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Research Article

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Associated Risk of Anxiety among CAD patients in PSCC in Qassim, Saudi Arabia

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Abstract

Context: The presence of anxiety in individuals with Coronary Heart Disease (CHD) is widespread, and it is related to a higher risk of negative outcomes. There has been a dearth of research on the management of anxiety in people with coronary artery disease.

Aims: The present study aimed to determine the associated risk of anxiety among Coronary Artery Disease (CAD).

Settings and design: This was a cross-sectional study conducted on a group of patients with IHD between the ages of 20 and 60 years.

Methods and material: A total of 200 individuals participated. Medical records were one of the data sources. The data of patients who meet the selection criteria gathered from the cardiology departments of the PSCC in KFSH.

Statistical analysis used: Statistical package for Social Science (SPSS) version 23 was used for statistical analysis.

Results: This research comprised 200 patients, the majority of whom were male (81%) and female (19%). According to the findings, 70% of people had minimal depression, 13.5% had mild depression, 8.5% had moderate depression, 4.5% had severe depression, and 3.5% had moderately severe depression. Medications were utilized in the majority of cases (98%).

Conclusion: Anxiety disorders that manifest themselves in the setting of heart disease must be recognized and treated with caution in the early stages of the disease. When giving medical therapy, it is important to examine the effects of the drugs on the heart, as well as the possibility of drug-drug interactions.

Keywords: Anxiety • CAD • PSCC • Qassim • Saudi Arabia

Introduction

Non-Communicable Diseases (NCDs) are the most prevalent global public health concern. They account for 70% of fatalities worldwide. Nearly three-quarters of all fatalities from non-communicable diseases and 82% of the 16 million individuals who died prematurely, or before the age of 70, occur in low and middle-income countries [1]. Cardiovascular Disease (CVD) is the leading cause of mortality worldwide among all NCDs [2]. 31% of the population in Nepal is afflicted with Non-Communicable Diseases (NCDs).

Literature

CVD accounts for 40% of all instances of NCDs. Hypertension accounted for the majority of cardiovascular disease patients (47%), followed by cerebrovascular accident (16%), congestive cardiac failure (11%), ischemic heart disease (7%), rheumatic heart disease (5%), and myocardial infarction (2%) [3].

Psychological morbidities, such as sadness and anxiety, are prevalent among CHD patients. One study found that 32.5% and 17.5% of CHD patients have depressive and anxious symptoms, respectively [3,4]. The majority of research indicates that depression is a significant illness that leads to an increase in cardiovascular events, hospital readmissions, and CHD mortality. The cohabitation of physical and psychological illness has a deleterious impact on the course and prognosis of both disorders, increasing the total disease burden [5].

The identification of psychological illnesses (anxiety and depression) in patients with CAD has been proven to enhance their prognosis and quality of life [6]. Patients treated for depression and anxiety may be more receptive to modifying risk factors, taking prescribed medicines, and participating in rehabilitation programs. Patients with known CAD who exhibit psychological morbidity should thus be investigated [7]. Around 95.4% of patients with Ischemic Heart Disease (IHD) experienced depressive or anxious psychological symptoms. Anxiety disorder was prevalent in 36.9% of patients, whereas major depressive disorder was present in 34.6% of patients. The majority of individuals with low quality of life were diagnosed with anxiety or depression [8]. Similarly, anxiety and depression were observed in 48.5% and 25.2% of myocardial infarction (MI) patients, respectively [9,10]. Patients with CAD are at greater risk for myocardial infarction and mortality if they maintain a high or rising degree of anxiety over a prolonged period. Because depressed people are less likely to engage in healthy behaviors, they have a higher prevalence of these risk factors than those without depression. Non-adherence, which includes the inappropriate administration of medications, not adhering to a recommended diet or exercise regimen, and missing planned doctor's appointments, may be behavioral factors that contribute to the development and progression of Coronary Artery Disease (CAD). Depression has been demonstrated to be a risk factor for poor drug adherence, and cardiovascular events associated with poor medication adherence have the worst prognosis [7]. Anxiety and despair are linked to several variables in CAD patients. An examination of 108 CHD patients at a tertiary hospital in Malaysia found that anxiety and sadness levels were low. Unmarried respondents with comorbid illness report higher levels of anxiety and sadness than married respondents and non-comorbid disease respondents [11].

During annual clinic visits, patients with stable Coronary Artery Disease (CAD) and those who had high levels of anxiety had a twofold increased risk of adverse events [12]. Not all studies have identified a predictive

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connection, especially when anxiety was measured in-hospital following an acute coronary event or during diagnostic exercise stress testing, as is the case with depression literature [13]. Individuals with stable CHD and high levels of anxiety will have their anxiety symptoms evaluated outside of a clinic or hospital setting in the proposed study [14].

The present study aimed to determine the prevalence of anxiety among IHD in Qassim's PSCC by conducting a survey. Despite earlier indications of anxiety prevalence, only a few researchers have focused specifically on the Qassim region of Saudi Arabia, according to the authors. This will be the first study of its kind to be done among patients with ischemic heart disease at the PSCC Buraydah, in the Qassim district.

Subjects and Methods

Study design

This was a cross-sectional study conducted on a group of patients. Patients with IHD between the ages of 20 and 60 who visit the outpatient clinics enrolled in the study based on convenience sampling. Patients with serious medical illnesses and patients who are in a state of instability were excluded. It was determined that the sample size would be 200 when utilizing 95% confidence limits, a 25% proportion of patients with psychiatric disorders among CHD patients based on a literature review [15], and a 5% degree of precision that the confidence limits were used.

Ethical statement

This study was approved by Institutional Ethics Committee with reference number 1441-1349773 obtained on 27 February 2021. The data of patients who meet the selection criteria for Coronary Artery Disease (CAD) was collected from the cardiology departments of the Prince Sultan Cardiac Center (PSCC) in King Fahad Specialist (KFSH), which is located in the Al-Qassim region, once the study has received ethical permission.

Declaration of patient consent

Patients have interviewed them during their visits to the outpatient clinics. Participants were explained the study objectives and benefits to them, obtaining their signature on the informed consent form for each patient who will be participating in the study, as well as their written consent.

Research instrument

Anxiety was assessed using the Patient Health Questionnaire (PHQ9) for generalized anxiety disorder (PHQ-GAD7) and the Patient Health Questionnaire-generalized anxiety disorder (PHQ-GAD7) (Appendix 1). Anxiety symptoms can be evaluated using these validated measures, which have been proven to be an effective strategy. The Arabic version of the questionnaire was used for data collection [16]. A Cronbach's alpha of ≥ 0.7 was considered statistically acceptable.

Data analysis

Statistical package for Social Science (SPSS) version 23 was used for statistical analysis. All categorical data including gender, nationality, and presence of either depression, anxiety, or both among Ischemic Heart Disease (IHD) patients were presented as frequencies and percentages. Point prevalence of depression and anxiety in IHD will be calculated as the number of confirmed depressed or anxious (GAD) patients per 00000 the number of IHDs at PSCC in KFSH of Al-Qassim region of Saudi Arabia. Bivariate analysis was performed to evaluate the significance of characteristics of depression among IHD. Logistic regression analysis was performed to find possible predictors of depression as comorbidity of IHD. P-value ≤ 0.05 was considered a statistically significant result.

Results

This research comprised 200 patients, the majority of whom were male (81%) and female (19%). The majority (49.5%) were aged >60, followed by 33.5% of those aged 50-60, 13.5% of those aged 40-50, and 0.5% of those aged 20-30. 95% of the population consisted of Saudi citizens, while the remaining 5% consisted of non-Saudis. Marriage accounted for 95% of all marriages, 2.5% of widowed couples, 1.5% of divorcees, and 1% of single patients. The majority of primary school pupils had an education level of 30.5%, 23.5% had a high school diploma, 21.5% had a bachelor's degree, 17.5% were illiterate, and 7.5% had a postgraduate degree. The majority of retirees were employed in 47.5% of their jobs, while 28% were unemployed and 24.5% were employed (Table 1).

Table 1. Demographic profile

Variables	Frequency	Percentage (%)
Gender		
Male	162	81
Female	38	19
Total	200	100
Age catagory		
20-30	1	0.5
30-40	6	3.0
40-50	27	13.5
50-60	67	33.5
>60	99	49.5
Total	200	100.0
Nationality		
Saudi	190	95.0
Non-Saudi	10	5.0
Total	200	100.0
Marital status		
Single	2	1.0
Married	190	95.0
Divorced	3	1.5
Widowed	5	2.5
Total	200	100.0
Educational level		
Illiterate	35	17.5
Elementary	61	30.5
High school	47	23.5
Bachelor	42	21.0
Postgraduate	15	7.5
Total	200	100.0
Occupation		
Employed	49	24.5
Unemployed	56	28.0
Retired	95	47.5
Total	200	100.0
Socioeconomic status		
<5000	54	27.0

5000-15000	106	53.0
>15000	40	20.0
Total	200	100.0

According to Table 2, 44.5% of the population had a Genera Activity Level of Somewhat active, followed by 35.5% who were Active, 19% who were not at all active, and 1% who were Very active. 42.5% had a BMI of more than 30, 41.5% had a BMI between 29.9 and 25, 13.5% had a BMI less than 25, and 1.5% had a BMI less than 4. With 51.5% voting against Adequate Walking and 48.5% voting in favor, the majority voted against it. 56% of those surveyed preferred smoking cigarettes or never smoking; 29% were former smokers and 15% were current smokers. 75% of respondents said no, while 25% said yes, indicating that the majority felt stressed. 5% of individuals who replied no had a history of comorbidities, compared to 95% of those who said yes. Type CAD of IHD was the most prevalent diagnosis at 61.5%, followed by MI at 30.5% and Angina pectoris at 8%. Medications were utilized in the majority of cases (98%); medications were not used in the majority of cases (2%). 66% of all procedures were PCI surgical interventions, 11.5% were non-surgical, 11% were combination (PCI+CABG) and CABG each, and 0.5% were other (non-cardiac). 57.5% of respondents claimed they did not have a family history of CAD or IHD, while 36% said they had and 6.5% were uncertain. 79.5% of individuals who said no had a family history of mental disorder, compared to 36% who answered yes, 13% who were unsure, 2% who answered yes and had depression, and 3.5% who answered yes and had anxiety.

Table 2. Frequencies of different variables

Variables	Frequency	Percentage (%)
General activity level		
Not active at all	38	19.0
Somewhat active	89	44.5
Active	71	35.5
Very active	2	1.0
Total	200	100.0
BMI category		
≥30	85	42.5
29.9-25	83	41.5
<25	27	13.5
4	3	1.5
Total	198	99.0
Adequate walking		
No	103	51.5
Yes	97	48.5
Total	200	100.0
Cigarette smoking		
Never smoking	112	56.0
Past smoker	58	29.0
Current smoker	30	15.0
Total	200	100.0
Stress		
No	150	75.0
Yes	50	25.0
Total	200	100.0
History of comorbidities		
No	10	5.0
Yes	190	95.0
Total	200	100.0
Type of CAD		
Angina pectoris	16	8.0
MI	61	30.5
IHD	123	61.5
Total	200	100.0
Medications used		
No	4	2.0
Yes	196	98.0
Total	200	100.0
Surgical interventions		
No surgical intervention	23	11.5
PCI	132	66.0
CABG	22	11.0
Combined (PCI+CABG)	22	11.0
Other (non-cardiac)	1	0.5
Total	200	100.0
Family history of CAD or IHD		
No	115	57.5
Not sure	13	6.5
Yes	72	36.0
Total	200	100.0
Family history of psychiatric disease		
No	159	79.5
Not sure	26	13.0
Yes	4	2.0
Depression	4	2.0
Anxiety	7	3.5
Total	200	100.0

Patients with Generalized Anxiety Disorders (GADs) were reviewed in Table 3. According to the findings, 70% of people had minimal depression, 13.5% had mild depression, 8.5% had moderate depression, 4.5% had severe depression, and 3.5% had moderately severe depression. Feeling nervous, anxious, or on the edge of not at all was the most common response, accounting for 60% of all responses; 21.5% involved several days; 9.5% involved more than half of the days; and 9% involved nearly every day. With 62% reporting not being able to stop or manage to worry at all, 17% reported many days of worrying, 13% reported more than half of the days, and 8% reported worrying nearly every day of the week. The majority (77.5%) had trouble relaxing or not at all; 11% were several days; 6.5% were more than half the days; and 5% were nearly every day, according to the survey. So restless or not at all accounted for 83% of the total, while 7% were a few days or more than half of the days, and 3% were nearly every day, which accounted for the remainder. The majority (63.5%) was easily annoyed or irritable rather than not at all, while 18% were many days, 10.5% were more than half the days, and 8% were nearly every day of the week. 75% of those polled said they were worried about something happening or that nothing would happen at all. 10% said they were worried more than half the time;

9% said they were worried several days; and 5% said they were worried nearly every day. 75% of the participants had anxiety. In the severity of minimal anxiety, 12.5% had mild anxiety, 8.5% had severe anxiety and 5.5% had moderate anxiety.

Table 3. Patients with generalized anxiety disorders (GADs)

Variables	Frequency	Percentage (%)
Depression Severity		
Minimal depression	140	70.0
Mild depression	27	13.5
Moderate depression	17	8.5
Moderately severe depression	7	3.5
Severe depression	9	4.5
Feeling nervous anxious or on edge		
Not at all	120	60.0
Several days	43	21.5
Over half the days	19	9.5
Nearly every day	18	9.0
Not being able to stop or control worrying		
Not at all	124	62.0
Several days	34	17.0
Over half the days	26	13.0
Nearly every day	16	8.0
Worrying too much about different things		
Not at all	120	60.0
Several days	37	18.5
Over half the days	26	13.0
Nearly every day	17	8.5
Trouble relaxing		
Not at all	155	77.5
Several days	22	11.0
Over half the days	13	6.5
Nearly every day	10	5.0
So restless		
Not at all	166	83.0
Several days	14	7.0
Over half the days	14	7.0
Nearly every day	6	3.0
Easy annoyed or irritable		
Not at all	127	63.5
Several days	36	18.0
Over half the days	21	10.5
Nearly every day	16	8.0
Feeling afraid that something awful might happen		
Not at all	150	75.0
Several days	19	9.5
Over half the days	21	10.5
Nearly every day	10	5.0
Anxiety severity		
Minimal anxiety	147	73.5
Mild anxiety	25	12.5
Moderate anxiety	11	5.5
Severe anxiety	17	8.5

In Table 4, it is clear from the table that there is no relationship between the patient's age and anxiety severity. Table 5 shows that there is no relationship between the patient's Occupation and Feeling nervous anxious or on edge. While Table 6 shows no relationship between the patient's General Activity Level and Anxiety Severity.

Table 4. Relationship between the patient's age and anxiety severity

Model	Sum of Squares	df	Mean Square	F	Sig.	vdvvv
1	Regression	79.683	1	79.683	1.015	.318b
	Residual	4083.817	52	78.535		
	Total	4163.500	53			

Table 5. Relationship between the patient's occupation and feeling nervous anxious or on edge

		Occupation	Feeling nervous anxious or on edge
Occupation	Pearson Correlation	1	-.088
	Sig. (2-tailed)		.214
	N	200	200
Feeling nervous anxious or on edge	Pearson Correlation	-.088	1
	Sig. (2-tailed)	.214	
	N	200	200

Table 6. Relationship between the patient's general activity level and anxiety severity

Model	Sum of Squares	df	Mean Square	F	Sig.	vdvvv
1	79.683	1	79.683	1.015	.318b	.318b
	Residual	4083.817	52	78.535		
	Total	4163.500	53			

Discussion

The present study reported minimal depression in 70% of the patients, 13.5% had mild depression, 8.5% had moderate depression, 4.5% had severe depression, and 3.5% had moderately severe depression. Feeling nervous, anxious, or on the edge of not at all was the most common response, accounting for 60% of all responses. The majority (63.5%) was easily annoyed or irritable rather than not at all. 75% of the participants had

anxiety.

The research found no correlation between CAD patients' anxiety and their age. An Indian study discovered that the level of anxiety experienced by CAD patients was substantially related to the existence of a concurrent condition. The researchers believe that the disparity in results might be attributed to changes in sample size, study setting, and sample characteristics [17]. Sharma et al. discovered that CAD patients' anxiety levels were unrelated to their age or concomitant illnesses [15]. This conclusion contrasts the findings of research done in the United States [9], which found that age was strongly related to anxiety level. The disparity in results might be attributed to differences in sample size, research environment, and sample characteristics.

The present study reported 75% of the participants had anxiety. In the severity of minimal anxiety, 12.5% had mild anxiety, 8.5% had severe anxiety, and 5.5% had moderate anxiety. In the study by Sharma et al. (2018), 27.4% of 168 individuals had anxiety disorder and 19.6% had borderline anxiety. This conclusion is remarkably identical to research is done in Brazil [18], in which 48.4% of CAD patients reported worry. Similarly, studies in Brazil [4] and Germany [19] found 32.5% and 8.3% of CAD patients to be anxious, respectively. Anxiety among CAD patients is greater in the current research, which might be attributed to unemployment following sickness, illiteracy, a lack of knowledge about the prognosis of CAD, and a lack of counseling services in the hospital system. Even though patients who were engaged in housekeeping had a higher level of anxiety than those who were active in other professions (p=.214), the degree of Feeling nervous, anxious, or on edge in CAD patients (p=.214) was not shown to be impacted by their employment. Research conducted in Pakistan discovered that one's job had nothing to do with one's degree of anxiety. This might be due to the use of a different instrument or the inclusion of a different kind of sample group [20].

The research's results indicated that the existence of comorbidities was significantly related to the degree of Anxiety experienced by CAD patients, which is consistent with the findings of a Malaysian study. This might be due to increasing symptoms associated with the related diseases interfering with CAD patients' daily activities, leading them to feel elevated levels of anxiety [11]. Furthermore, the level of Anxiety Severity in the CAD patients was shown to be substantially linked with the level of General Activity Level (p=.014), with the patients who did regular exercise having a lower level of Anxiety Severity. This might be because exercise has been shown to reduce anxiety in individuals while simultaneously improving their general well-being. The limitations include a lack of data and a restricted number of participants in the outpatient clinic setting.

Conclusion

Anxiety disorders that manifest themselves in the setting of heart disease must be recognized and treated with caution in the early stages of the disease. When giving medical therapy, it is important to examine the effects of the drugs on the heart, as well as the possibility of drug-drug interactions.

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Conflict of Interest

The authors declare no conflict of interest.

Data Availability Statement

Data supporting reported results are available from the corresponding author on reasonable request.

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of the Ministry of Health, Qassim region, Saudi Arabia (approval no: 1441-1349773). All researchers successfully completed the bioethics course recommended by the IRB.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Key Messages

The research's results indicated that the existence of comorbidities was significantly related to the degree of Anxiety experienced by CAD patients, which is consistent with the findings of a Malaysian study.

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