ABSTRACT

Objective: This study examined the prevalence and risk factors for depression and anxiety in hospitalized cardiac patients in Pakistan.

Methods: All patients admitted to a cardiac unit of a tertiary care hospital in Pakistan over a period of eight weeks were evaluated with clinical interview using Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria, Hospital Anxiety and Depression Scale (HADS), and Quality of Life (QoL) scale.

Results: One hundred patients entered the study. Sixty eight met the criteria for either major depressive disorder, generalized anxiety disorder, or both. A total of 87.5 percent of the entire female sample met the criteria for either a depressive disorder, an anxiety disorder or both. Patients with higher scores on HADS anxiety subscale had longer duration of cardiac illness. Patients with depression and anxiety had poor quality of life on the four domains of QoL scale.
Conclusions: This study shows high prevalence of major depressive disorder and generalized anxiety disorder in cardiac patients in Pakistan. Being female, a housewife, and a widow are high risk factors for developing depression and/or anxiety in this population, requiring close monitoring.

INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death in the United States and in third-world countries. According to World Health Organization’s estimate, depression and cardiovascular disease will be the two major causes of disability-adjusted life years by the year 2020.1 Depression and anxiety have an overall negative impact on various medical illnesses.2 The growth of psychosomatic medicine has witnessed an exponential increase in studies looking at the relationship of heart disease with psychological illnesses. Various psychological states and traits, such as depression, anxiety, tension, stress, and anger, have been implicated as risk factors for CVD.

The relationship between anxiety and depression and cardiovascular disease is complex and multidirectional. In an analysis of Framingham Offspring study, authors found increased stress to be an independent risk factor for CHD and mortality for men.2 There is strong evidence that depression1 and anxiety4 are independent risk factors for the development of CAD.

In Pakistan, which is a developing country, the authors could not find any recent studies on the prevalence of cardiac mortality or any study exploring the incidence of patients presenting to an emergency room with non-cardiac chest pain. To our knowledge, this is the first study performed in Pakistan to evaluate the prevalence and risk factors for depression and anxiety in hospitalized cardiac patients.

The study, however, is not an exact representation of different demographic groups in Pakistan. For example, the majority of Pakistan’s population is rural, with a ratio of rural to urban being approximately 68 percent versus 32 percent, whereas the study population was 73 percent urban. On the other hand, the literacy is only 26 percent, whereas in the study population, literacy rate was about 55 percent. The group studied had somewhat higher income as compared to the average population in Pakistan.

METHODS

This study was conducted in a cardiac unit of District Headquarters Hospital (DHQ), Punjab Medical College, a tertiary care hospital in Pakistan that serves a large population of Faisalabad and its periphery. The Department of Cardiology has 12 coronary care unit (CCU) beds with monitoring facilities. The department has a 20-bed unit for more stable patients. The patients could either be admitted directly to the cardiac unit or transferred from the CCU. Patients suffering from unstable illness or sever illness are usually admitted to the CCU and then transferred to cardiac unit once they are medically stable.

The department’s diagnostic procedures include electrocardiography (ECG), exercise tolerance test (EET), bedside X rays unit, a fully operational fluoroscopy unit, and angiographies. In the CCU, on average 2 to 3 temporary pacemakers are placed every day and 1 to 2 permanent pacemakers every month. The cardiology staff used clinical history, physical examination, and cardiac diagnostic tools (lab workup, ECG, enzymes, angiographies) to diagnose various cardiac illnesses.

Patients admitted to the cardiac unit over eight weeks during the year 2005 were evaluated for the study. Patient consent was received from all subjects except for two. The authors do not have information about the patients who did not give consent. Authors obtained history including duration of cardiac illness, number of previous admissions in addition to demographic information. The authors categorized the patients as having severe cardiac illness if they were admitted to the CCU or came from the monitored beds in the emergency room. Patients who were admitted directly to the cardiac unit were considered as non-severe. Clinical interview using Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition (DSM-IV) criteria were conducted. Urdu (Pakistan’s national language) translated version of Hospital Anxiety and Depression Scale (HADS) and World Health Organization Quality of Life Brief (WHO QOL-BREF) scales were used. These translated versions were validated for use in Pakistan and have been used in other studies. The research committee of Punjab Medical College approved the study.

Instruments. HADS. HADS5 is a self-administered scale to evaluate depression and anxiety in medically ill hospitalized patients. HADS contain 14 items. It has two subscales for anxiety (A) and depression (D). The scale is a four-point rating system for the 14 items giving maximum scores of 21. Scores of 11 to 21 are considered abnormal.

WHO QOL-BREF. WHO QOL-BREF was developed by WHO QOL group6 in an attempt to develop a quality of life assessment that would be applicable cross culturally; the WHO QOL-BREF is based on a four domain structure: physical health, psychological health, social relationships, and environment. The WHO QOL-BREF is also self-administered; for the patients who could not read, raters assisted them.

RESULTS

One hundred patients participated in the study. The mean age was 52.2±11.12, 60 percent were male, 84 percent were...
married, 10 percent were widowed, with the remainder divorced or never married. The majority of the sample was from urban areas (73%), and 55 percent had received some form of education. In terms of their illness, 39 percent had experienced an myocardial infarction (MI), 25 percent had ischemic heart disease, 17 percent suffered from acute coronary syndrome (ACS), with the balance experiencing angina or other CVD. Duration of the illness was bimodal with 48 percent reporting less than one month and 28 percent reporting greater than one year. Sixty five percent were rated as severe in their illness.

Psychiatric diagnoses. In this sample, 68 percent were diagnosed with a depressive disorder (47%), an anxiety disorder (16%), or both (5%) according to DSM-IV criteria. Comparisons across these groups are shown in Table 1. Rates of depression and anxiety were very high among women (87.5 %) versus 55 percent for men. Those with longer duration of illness (over 6 months) tended to have higher depression and anxiety scores than those with shorter duration, with these differences reaching significance for anxiety scores (9.9 vs. 7.2, F=6.8, p=0.01) but not for depression (11.2 vs. 9.1, F=2.9, p=0.09).

Quality of life. A multivariate analysis of variance was performed to examine differences on the four quality of life domains as a function of psychiatric diagnosis. There was a significant difference across diagnoses on the domains [Wilks Lambda=0.68, F(12,246.3)=3.18, p<0.001]. Across each domain (i.e., physical health, psychological health, social relations, and environment), those with depression or depression and anxiety had poorer quality of life than those with no psychiatric diagnosis. The differences remained even after controlling for severity of illness.

**DISCUSSION**

This study shows high prevalence of major depressive disorder and generalized anxiety disorder in hospitalized cardiac patients in Pakistan. This issue becomes even more important in developing countries like Pakistan where there is already a lack of mental health services, thus making it more important for the general practitioners and cardiologists to understand the importance of risks of untreated anxiety and depression in cardiovascular patients. Complicating this picture is the prevailing social stigma associated with mental illness in Pakistan.

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. On the other hand, Kawachi et al.,

### Table 1. Demographic and psychiatric characteristics of CVD patients

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>NORMAL</th>
<th>ANXIETY ONLY</th>
<th>DEPRESSION ONLY</th>
<th>ANXIETY AND DEPRESSION</th>
<th>STATISTIC</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>32</td>
<td>16</td>
<td>47</td>
<td>5</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>% of severe CVD</td>
<td>75</td>
<td>43.8</td>
<td>70.2</td>
<td>20</td>
<td>X2=12.6</td>
<td>0.05</td>
</tr>
<tr>
<td>% of family psychiatric history</td>
<td>0</td>
<td>6.3</td>
<td>17</td>
<td>20</td>
<td>X2=6.0</td>
<td>0.07</td>
</tr>
<tr>
<td>% female</td>
<td>15.6</td>
<td>81.3</td>
<td>40.4</td>
<td>60</td>
<td>X2=20.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>% more than one admission</td>
<td>34.4</td>
<td>31.3</td>
<td>44.7</td>
<td>60</td>
<td>X2=2.2</td>
<td>0.53</td>
</tr>
<tr>
<td>Duration of illness &gt;6 months</td>
<td>28.1</td>
<td>43.8</td>
<td>38.3</td>
<td>60</td>
<td>X2=2.6</td>
<td>0.46</td>
</tr>
<tr>
<td>HADS-Anxiety</td>
<td>3.5 (2.8)</td>
<td>11.4 (4.9)</td>
<td>9.8 (4.4)</td>
<td>12.8 (3.3)</td>
<td>F=22.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>HADS-Depression</td>
<td>4.6 (3.7)</td>
<td>7.5 (3.7)</td>
<td>13.9 (5.2)</td>
<td>12.8 (3.3)</td>
<td>F=30.3</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

CVD: cardiovascular disease; HADS: Hospital Anxiety and Depression Scale.
showed an increase risk of sudden cardiovascular death among patients with panic and phobic symptoms. Many studies9–11 point toward an increased risk of sudden cardiac death in patients with depression as well.

In our study, being female, a housewife, and a widow seemed to put cardiac patients more at risk for developing depression and/or anxiety in this population. As there is a strong relationship between depression, anxiety, and cardiac illness, hospitalized cardiac patients should be monitored closely for depression and anxiety symptoms. In addition, cardiac patients should be screened for symptoms of depression and anxiety.

Major limitations of this study include lack of use of structured diagnostic clinical interview scales like Structured Clinical Interview for DSM Disorders (SCID),12 small sample size, lack of definite criteria for categorizing patients with severe cardiac illness, and lack of comparison group. Authors also did not have information on the patients who did not give consent for the study. Prospective, controlled studies are needed involving larger sample size, multiple sites, and over a longer period of time.

CONCLUSION

Depression and anxiety disorders are common psychiatric disorders in Pakistan, and their prevalence is high in patients with CVD. Depression and anxiety can affect the mortality and morbidity of these patients; thus it is important to screen for symptoms of anxiety and depression, especially in cardiovascular patients in developing countries.

REFERENCES