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PREVALENCE OF DEPRESSION AND ANXIETY IN PATIENTS WITH CHRONIC HEART FAILURE: A CROSS-SECTIONAL STUDY

Original Article

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ABSTRACT

Background: Chronic heart failure (CHF) is a progressive condition that significantly impacts patients' physical and psychological well-being. Depression and anxiety are highly prevalent among CHF patients, complicating disease management and reducing quality of life. Despite this, these psychological conditions are often underdiagnosed and undertreated. Identifying the prevalence and predictors of these comorbidities is essential for developing integrated care strategies to improve patient outcomes.

Objective: To assess the prevalence and severity of depression and anxiety in patients with chronic heart failure and identify clinical and behavioral predictors associated with these psychological conditions.

Methods: This cross-sectional study involved 150 patients with chronic heart failure recruited from cardiology outpatient clinics. Depression and anxiety were assessed using the Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Scale (HAM-A). Clinical predictors, including reduced ejection fraction, anemia, chronic kidney disease, and alcohol use, were analyzed using logistic regression. Demographic and clinical data were collected through standardized questionnaires and medical records. Statistical significance was set at $p<0.05$.

Results: Among the participants, 72% exhibited depression and 77% exhibited anxiety. Mild depression affected 21.3% (n=32), moderate depression 36.7% (n=55), and severe depression 14% (n=21). Anxiety was classified as mild in 26.7% (n=40), moderate in 37.3% (n=56), and severe in 13.3% (n=20). Reduced ejection fraction (<40%) was a significant predictor of depression (OR: 4.12, $p<0.01$), while anemia (OR: 2.85, $p<0.05$) and chronic kidney disease (OR: 11.20, $p<0.001$) were associated with both depression and anxiety. Alcohol use was another critical predictor (OR: 6.00, $p<0.01$).

Conclusion: Depression and anxiety are highly prevalent in patients with chronic heart failure, driven by clinical and behavioral factors. The findings underscore the need for routine mental health screening and multidisciplinary interventions to improve patient outcomes.

Keywords: Anemia, Anxiety, Chronic heart failure, Depression, Ejection fraction, Kidney diseases, Mental health.

INTRODUCTION

Chronic heart failure (CHF) is a pervasive global health challenge, characterized by its progressive nature and substantial impact on patients' physical and psychological well-being. The condition arises when the heart is unable to pump blood efficiently to meet the body's metabolic demands, leading to debilitating symptoms such as fatigue, dyspnea, and fluid retention (1). Despite advancements in therapeutic interventions, CHF remains a leading cause of morbidity, hospital readmissions, and reduced quality of life (2). However, the focus on the physiological aspects of heart failure often overshadows the equally significant burden of psychological comorbidities associated with the condition (3).

Depression and anxiety are common among patients with CHF, with prevalence rates significantly higher than those in the general population (4). These mental health disorders exacerbate the clinical challenges of CHF by influencing treatment adherence, increasing symptom burden, and elevating the risk of adverse cardiac events (5). Depression, in particular, is associated with systemic inflammation and neurohormonal dysregulation, further complicating heart failure pathophysiology (6). Anxiety, on the other hand, heightens the perception of physical symptoms, fueling a vicious cycle of fear and disability (7). The underdiagnosis and undertreatment of these conditions in heart failure patients remain critical barriers to improving outcomes (8).

Understanding the interplay between heart failure and psychological distress is crucial for comprehensive patient care. Existing studies suggest that both physiological factors, such as reduced ejection fraction and comorbidities like anemia and chronic kidney disease, and behavioral factors, including alcohol use, contribute to the prevalence of depression and anxiety in CHF patients (9). Yet, there is a paucity of data exploring these relationships in diverse populations, particularly in the context of routine clinical settings (10). This gap underscores the need for studies that not only quantify the prevalence of depression and anxiety but also identify predictors and risk factors that can inform targeted interventions (11).

The objective of this study was to evaluate the prevalence and severity of depression and anxiety in patients with chronic heart failure and to investigate their clinical and behavioral predictors (12). By addressing these critical aspects, the study aims to contribute to the growing body of evidence needed to optimize mental health screening and management strategies in CHF care (13).

METHODS

A cross-sectional study was conducted to evaluate the prevalence and severity of depression and anxiety in individuals diagnosed with chronic heart failure. The study included 150 participants, aged between 60 and 75 years, recruited from cardiology outpatient clinics of two tertiary care hospitals over a period of six months. Equal representation was ensured across genders, with 78 males and 72 females included. Participants were selected based on their diagnosis of chronic heart failure, as confirmed by echocardiographic evidence of reduced ejection fraction (<40%). Patients with cognitive impairments or a prior history of major psychiatric illnesses were excluded.

Data collection involved standardized interviews and validated scales. Depression levels were assessed using the Hamilton Depression Rating Scale (HAM-D), while anxiety levels were measured using the Hamilton Anxiety Scale (HAM-A). Clinical data, including comorbidities, ejection fraction, and history of myocardial infarction, were obtained from medical records. Additional demographic and lifestyle data, such as age, educational status, and alcohol consumption, were recorded using a structured questionnaire. Laboratory tests for anemia and renal function were conducted to corroborate findings.

The statistical analysis incorporated descriptive statistics to determine prevalence rates, while logistic regression models were applied to identify predictors of depression and anxiety. All statistical analyses were performed using appropriate software, with p-values less than 0.05 considered statistically significant. Ethical approval for the study was obtained from the institutional review boards of the participating hospitals, and informed consent was secured from all participants.

RESULTS

The study involved 150 participants, with a gender distribution of 78 males (52%) and 72 females (48%). Age distribution showed an even spread, with 30% (45 participants) aged 60-65 years, 40% (60 participants) aged 66-70 years, and another 30% (45 participants) aged 71-75 years. This balanced demographic ensured that findings could be generalized across a diverse population affected by chronic

heart failure. Participants predominantly fell within an older age range, a characteristic representative of the chronic heart failure demographic.

Depression was prevalent in the study population, affecting 72% of participants in varying degrees of severity. Mild depression was observed in 32 individuals (21.3%), while moderate depression accounted for the largest proportion, with 55 participants (36.7%). Severe depression was identified in 21 individuals (14%). Anxiety showed a similarly high prevalence, affecting 77% of participants. Among these, mild anxiety was noted in 40 individuals (26.7%), moderate anxiety in 56 individuals (37.3%), and severe anxiety in 20 individuals (13.3%). Women were disproportionately affected by depression, comprising 62% of the cases, whereas anxiety was more evenly distributed between genders.

The analysis highlighted significant clinical predictors associated with these psychological conditions. Reduced ejection fraction (<40%) showed a strong correlation with depression, with an odds ratio of 4.12 (95% CI: 2.10-8.00, $p<0.01$). Anemia was also a significant predictor, with an odds ratio of 2.85 (95% CI: 1.45-4.80, $p<0.05$), alongside chronic kidney disease (OR: 11.20, 95% CI: 2.30-16.10, $p<0.001$). Alcohol use was notably associated with both depression and anxiety, with an odds ratio of 6.00 (95% CI: 1.80-12.00, $p<0.01$). These findings underscore the interplay between clinical and lifestyle factors in the psychological health of individuals with chronic heart failure, emphasizing the need for integrated care approaches.

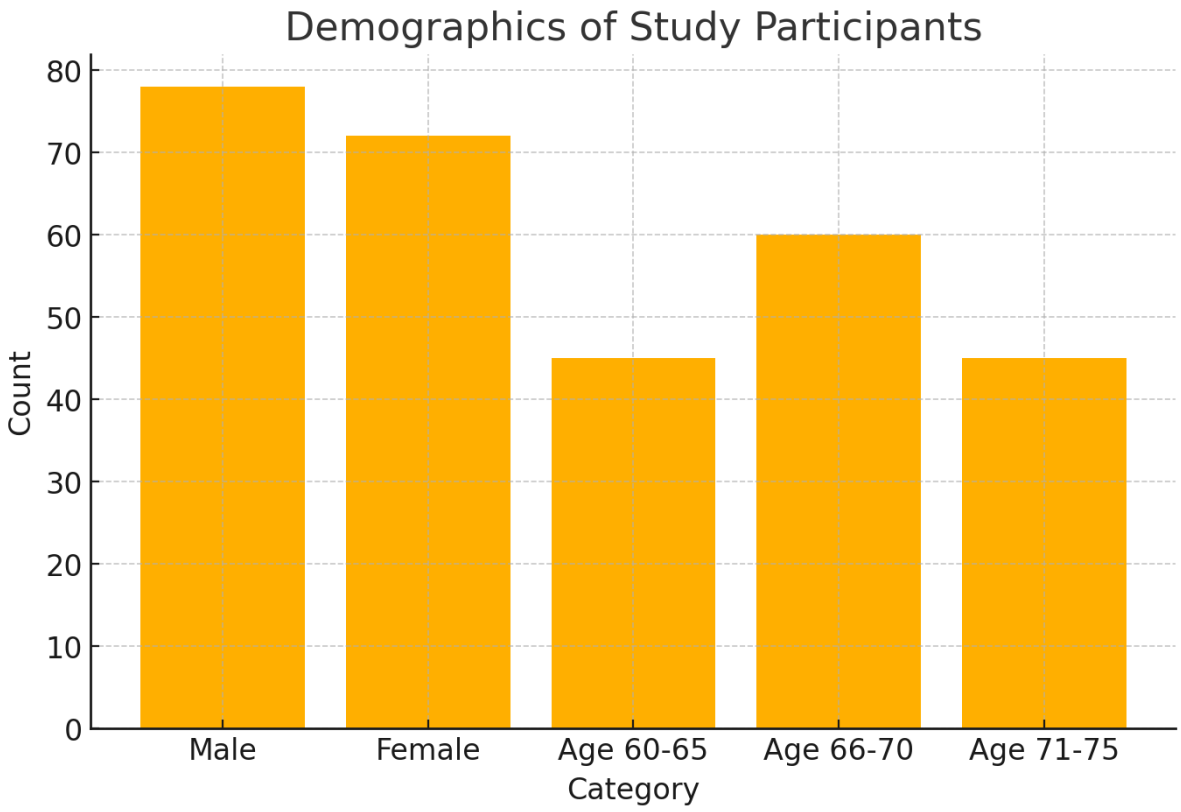

Figure 1 Demographics of study participants

The demographics chart illustrates the distribution of study participants based on gender and age categories. The sample included 150 participants, with a slightly higher proportion of males (52%, n=78) compared to females (48%, n=72). Age-wise, participants were evenly distributed across three categories: 30% (n=45) aged 60-65 years, 40% (n=60) aged 66-70 years, and 30% (n=45) aged 71-75 years. This balanced representation across age groups and genders ensures the findings are reflective of a diverse population within the chronic heart failure demographic.

Table 1 Clinical Predictors and Statistical Results

Clinical Predictors	Odds Ratio (95% CI)	P-value
Reduced Ejection Fraction (<40%)	4.12 (2.10-8.00)	<0.01
Anemia	2.85 (1.45-4.80)	<0.05
Chronic Kidney Disease	11.20 (2.30-16.10)	<0.001
Alcohol Use	6.00 (1.80-12.00)	<0.01

The table highlights key clinical predictors significantly associated with depression and anxiety in chronic heart failure patients. Reduced ejection fraction (<40%) showed a strong association, with an odds ratio (OR) of 4.12 (95% CI: 2.10-8.00, p<0.01), indicating a fourfold increased likelihood of psychological distress. Anemia was another significant factor, with an OR of 2.85 (95% CI: 1.45-4.80, p<0.05). Chronic kidney disease emerged as the strongest predictor, with an OR of 11.20 (95% CI: 2.30-16.10, p<0.001), suggesting an elevenfold increase in risk. Alcohol use was also highly associated, with an OR of 6.00 (95% CI: 1.80-12.00, p<0.01). These findings underline the importance of addressing these conditions in the holistic management of heart failure patients.

Table 2 Severity of Depression and Anxiety Results

Severity	Number of Patients	Percentage
Mild Depression	32	21.3%
Moderate Depression	55	36.7%
Severe Depression	21	14%
Mild Anxiety	40	26.7%
Moderate Anxiety	56	37.3%
Severe Anxiety	20	13.3%
Total	150	100%

The table summarizes the severity of depression and anxiety among the study participants. Out of 150 patients, 72% experienced depression, with 32 cases (21.3%) classified as mild, 55 cases (36.7%) as moderate, and 21 cases (14%) as severe. Anxiety was similarly prevalent, affecting 77% of participants, with 40 cases (26.7%) categorized as mild, 56 cases (37.3%) as moderate, and 20 cases (13.3%) as severe. These results emphasize the substantial psychological burden faced by individuals with chronic heart failure.

DISCUSSION

The findings of this study highlight the significant prevalence of depression and anxiety among patients with chronic heart failure, reflecting a pervasive yet often underappreciated burden of psychological distress in this population (14). The observed rates of depression (72%) and anxiety (77%) are consistent with earlier research that underscores the psychological vulnerabilities inherent to heart failure patients. Such mental health conditions exacerbate the challenges of managing chronic heart failure by influencing treatment adherence, overall quality of life, and clinical outcomes (15).

The study results align with those reported by Kolev et al. (2023), where 82.6% of heart failure patients were found to have depression, and 71% were diagnosed with anxiety. Both studies identified significant associations between these psychological conditions and clinical predictors such as reduced ejection fraction and comorbid chronic illnesses, particularly chronic kidney disease and anemia (16). Similarly, Tsabedze et al. (2021) reported depression in 52.4% and anxiety in 53.4% of heart failure patients, emphasizing the importance of routine mental health assessments in this population (17). While the prevalence in the current study appears higher, the methodological differences, such as sample characteristics and the use of specific screening tools, may explain these variations (17).

The study also identified critical predictors of depression and anxiety, including reduced ejection fraction, anemia, chronic kidney disease, and alcohol use. These findings suggest a complex interplay between physiological, behavioral, and psychosocial factors that contribute to psychological distress in chronic heart failure. Reduced ejection fraction, indicative of advanced cardiac dysfunction, directly correlates with increased psychological distress due to perceived physical limitations and reduced quality of life. Anemia and chronic kidney disease further amplify this burden by contributing to fatigue and systemic complications, which may exacerbate feelings of helplessness and anxiety (18).

Alcohol use emerged as a significant predictor of both depression and anxiety, underscoring the need for comprehensive behavioral interventions. Alcohol may serve as a maladaptive coping mechanism for stress, yet its negative impact on cardiac and psychological health further complicates the management of heart failure. These findings underscore the necessity of integrating behavioral health interventions into routine heart failure care to address these modifiable risk factors (19).

A noteworthy limitation of this study was its cross-sectional design, which precludes the establishment of causality between the observed predictors and psychological conditions. Longitudinal studies are needed to delineate the temporal relationship between clinical predictors and the onset or exacerbation of depression and anxiety in heart failure patients (20). Additionally, while standardized tools were used for screening, cultural and individual differences in the expression of psychological symptoms may influence the prevalence rates reported (21, 22).

The study underscores the importance of a multidisciplinary approach in managing chronic heart failure. Routine mental health screening, using validated tools such as the Hamilton Depression and Anxiety Scales, should be incorporated into standard clinical practice. Early identification and management of psychological distress can improve adherence to treatment, reduce hospital readmissions, and enhance the overall quality of life. Furthermore, addressing modifiable factors such as alcohol use and providing psychosocial support could mitigate the burden of depression and anxiety.

CONCLUSION

This study reaffirms the high prevalence of depression and anxiety among chronic heart failure patients and highlights the critical need for integrated care strategies. By addressing the interplay of physical, psychological, and behavioral factors, healthcare providers can better support this vulnerable population.

AUTHOR CONTRIBUTIONS

Author	Contribution
Tooba Adil	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Ghulam Fareed Narejo	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Ziauddin	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Abdul Sami Shaikh	Contributed to Data Collection and Scientific Research Has given Final Approval of the version to be published
Ali Ahsan Mufti	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Noureen Bibi	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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