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Research Article

An Assessment of Depression, Anxiety and Stress Levels in Heart Failure Patients and Their Correlation with Medication Adherence

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ABSTRACT

Patients with HF experience high levels of anxiety and depression and their quality of life decreases significantly. Mental health illnesses are associated with frequent hospitalizations and increased risk. Off all-cause was mortality. This study was conducted to know the mental health of HF patients. A cross-sectional study was conducted at an outpatient HF clinic in a tertiary teaching hospital. The study participants completed a DASS-21 questionnaire to screen for the presence and severity of depression, anxiety and stress symptoms. MMAS-8 was used to screen the patient's adherence to medication. Out of 100 patients, 53.6% of patients are normal without any psychiatric symptoms, and 46.4% of patients are suffering from psychiatric symptoms. Among them, 17.3% of patients have mild symptoms, 24% have moderate symptoms, and only 5% have severe symptoms related to depression, anxiety & stress. Of 100 patients, 54% have low adherence, 28% have medium adherence, and 18% have high adherence. HF is one of the most clinical diseases associated with a significant reduction in the QOL. Psychiatric symptoms are common in HF patients and they have low medication adherence. Hence, multimodal treatment approaches such as collaborative care models or stepped care from mental health professionals are needed to improve psychiatric and cardiac health.

INTRODUCTION

Inadequate filling and ejection of blood by the heart, whether due to anatomical or functional reasons, causes the clinical syndrome known as heart failure (HF), which in turn prevents the heart from pumping blood and delivering oxygen and nutrients to tissues. There is an increased risk of death when depression, anxiety, and stress (DAS) are present. The HF symptoms like shortness of breath, weariness, edema, rapid heartbeat, and impaired ability to exercise influence the patient's ability to accomplish events such as daily living, socialization, functional status and quality of life. [1]

Enhancing the quality of life for heart failure patients, as it is predominantly a multidimensional variable, is a paramount objective of their healthcare provision.[2] HF has a deleterious influence on all the body systems. It indicates a significant burden on both individuals and the healthcare system. Despite advancements in treatment, mortality is still significant, with roughly half of the patients fading within 5 years of findings.[3] When it comes to interactive tools, maintaining a healthy lifestyle is absolutely essential for heart health. Physical inactivity is likely associated with the onset of heart failure in individuals who do not already have the condition.[4] The use of pharmacologic agents, a stumpy sodium diet, and non-adherence to corporeal idleness are all components of poor self-care that are associated with worse outcomes among HF patients.

Among heart failure patients, at least one in five experience clinically significant depression. There is a robust and

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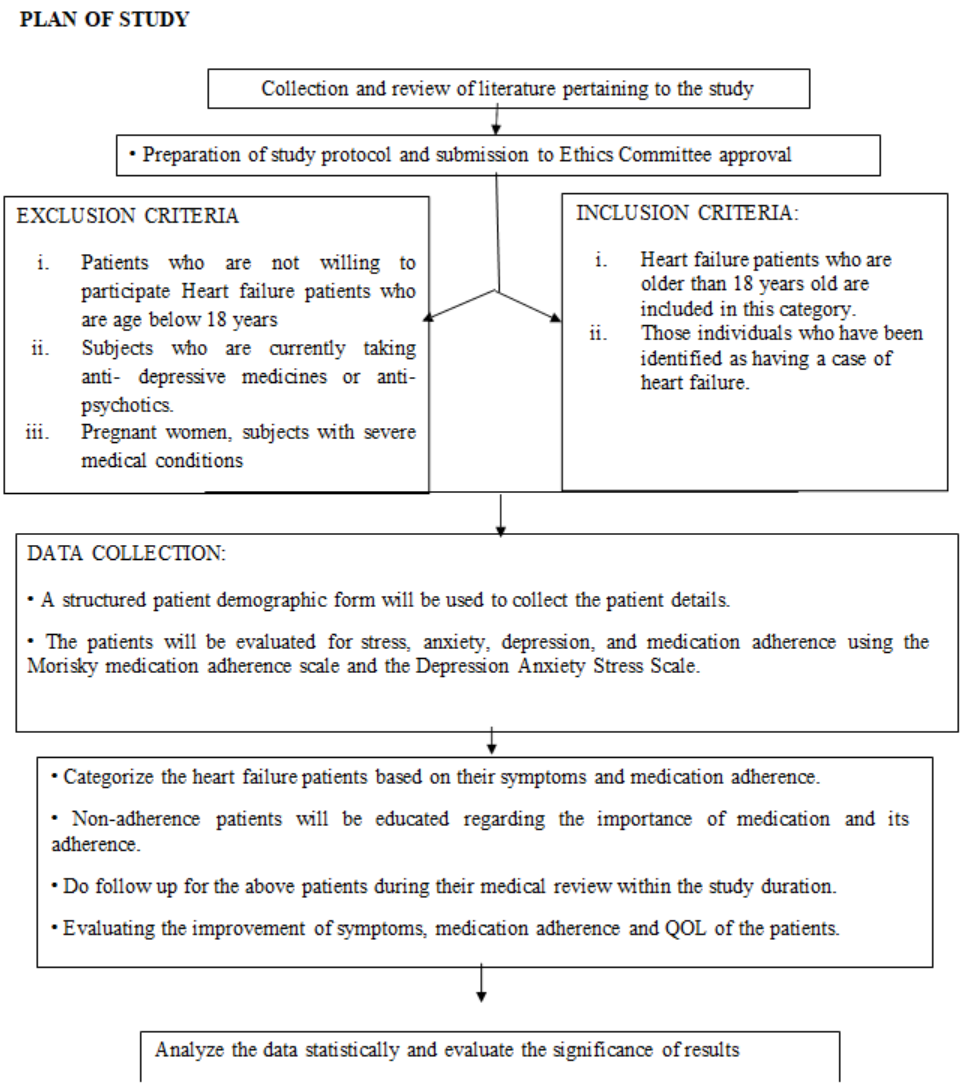

Fig. 1: Plan of the study flow chart

consistent association between depression and worse HF outcomes across a variety of endpoints.[5] A key factor in the success of management is adherence to therapies. Adherence issues are serious problems that impact the patient and the healthcare system as a whole. Signs of patients not taking their medication as prescribed point to rapid worsening of their illness, mortality, and increased healthcare expenditures.[6] Medication issues, disease worsening, functional capacities decline, quality of life (QoL) drops, and healthcare resources like nursing homes, doctor visits, and hospital stays are overused as a result of non-adherence.[7] Despite current developments in finding and organization of such patient's situation, ill-advisedly, the results have been hostile. The purpose of this study was to assess the degree of QoL and drug adherence in HF patients. The goal of the studies is to improve the quality of life for heart failure patients by preventing DAS. [8]

Materials And Methods

The research was conducted in the Department of Cardiology. The study proposal received approval from the Institutional Ethical Committee (IEC) and the Head of the Institution. The IEC authorized the study in February 2023 under IEC number 1434 (Annexure 5).

A bilingual informed consent form (Annexure 1) and a comprehensive data collection form (Annexure 2) were developed for the study. Data collection was carried out according to predefined inclusion and exclusion criteria. Patients were provided with detailed explanations of the study objectives and benefits in their native language to ensure informed and voluntary participation. Inclusion criteria required participants to be willing to participate, have a diagnosis of heart failure, be aged 18 or above, and be receiving medication. Exclusion criteria included

unwillingness to participate, being under 18, currently taking antidepressants or antipsychotics, and pregnancy. The study included all patients diagnosed with heart failure, and their clinical and demographic information was collected and recorded. The DASS-21 and MMAS-8-item scales (Annexure 3 and 4, respectively) were used to assess levels of anxiety, depression, and stress in heart failure patients, along with medication adherence based on validated scales.

Statistical Analysis

The data that was collected was entered into the worksheet that was created in Microsoft Excel. To determine the relationship between the level of DAS and medication adherence, descriptive statistics such as frequency distribution and percentage were utilised in the analysis of this data. Inferential statistics were also utilized to determine the significance of the relationship.

Results

Information from the medical records of 100 patients (100) diagnosed with heart failure in the cardiology department was included in the study. Among the participants, 71% were men (n = 71) and 29% were women (n = 29), represented in Fig. 2.

Based on the data presented in Fig. 3, it can be observed that out of 100 patients, 1% were female and 6% were male. Among the 41 to 50 age group, 31% consisted of 12 females and 19 males, and 27% were 51 to 60 years old, with 5 females and 22 males making up this age group. 3 females and 21 males made up the 24% who were under the age of 61 to 70 years. There were six females and five males under the age of 71, making up 11% of the total.

Social history revealed that 6 participants had a history of smoking, 8 had a history of both alcohol and smoking use, one had a history of tobacco chewing, present eight are consuming alcohol, nine are smoking and 11 are having both habits, and 28 had no social history of tobacco, alcohol and smoking (Fig. 4).

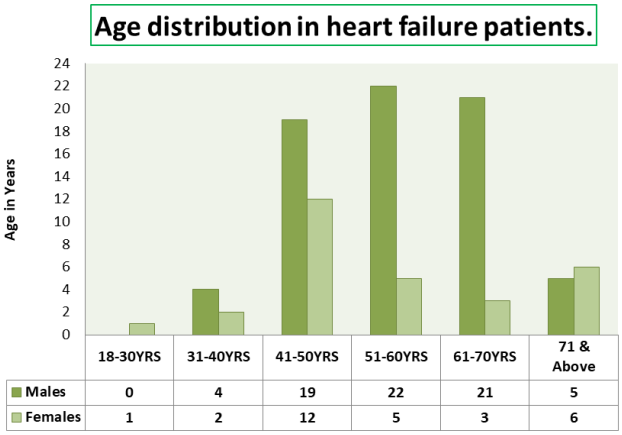

Fig. 3: Age distribution in heart failure patients

Out of a total of one hundred patients, 36 patients are diagnosed with heart failure with mild LV dysfunction of ejection fraction between 40 and 49%, 34 patients are diagnosed with moderate LV dysfunction of ejection fraction between 30 and 39%, 18 patients are diagnosed with severe LV dysfunction of ejection fraction less than 30%, and 12 patients are diagnosed with heart failure with adequate LV function of ejection fraction between 50 and 70% (Fig. 5).

Among 100 patients with heart failure, we found out that nearly 53.67% of patients are normal without depression, anxiety and stress. 17.33% of patients have mild symptoms of depression, anxiety and stress. Among 18 are depressed, 25 are anxious and nine are stressed. 24% of patients have moderate symptoms of depression, anxiety and stress. Among 39 are depressed, 26 are anxious and seven are stressed. About 5% of patients have severe symptoms of depression, anxiety and stress. Among 11 are depression, 4 are anxiety and zero (0) are stress.

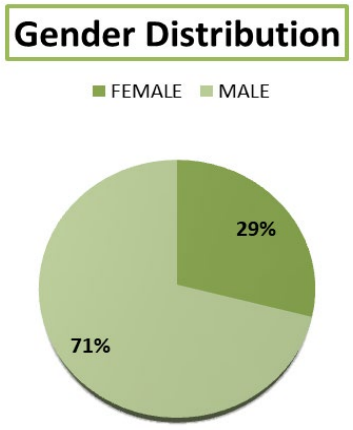

Fig. 2: Gender distribution in heart failure (n = 100) patients

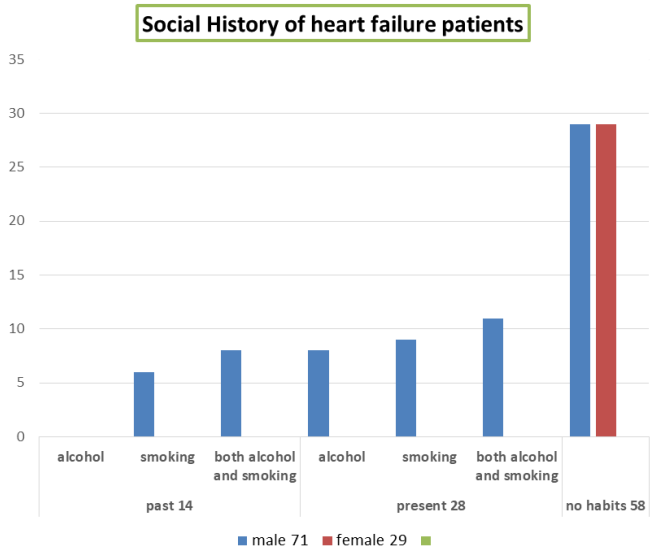

Fig. 4: Social history of heart failure patients

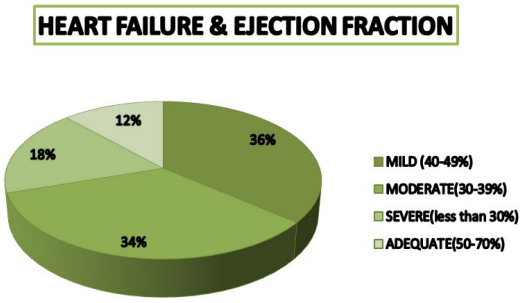

Fig. 5: Number of patients with heart failure and their ejection fraction

Out of 100 patients, 54% (54) patients have low adherence, 28 (28%) patients have medium adherence and 18 (18%) have high adherence (Fig. 6).

A comparison of mental health conditions such as depression, anxiety, and stress with adherence to medication in patients with heart failure (Fig. 7).

Anxiety with Medication Adherence

From 100 patient's anxiety scores were calculated and the following results are: 45 (45%) have normal anxiety. Among them 13 (13%) are high adherence, 14 (14%) are medium adherence and 18 (18%) are low adherence. 25 (25%) patients have mild anxiety; among them, 2 (2%) are high adherence, 5 (5%) are medium adherence and 17 (17%) are low adherence. In 26 (26%) patients have moderate anxiety; among them 3 (3%) are high adherence, 7 (7%) are medium adherence and 16 (16%) are low adherence. 4 (4%) patients have severe anxiety; among them, no one is high adherence, 1 (1%) are medium adherence and 3 (3%) are low adherence.

Depression with Medication Adherence

From 100 patients, depression scores were calculated and the following results are: 32 (32%) have normal depression; among them, 5 (5%) have high adherence, 8 (8%) have medium adherence and 19 (19%) have low

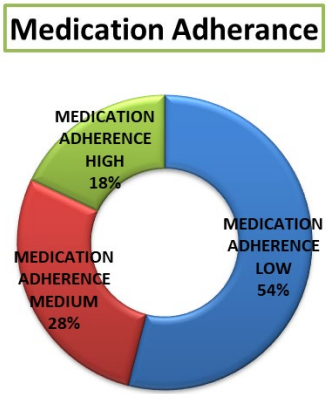

Fig. 6: Medication adherence in heart failure patients

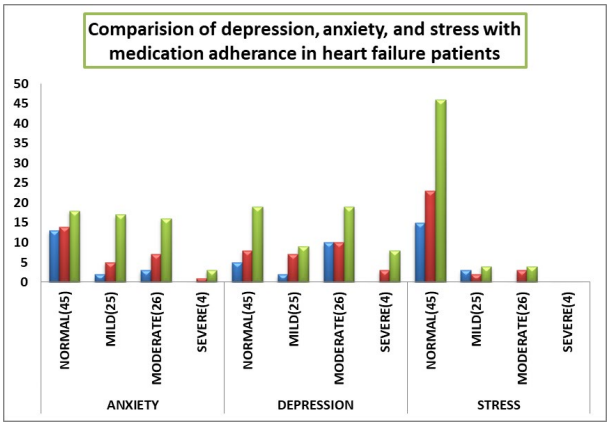

Fig. 7: Comparison of depression, anxiety and stress with medication adherence in heart failure patients

adherence. In 18 (18%) patients have mild depression; among them, 2 (2%) are high adherence, 7 (7%) are medium adherence and 9 (9%) are low adherence.

among 39 (39%) patients have moderate depression; among them 10 (10%) are high adherence, 10 (10%) are medium adherence and 19 (19%) are low adherence. 11 (11%) patients have severe depression; among them no one is high adherence, 3 (3%) are medium adherence and 8 (8%) are low adherence.

Stress with Medication Adherence

From of 100 patients, stress scores were calculated and the following results are: 84 (84%) have normal stress; among them, 15 (15%) are high adherence, 23 (23%) are medium adherence and 46 (46%) are low adherence. about 9 (9%) patients are having mild stress; among them 3 (3%) are high adherence, 2 (%) are medium adherence and 4 (9%) are low adherence. 7 (7%) patients have moderate stress; among them, no one has high adherence, 3 (3%) have medium adherence and, 4 (4%) have low adherence and no patients have severe stress.

Discussion

From 100 patients who were brought to the Cardiology department with HF participated in the current study. Since, depression, anxiety and stress symptoms were mostly seen in HF patients. The majority of HF patients were men in the 51 to 60 age range. Tsabedze N, *et al.*, (2021) conducted a study to determine the prevalence of DAS symptoms in patients with CHF who were between the ages of 38 and 61 years old.[1]

With an ejection fraction of 40 to 49%, the majority of patients had mild left ventricular (LV) dysfunction (36%). According to the findings of the research carried out by Carson P. and colleagues in 1996, their study on mild systolic dysfunction in heart failure came to a conclusion that patients who had a left ventricular ejection fraction greater than 35% were associated with different

characteristics and a more favorable prognosis of heart failure.[9]

Now, considering the depression, anxiety and stress symptoms in heart failure, from a total of 100 patients, we found out nearly 53.6% of patients are normal without any depression, anxiety and stress. The rest of them are showing depression, anxiety and stress symptoms. Around 17.3% of patients are with mild symptoms of depression (18), anxiety (25) and stress (9). Over 24% of patients have moderate symptoms of depression (39), anxiety (26) and stress (7). About 5% of patients have severe symptoms of depression (11), anxiety (4) and stress (0). Over one-quarter of patients (29%) were found to have a depressive disorder, and almost one-fifth (18%) of patients were found to have at least one anxiety disorder, according to the findings of a study that was carried out by this author Haworth JE *et al*., (2005). [10]

The symptoms of depression and anxiety are common in CHF, but they are not widely reported. It is important to be aware of these symptoms when working with patients. The majority of patients are troubled with sleep disturbances as a result of the anxiety and stress they are experiencing. Central sleep apnoea and Cheyne-Stokes respiration (CSA-CSR) is a condition that affects patients with heart failure, regardless of whether their ejection fraction is reduced (HFrEF), preserved (HFpEF), or mildly reduced (HFmrEF).[11] Due to the fact that both conditions have been associated with negative outcomes, including an increased likelihood of depression, this is of the utmost importance. Anxiety and depression were found to coexist in 41.3% of patients who participated in our study.

The proactive heart study, which involved telephone-delivered counseling, was able to reduce anxiety among those who remained in the well-being attack group. On the other hand, the combined motivational interrogating cognitive behavioral therapy (Beating Heart Problems) was able to reduce depression and anger without exhibiting any physiological or behavioral benefits. [12]

Out of 100 patients' anxiety score 45% are normal anxiety, (13- high medication adherence, 14- medium medication adherence, 18- low medication adherence) 22 are mild anxiety, (2- high medication adherence, 5- medium medication adherence, 17- low medication adherence) 26 are moderate anxiety, (3- high medication adherence, 7- medium adherence, 16- low adherence) and 4 are severe anxiety (1%- medium adherence and 3% low adherence). The prevalence of major depressive disorder and anxiety disorders, particularly generalized anxiety disorder (GAD), is extremely high among patients who have heart failure (HF), and these psychiatric illnesses have been linked to poor medical and functional outcomes. Despite the fact that diagnosing a psychiatric illness can be difficult due to the significant overlap that exists between psychiatric and heart failure-related symptoms, doing so can assist in identifying individuals who are at a higher risk for poor cardiac outcomes and make it possible to treat these disorders.[3] Patients diagnosed with heart failure are more likely to experience cognitive impairment, anxiety, depression, and memory loss than sufferers of other mental health conditions.[13]

Now coming to medication adherence in heart failure patients out of 100 patients 54 (54%) patients have low adherence, 28 (28%) patients have medium adherence and 18 (18%) have high adherence. In a study that was carried out by Gathright EC and colleagues (2017), the researchers came to the conclusion that depressive symptoms are associated with an increased risk of death from any cause in heart failure and that medication non-adherence is a factor that contributes to this relationship. Depression and non-adherence are two risk factors that have the potential to be modified and are associated with a poor prognosis.[14]

In present study, 90% of the patients who has non-adherences to medication have shown depression, anxiety and stress symptoms, which are mild, moderate and severe. The findings of a study that was carried out by Jimmy B and colleagues (2011)[7] came to the conclusion that patient medication non-adherence is a significant medical problem on a global scale.

There are plenty of reasons that are connected to one another. Even though patient education is the most important factor in improving compliance, it has also been demonstrated that the utilization of compliance aids, appropriate motivation, and support can also increase medication adherence. The professionals in the health care industry should identify strategies that are practically possible to improve medication adherence within the boundaries of their practice, ultimately leading to an improvement in the therapeutic outcome obtained. All of those who are involved in the use of medication should be on board with the implementation of this multidisciplinary approach, which should be carried out with their support. To enhance mental and cardiac health in this high-risk group, a vigorous, multimodal treatment strategy, like a mental health professional's stepped care or a collaborative care model, is probably required.

Conclusion

Patients suffering from heart failure are among the most clinically linked to a notable decline in quality of life. The majority of the men in our study were between the ages of 51 and 60 and were experiencing heart failure. In this study, 53.6% of patients are normal without any psychiatric symptoms, and 46.4% of patients are suffering. Among them, 17.3% of patients have mild symptoms, 24% have moderate symptoms and only 5% have severe symptoms. In this study, we recognized that moderate depression (9.3%) is high when compared with mild anxiety (4.3) and severe depression (0.55%). Medication adherence is very low (82%) in heart failure patients with or without psychiatric symptoms. Out of 100 patients, 54% have low

medication adherence, 28% are moderately adherence and 18% are highly adherent. So, for interventions to enhance both mental and cardiac health, a multimodal treatment approach is required, which may include mental health professionals providing stepped care or collaborative care models.

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