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Strong risk factors for depression and anxiety in heart failure patients

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ABSTRACT

Despite advancing medical technology, Heart Failure (HF) is still a prevalent disease with high mortality and high health expenditure. To improve patient outcome and prognosis, it is important to identify the association of risk factors which leads to the co-morbid depression and anxiety in heart failure patients. **Objectives:** To determine the association of depression and/or anxiety with age, gender and ejection fraction in heart failure patients. **Methods:** It is an analytical cross sectional study including 323 CHF patients who visited the to the Faisalabad Institute of Cardiology hospital Out-Patient Department, 250 were males and 73 were females, mean age was 54.1 ± 9.2 years having 70 years as maximum and 25 years as minimum. Data collection was done using Hospital Anxiety and Depression Scale (HADS) questionnaire to assess depression and anxiety. Data was analyzed using SPSS version 24. For quantitative data, mean and standard deviation was calculated and for qualitative data frequency and percentages was calculated. To measure the association of anxiety and depression with age categories, ejection fraction and gender, chi square test was used. P values less than and equal to 0.05 were taken as significant. **Results:** No association of depression and anxiety with gender and Left Ventricular Ejection Fraction (LVEF) was observed. However, depression and anxiety were found to be significantly associated with age. **Conclusions:** The study concluded that age is a strong risk factor of depression and anxiety in congestive heart failure patients. Multidisciplinary health care team approach and interventions are required to cater chronic heart failure (CHF) patients to address the psychological burden.

INTRODUCTION

Despite advancing medical technology, Heart Failure (HF) is still a prevalent disease with high mortality and high health expenditure [1]. The statistics show that every year more than 55,0000 patients are newly diagnosed in the USA and prevalence of HF is 5.7 million (2.2%) for people above the age of 20 years [2]. The rise in the cardiac diseases and life expectancy as a result of interventional therapies for treatment of the coronary artery disease (CAD) or heart failure predicts that the number of heart failure patients will only increase in the future [3]. HF lead to depression and anxiety due to pathophysiological changes as a result of poor circulation, breathlessness and mobility limitations.

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Depression is prevalent in hospitalized patients with heart failure [4].

Clinical characteristics and socio-demographic status causes predisposition to depression and anxiety in HF patients [5]. To optimize the cost on the hospitalization, working on improving patient outcomes and predicting the risk factors associated to depression and anxiety in HF patients is necessary. Heart failure is an illness which results in poor psychological, social, operational, poor physical with an impaired quality of life [6]. The outcome and quality of life is subjected to not only the illness but also on the psychological situation of the patient [6-8]. Heart failure patients having co-morbid depression or anxiety have more physical mobility issues leading to a poor quality of life [9]. Such patients are also predisposed to recurrent cardiac issues and high mortality [10]. Mostly only the physical symptoms are taken into account by the physicians which lead the patient to further specialty and not the psychiatrist [11].

Failure to comprehend the psychological needs of HF patients and lag in the development of multidisciplinary foster approach for early screening could lead to explanations that why the morbidity and mortality of heart failure patients is high. To improve patient outcome and prognosis, it is important to identify the risk factors which leads to the co- morbid depression and anxiety in heart failure patients. Pipenburg has demonstrated that physical training, comprehensive disease management and cognitive behavioral therapy improved prognosis in individual randomized studies [12].

After literature review, not much work done was found regarding the psychological state and risk factors leading to heart failure. This study will elaborate the association of age, gender and ejection fraction with depression and anxiety among heart failure patients.

METHODS

The study was an Analytical Cross-sectional Study from June 2019 to Nov 2019 in Out Patient Department, Faisalabad Institute of Cardiology, Faisalabad, Pakistan. Inclusion criteria was patients having history of compensated Chronic Heart Failure with reduced Ejection Fraction (HFrEF) ≤40% at least for the last one year, symptoms free and at least 72 hours after discharge from hospital due to acute exacerbation, age range of 25-70 years and both genders. The exclusion criteria was the patients who had any other chronic disease (e.g. cancer, rheumatic problem) that can cause psychiatric symptoms in the patient, were already taking treatment for a well-defined psychiatric illness, had history of substance abuse (alcohol or narcotics) during the past 06 months or unable to clearly communicate with the investigator.

After taking ethical approval from ethical committee of Faisalabad Institute of Cardiology and after taking written consent from the patients, data was collected using HADS questionnaire. 323 patients visiting the hospital with reduced ejection fraction were enrolled which fulfilled the criteria. The Hospital Anxiety and Depression Scale (HADS) questionnaire which is semi structured questionnaire, questionnaire was used to collect information data. It took 7-10 min in total. The survey was conducted face to-face with the respondents by the investigator and volunteers in the hospital.

Data was processed and analyzed by using the Statistical Package for Social Science (SPSS) version 24. For quantitative data, mean and standard deviation was calculated and for qualitative data frequency and percentages was calculated. To measure the association of anxiety and depression with age categories, LVEF and gender; Chi square test was used. p values less than and equal to 0.05 were taken as significant.

RESULTS

The mean age of participants was 54.1 ± 9.2 years with minimum and maximum age as 25 and 70 years. There were 5 (1%) subjects in 25-35 years group, 51 (16%) subjects in 36-45 years group, 123 (38%) subjects in 46-55 years group, 115

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(36%) subjects in 56-65 years and 29 (9.0%) subjects were in the 66-70 years old. It was found that more HF patients belonged to the ages of between 46-65 years. There were 250 (77%) male and 73 (23%) female subjects in the study.

		Anxiety		Total
		No	Yes	
Age	25-35	0 (0%)	5 (100%)	5(100%)
	36-45	16 (31.4%)	35 (68.6%)	51(100%)
	46-55	56 (45.5%	67(54.5%)	123(100%)
	56-65	51 (44%)	64 (56%)	115(100%)
	66-70	17 (59%)	12 (41%)	29(100%)
Total		140 (43%)	183(57%)	323(100%)

Table 1: Distribution of participants' age and anxiety
Chi-square = 9.844, P-value = 0.043 (Significant)

(25-35) years age group had 5 subjects with anxiety, (36-45) years age group had no anxiety in 16 subjects and anxiety was found in 35 subjects, (46-55) years age group had no anxiety in 56 subjects and anxiety was found in 67 subjects, (56-65) years age group had no anxiety in 51 subjects and anxiety was found in 64 subjects and (66-70) years age group had no anxiety in 17 subjects and anxiety was found in 12 subjects (Table 1).

		Depression		Total
		No	Yes	
Age	25-35	2 (40%)	3 (60%)	5(100%)
	36-45	17 (33%)	34 (67%)	51(100%)
	46-55	61 (49.5%)	62 (50.5%)	123(100%)
	56-65	47 (41%)	68 (59%)	115 (100%)
	66-70	13 (45%)	16 (55%)	29 (100%)
Total		140 (43%)	183 (57%)	323 (100%)

Table 2: Distribution of participants' age and depression
Chi-square = 8.37, P-value = 0.035 (Significant)

(25-35) years age group had 2 subjects with no depression and 3 subjects with depression, (36-45) years age group had no depression in 17 subjects and depression was found in 34 subjects, (46-55) years age group had no depression in 61 subjects and depression was found in 62 subjects, (56-65) years age group had no depression in 47 subjects and depression was found in 68 subjects and (66-70) years age group had no depression in 13 subjects and depression was found in 16 subjects. (Table 2). In males, 104 subjects had no anxiety, 146 subjects had anxiety and in females, 36 subjects had no anxiety and 37 subjects had high level of anxiety (Table 3). In males, 104 subjects had no depression, 140 subjects had depression and in females, 36 subjects had no depression and 43 subjects had high level of depression (Table 4). Less than 30-40% group LVEF subjects had no anxiety in 118 subjects and anxiety in 153 subjects and less than 30-40% LVEF group subjects had no anxiety in 22 subjects and anxiety in 30 subjects (Table 5). Less than 30-40% LVEF group subjects had no depression in 118 subjects and depression in 153 subjects and less than 30-40% LVEF group subjects had no depression in 22 subjects and depression in 30 subjects (Table 6).

		Anxiety		Total
		No	Yes	
Gender	Male	104 (42%)	146 (58%)	250(100%)
	Female	36 (49%)	37 (51%)	73 (100%)
Total		140 (43%)	183 (57%)	323(100%)

Table 3: Distribution of participants' gender and anxiety
Chi-square = 1.37, P-value = 0.242 (Insignificant)

		Depression		Total
		No	Yes	
Gender	Male	110 (44%)	140 (56%)	250(100%)
	Female	30 (41%)	43 (59%)	73(100%)
Total		140 (43%)	183 (57%)	323(100%)

Table 4: Distribution of participants' gender and depression
Chi-square = 0.195, P-value = 0.660 (Insignificant)

		Anxiety		Total
		No	Yes	
LVEF	30-40	118 (43.5%)	153 (%)	271(100%)
	< 30	22 (42%)	30 (58%)	52(100%)
Total		140 (43%)	183 (57%)	323(100%)

Table 5: Distribution of participants' LVEF and anxiety
Chi-square = 0.027, P-value = 0.869 (Insignificant)

		Depression		Total
		No	Yes	
LVEF	30-40	118 (43.5%)	153 (56.5%)	271(100%)
	< 30	22 (42%)	30 (58%)	52(100%)
Total		140 (43%)	183 (57%)	323(100%)

Table 6: Distribution of participants' LVEF and depression
Chi-square = 0.027, P-value = 0.869 (Insignificant)

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DISCUSSION

Heart failure patients experience more depression as compared to other chronic diseases patients [13, 14]. In the current study, patients were studied using the Hospital Anxiety Depression Scale to assess anxiety and depression in heart failure patients whereas some studies have used Beck Depression Inventory (BDI) [15-17] or Center for Epidemiologic Studies Depression (CES-D) in CHF patients [18].

The HADS questionnaire has been used to assess levels of depression and anxiety in heart failure patients in various other studies. Sokoreli I *et al.*, in Russia (2016) supported that depression is associated with increased mortality with chronic heart failure by HADS and concluded that depression is linked with adverse outcome [4, 19].

The association of anxiety and depression with gender in heart failure patients was also determined in the study. In another study was conducted by. Shi X in 2016 concluded that females belonging to poor families showed more signs of anxiety which is also supported by Alexendri that socio-demographic status play an important role in the mental health profile of the HF patients [4, 5]. However in the present study there was no association found between gender and depression or anxiety.

In the current study depression and anxiety was found to be higher than any other group in the 46-55 years age group and age was found to be strong risk factor for depression or anxiety. A study in Pakistan done by Khan (2012) showed the incidence was more in 51-60 year old age group which corroborates the finding in the current study [20]. Hussain (2019) conducted a large cohort study on 1009 patients in Pakistan, the results of which demonstrated that the depression is high (66%) in CHF patients and related to high mortality. According to the study mental illnesses play a detrimental role in CHF patients [15].

CONCLUSIONS

Depression and anxiety is highly prevalent in congestive heart failure patients. Diagnosing these mental illnesses will increase the awareness for treatment and encourage adherence to medication. Multidisciplinary health care team approach and interventions are required to cater CHF patients to address the psychological burden.

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