9
Anxiety caseness (11-21)	24	26.7
Depression		
No depression (0-7)	45	50.0
Borderline depression (8-10)	22	24.4
Depression caseness (11-21)	23	25.6
Total	90	100.0

Possible score of anxiety: 0-21; possible score of depression: 0-21

Table 3 shows that 26.7% of the respondents had anxiety caseness and 18.9% had borderline anxiety. Similarly, 24.4%of the respondents had borderline depression and 25.6% haddepression caseness.

Table 4: Association of level of anxiety with different variables

	No anxiety n (%)	Borderline anxiety n (%)	Anxiety caseness n(%)		
Gender					
Male	34(63)	10(18.5)	10(18.5)	18.258	<0.001
Female	12(33.3)	8(22.2)	16(44.4)		
Living with					
Spouse	50(56.3)	10(20.7)	12(23.0)	8.758	0.034
Single	3(39.4)	2(15.2)	5(45.5)		
Occupation status (n= 52)					
Housework	4(25)	4(25)	8(50.0)		
Agriculture	4(36.4)	3(27.2)	4(36.4)	23.999	0.001*
Service	8(61.5)	3(23.1)	2(15.4)		

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Business	10(83.4)	1(8.3)	1(8.3)		
Economic status					
Enough to run family	39(56.5)	11(15.9)	19(27.5)	19.925	<0.001
Not enough to run family	5(23.8)	6(28.6)	10(47.6)		

Table 4 shows that the level of anxiety was significantlyassociated with sex of the respondents where females had more anxiety cases than males. Moreover, respondents who were living single had more anxiety caseness than respondents who were living with their spouse. Similarly, respondents who were involved in housework had more anxiety caseness than other occupation. The results further demonstrated that respondents whose family income is not sufficient to family had more anxiety caseness than respondents whosefamily income is not enough to run family.

Table5: Association of level of depression with different variables.

	No depression n(%)	**Borderline depression n (%)**	**Depression caseness n(%**		
Living with					
Spouse	36(50)	20(27.8)	16(22.2)	20.754	<0.001
Single	4(22.2)	4(22.2)	10(55.6)		
Education status					
Literate	34(63)	10(18.5)	10(18.5)	19.858	<0.001
Iliterate	12(33.3)	8(22.2)	16(44.4)		
Level of education					
Up to secondary	8(42.1)	7(36.8)	4(21.1)	9.133	0.023
Above secondary	24(68.6)	6(17.1)	5(14.3)		
Occupation status (n= 106)					
Housework	5(35.7)	4(28.6)	5(35.7)	25.621	0.001*
Agriculture	3(27.2)	4(36.4)	4(36.4)		
Service	10(76.9)	2(15.4)	1(7.7)		
Business	9(64.3)	3(21.4)	2(14.3)		
Presence of co morbidities				9.239	0.033
Yes	21(46.6)	12(26.7)	12(26.7)		
No	25(55.6)	11(24.4)	9(20)		
Family history of CAD				0.488	0.786*
Yes	5(55.6)	2(22.2)	2(22.2)		
No	41(50.6)	22(27.2)	18(22.2)		

Table 5 shows that respondents who were living single had more depression caseness than respondents who were livingwith their spouse. Likewise, level of depression was more prevalent among illiterate respondents having CAD than literate respondents having CAD, which further demonstratethat the higher the education the lower the depression cases.Moreover, respondents who were involved in agriculture hadmore depression caseness than other occupation.

DISCUSSION

In the present study, the observed rates of depressive and anxiety symptoms were high. Only 21% (CDS) and 46% (DASS-anxiety) of patients did not exhibit any symptoms of depression and anxiety, respectively. Our findings point to the need for integrating mental health care into cardiac treatment. It is noteworthy that several factors found to be associated with depression and anxiety may serve as screening and possibly as intervention targets.

Rates of mental health problems reported in earlier studies for patients with different cardiac diagnoses and in different cultural and health system settings ranged from 14 to 73% for depressive symptoms and 15 to 48% for anxiety symptoms. These varying rates are explained in part by differences in sample sizes, the instruments and cutoffs used for classifying depression and anxiety and the type of cardiac disease targeted in studies.

Lower rates of depression than in the current study were observed in other settings including Norway (14%), USA (15%), Brazil (26.4%) and Pakistan (14%). [13] Similar among these studies, was the common psychiatric instruments used to assess for depression, all of which were not specific for cardiac populations. In contrast, a different study assessing depression using the CDS found a rate of 73.2% of severe depression in Iranian patients with acute coronary syndrome (ACS), a rate even higher than in this study. [14]

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Similar anxiety rates to the current study were observed in Iran (28.5%) and Pakistan (18%). [15] Interestingly, in another study conducted in Brazil, Meneghetti *et al*. found a very high prevalence of 48.4% for anxiety symptoms among ACS patients using the Hospital Anxiety and Depression Scale (HADS). [16] A study in the USA also reported, 37% of patients with MI due to spontaneous coronary artery dissection screened for anxiety using the Generalized Anxiety Disorder 7-Item Scale (GAD-7). [17]

Mental health problems are generally high in the Palestinian population. [18] In the absence of a healthy control group the results of this study do not allow to conclude that depression and anxiety are more common in cardiac patients. However, cardiac patients are in particular need of treatment for depression and anxiety given that existing evidence points to their adverse effect on the course of heart disease. Furthermore, cardiac rehabilitation may be an efficient starting point to address mental health issues beyond the patient and to the extended family and social network. Given the shortage of mental health services available and the local economic instability in Palestine, the provision of additional services needs to be implemented in a cost-effective way. The identification of subgroups of cardiac patients at higher risk of depression and anxiety can guide screening and interventions.

In perspective of mental health screening among cardiac patients, focus should be given to females and less educated patients. The higher rates of depression and anxiety seen in these sub-groups were previously described in literature. [19] Women seem to be more vulnerable to the trauma caused by cardiac events, which leads to a deterioration in depression and anxiety symptoms. [20] As observed in some, but not all studies, the association between gender and social status may not be direct as suggested by the disappearance of gender and social status differences in the fully adjusted models. [21]

The presence of the following additional characteristics in cardiac patients should be a red flag for cardiologists to consider mental health care in cardiac practice: symptoms of PTSD, low levels of self-esteem, somatic symptoms, low QoL components, active smoking, physical inactivity, and longer disease duration. In contrast, a high level of resilience seems to reduce symptoms of psychological problems, as previously observed in patients with heart failure. [22] Unlike findings reported previously, comorbidities were not consistently more common in the presence of mental health disorders. [23] Little is known about the association of PSTD symptoms with depression and anxiety in cardiac patients. A study conducted on 813 patients who received angiograms at a large U.S. Veterans Administration Medical Center found depression to be positively associated with PTSD, smoking and alcohol consumption. [24] Low MCS and PCS scores on the SF-12, smoking, and chest pain were recently identified as the strongest predictors of longitudinally sustained high levels of depression and anxiety in CHD patients. [25]

Factors serving as targets for intervention include smoking, physical activity and social support. Smoking cessation interventions are crucial for cardiac rehabilitation, however in the presence of depression, results are less successful and interventions may need to be adapted. [26] Sedentary behavior, a risk factor for depression in the general population, was previously associated with depression according to the Beck Depression Inventory-II in patients hospitalized for ACS. [27] In a small non-randomized intervention study with heart failure patients, aerobic interval training decreased symptoms of depression over a period of 12-weeks. [28] In studies on breast cancer, promotion of physical activity may have the additional benefit of improving selfesteem, a factor associated with depression and anxiety in this study and a predictor of mortality in the general population. [29] In addition, according to previous studies, the inverse association between high social support and low levels of anxiety and depression points to another important target for prevention as it is supported by firm evidence from previous studies. Poor social support among patients with ACS was observed in secondary analyses of a randomized trial to reduce the effectiveness of treatment with antidepressants. [30] The quality of social support plays an important role, as overprotective behaviors of partners can have an adverse effect. [31]

CONCLUSION

The alarmingly high rate of depression and anxiety symptoms observed in cardiac patients in Palestine points to the need for integrating mental health care into cardiac rehabilitation. The prognostic value of depression and anxiety with regard to the course of heart disease, adherence to treatment and quality of life needs to be investigated. Treatment of psychological problems from the disease onset and onwards is crucial considering longer disease duration puts individuals at higher risk of being depressed. The expertise of social scientists and medical anthropologists is needed for identifying efficient means to overcome barriers related to the stigmatization of psychological disorders.

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