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A cross-sectional Study to Assess Symptoms of Depression Anxiety and Stress in Cardiovascular Patients in Tertiary Care Hospital

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Abstract

Background: In recent decades, depression was known as Melancholia. It had been considered as a serious spiritual disorder rather than a physical state. The ubiquity of depression in CVD patients has been observed for more than 50 years. In Pakistan, depression affects probably 34% of the population and both inheritance and ecological factors play a vital role in its progression. **Objective:** The primary objective of the study was to determine the prevalence of depression, anxiety, and stress associated with some risk factors in cardiac hospitalized patients. **Methods:** A cross-sectional study was conducted for 3 weeks at Nishtar Hospital Multan. Depression, anxiety, and stress scale (Dass 42) containing 42 questions had been used. Data analysis involved descriptive statistics using the latest version of SPSS. **Results:** A total of 108 patients were selected randomly. The final results of the current study were observed as depression was found to be 14.8% moderate and 13.9% very severe. Anxiety was found to be 17.6% moderate and 8.3 % very severe while stress was 22.2% moderate and 2% very severe. 57.4% of females were observed having mental disorders while only 42.5% of males were observed. 55.6% of smokers and 44.4% non-smokers were found to be the victim of these mental disorders. Depression was found to be more in patients with age group 40-60 years. Patients having diabetes mellitus, hypertension and angina were more associated with these disorders. On the basis of literacy 43% educated and 56.5% uneducated patients were observed. **Discussion:** Multivariate analysis were used to access the depression, anxiety, and stress in cardiovascular patients. Among them depression is a major cause of cognitive in the world. Most severely depressed patients were diabetic and had cardiovascular disorder. **Conclusion:** It is concluded that poor lifestyle, socio-economic factors, gender, age, marital status and concomitant disorders play a significant role in causing these disorders so they can be overcome by providing compassionate care, proper education, psychiatric monitoring, and social support.

Keywords: Cardiovascular disease; Depression; Anxiety; Stress; Risk-factors; Dass-42

Introduction

Cardiovascular disease (CVDs) is the general term used for the disease associated with the circulatory system. Non-communicable diseases (NCDs), CVDs are the principal causes of death considering for more than half of the global disease burden (Benziger, Roth *et al.* 2016). Prevalence rate of CVDs in world is increasing day by day. Prevalence rate of cases of total CVD nearly doubled from 271 million (95% uncertainty interval in 1990 to 523 million in 2019.Also the number of CVDs deaths increased to 18.6 millions in 2019 (Roth, Mensah *et al.* 2020). Hospitalized patients develop mental health problems like depression, anxiety and stress. Approximately one out of every five patient with CVDs experiences depression (Elderon and Whooley 2013). Depression which may be defined as a disease associated with physiological change in an individual

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affecting the mental health status and including the nervous system activation and cardiac rhythm disturbances. In US depression and cardiovascular diseases are the two most common diseases and are the two major source of ailment in US and worldwide (Joynt, Whellan *et al.* 2003). In one study Huffman stated that in a population of healthy man and women there is 60% expansion in the outset of the cardiac diseases due to depression (Huffman, Celano *et al.* 2010). Stress and anxiety also have a great impact on CVDs patients. In approximately 50% of the CVDs patients anxiety disorders are concomitant with depression disorders (Tully, Cosh *et al.* 2014).

There are greater number of risk factors associated with depression anxiety and stress in cardiac patients. These risk factors may be related to socio-demographic variables like age, gender, marital status and some socioeconomic variables like income, education and some lifestyle factors like smoking history and physical activity. Females and housewives have social issues suffering from sickness and heart diseases. Low socioeconomic status (SES) is also a greater risk factor in CVDs patients. When people do not have enough to eat or cannot come up with the expenses of their families they tend to suffer from depression and anxiety. Lifestyle risk factors e.g smoking, the standard of living, and education also play an important part. Smokers have been at greater risk of developing CVDs (Hamrah, Hamrah *et al.* 2018). Similarly, poor education in people has been a cause of stress in patients. Mental health problems have a physiological effect on the course of cardiac diseases. The clinical factors and concomitant conditions like hypertension, diabetes, myocardial infarction, coronary artery disease CAD, angina, heart failure were also considered responsible for developing depression, anxiety, and stress in cardiac patients. The incidence of depression in hypertensive patients becomes 40.1%. Moreover, depression and anxiety have been found to aggravate the diagnosis and quality of life in patients with cardiovascular disorders.

Problem statement:

Depression is associated with hospital readmissions. There is inadequate information about the prevalence of depression, anxiety, and stress among CVDs patients in developing countries. The association between depression, anxiety, and stress with cardiovascular disorders is complex. In Pakistan, there is a lack of mental health services therefore it is critical for general practitioners and cardiologists to assess the prevalence of mental health problems (depression, anxiety, and stress) in CVD patients.

Objective of study

The study aims to assess the prevalence and incidence of depression, anxiety, and stress in CVDs patients and to find the association of these mental health problems with some risk factors e. g age, gender, marital status, education, smoking status, and concomitant diseases.

Methodology

This cross-sectional study was carried out in the cardiology ward of Nishtar Hospital, a tertiary care hospital in Multan. In this study, Stages of depression, anxiety, and stress were also determined, and % of the severity of depression, anxiety, and stress was also evaluated in hospitalized cardiac patients.

The study participants were selected through a random sampling technique. The sample size was determined by calculating on the "Raosoft sample size calculator" keeping the chance of error (significance level) to 5 percent and original results (confidence interval/power of the study) to 95 percent. The sample consists of 108 (N =108) patients admitted to cardiac wards as research participants. A total of 108 cardiac patients were interviewed. Verbal approval was obtained from the participants before data collection. Data was collected from March 4th to March 24, 2019.

Inclusion criteria

All patients hospitalized for more than 48 hours were included in the study. Furthermore, among the total population only willing and having the ability to answer questions were asked to participate in the research. After taking verbal consent they were considered for the study.

Exclusion criteria

Individuals who were not able to answer questions of Dass-42 due to unconsciousness and serious illness were excluded.

Instrument

The data collection instrument was a pre-structured self-administered questionnaire. The questionnaire consists of two sections: the first section focused on socio-demographic questions (age, gender, marital status, social status, and smoking history). The second section consists of questions related to patient disease history and co-morbidities. After collecting patient data Dass-42 scale was used to assess the prevalence of depression, anxiety, and stress in hospitalized cardiac patients. DASS-42 scale is a reliable and valid instrument containing 42 questions.

Ethical considerations

Ethical approval of the study was obtained from the Department of Pharmacy Practice, Faculty of Pharmacy B Multan Bahauddin Zakariya University.

Data analysis

The data were computed and analyzed using Statistical Package for Social Sciences (version 25) IBM SPSS Statistics, New York, United States). Descriptive analysis was carried out as applicable, and each item in the questionnaire was reported as a percentage and frequencies.

Results

A total of 108 patients (N=108) was selected randomly and interviewed. The majority of the patients were in the age range of 50-70 years. 57.4% were females and 42.5% were males. 23.1% were widowed and 38% were married and remainders were unmarried. 56.5% were uneducated and 43.5% were educated. The majority of the participants were smokers 55.6%. In the case of their illness, 10.2% had experienced a myocardial infarction (MI), 11.1% had diabetes and ischemic heart disease, 13.9% suffered from diabetes and angina and 18.5% had hypertension and diabetes mellitus. The final in this study were observed as depression was found to be 14.8% moderate and 13.9% very severe. Anxiety was found to be 17.6% moderate and 8.3% very severe while stress was 22.2% moderate and 2% very severe.

Table1: Socio-demographic characteristics

Demographic Data		
Age (years)	**Number of participants (N)**	**Percentage (%)**
30-40	9	8.3
40-50	14	13
50-60	29	26.9
60-70	26	24.1
70-80	17	15.7
80-90	13	12
Gender		
Male	46	42.5
Female	62	57.4
Marital status		
Married	41	38
Un-married	42	38.9
Widow	25	23.1
Education		
Educated	47	43.5
Un-educated	61	56.5
Smoking status		
Smoker	60	55.6
Non-smoker	48	44.4

Table2: Concomitant diseases

Name of Disease	**Number**	**% age**
DM*	15	13.9
DM, HTN*	20	18.5
DM, MI*	11	10.2
DM, IHD*	12	11.1
DM, AV block	8	7.4
DM, Angina	15	13.9
DM, Angina , HTN	14	13
HTN, Stroke, Renal failure	13	12

*HTN: hypertension; DM: Diabetes mellitus; MI: myocardial infarction; IHD: ischemic heart disease

Discussion

Our study shows that there is a high incidence of depression and anxiety disorder in hospitalized cardiac patients. This issue becomes even more dominant in developing countries like Pakistan where there is already a deficiency of mental health services. An expert group of the National Heart Foundation of Australia had discussed the evidence with mixed findings. They concluded that there is an independent link between depression, its etiology, and prognosis of CVD, but did not find such a strong link with anxiety disorders (Dogar, Khawaja *et al.* 2008). On the other hand, a study conducted by kawatchi showed an increased risk of sudden cardiovascular death among patients with mental disorders (Kawachi, olditz *et al.* 1994). In our study, housewives and widow cardiac patients are at increased risk of developing depression and anxiety as compared to males. In our study 42.5% were males and 57.4% were females with cardiac disease.

Table 3: Percentage of depression, anxiety and stress

Depression		
Level	**Frequency**	**%**
Normal	36	33.3
Mild	21	19.4
Moderate	16	14.8
Severe	20	18.5
Very severe	15	13.9
Anxiety		
Normal	32	29.5
Mild	34	31.5
Moderate	19	17.6
Severe	14	13
Very severe	9	8.3
Stress		
Normal	40	44.4
Mild	23	21.3
Moderate	24	22.2
Severe	10	9.3
Very Severe	1	2

In addition, depression is 81% in the uneducated population, while anxiety is 63.2%. In our study 56.5% of patient were uneducated. So, illiteracy is also a possible factor for these mental disorders. According to a study conducted by Haddad, 13.6% of patient with myocardial infarction and angina are more vulnerable to depression. A study conducted by Poli kandrioti found 17.4% and 24.2% depression in heart failure patients (Bahall 2019). In our study, 18.5% of patient with diabetes and hypertension and 10.2% with diabetes and myocardial infarction were associated with depression, anxiety and stress. More mental disorders were observed in a patient with age groups 50-70 years. In another study, it is stated that depression is associated with hypertension. A meta-analysis found that depression increased the risk of hypertension. Adamis et al. found that the incidence of hypertension raised in patients with depression and the depressive mood was associated with high blood pressure level (Adamis and Ball 2000). Also, depression is associated with a high risk of coronary artery disease. Depression is also linked with diabetes. The prevalence of depression has been reported to reach 8.5– 27.3% in diabetic patients (Zhang, Chen *et al.* 2018). In our study, 13.9% of diabetic patients were observed with these mental disorders.

In a study conducted in Brazil 1053 patients were taken 54% were found with severe depression, 19.2% had severe to very severe anxiety, 62.6% had no stress,30% had mild to moderate stress and 7.4% had severe to very severe stress and it is more common among females and less educated patient (Allabadi, Alkaiyat *et al.* 2019). In our study 18.5% patient have severe and 13.9% have very severe depression.17.6% patient have moderate anxiety and 13% have severe anxiety symptoms, stress is moderate in 22.2% patient, severe 9.3% and very severe in 2% patients. The variation in results of both studies is due to sample size. There are some limitations and potential biases in our study that

need to be considered. Firstly, we are not able to determine the association of depression, anxiety and stress with some risk factors as described in a study. Secondly, the sample size of our study is very small therefore we can't collect a reasonable data to strengthen our study. Thirdly, our study is hospital based only, not including the general population so the results may not be applicable to general population. Fourthly, we collect data only in one hospital of Multan that is the weak point of our study. And finally, the accuracy of all the information that we are obtaining from our data is under question because patients feel fear and hesitation about telling their disease and personal information.

Conclusions and Recommendation

The purpose of this research was to determine the prevalence of depression anxiety and stress in CVD patients. High incidence of depression and anxiety is related with hypertension, coronary heart disease and diabetes. There is a strong link between depression and cardiovascular risk. This study showed that women are more depressed as compared to men. Many factors are cause of these disorders. It was determined that a further study of factors like cost of treatment, patient attitude towards treatment, adherence must be considered. It was concluded that mental fitness is based upon physical health. People who are physically unstable are at increased risk for developing mental disorders. Screening of all patients with cardiac disease is essential to identify and treat the patients who are at greater risk of depression.

Conflict of Interest

No conflict of interest found.

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