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Mental Illness in Patients with Heart Failure Admitted in Cardiac Ward in a Tertiary Care Hospital in Nepal

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ABSTRACT

Background: Heart failure (HF) is associated with significant psychiatric comorbidity, particularly anxiety and depression, which have adverse impact on patient outcomes. Despite the established relationship between mental illness and cardiovascular disease globally, this area of research in Nepal remains understudied. The objective of this study is to determine the prevalence of mental disorders, specifically anxiety and depressive disorders, in patients with heart failure admitted to a tertiary care hospital in Nepal, and to examine the association between mental disorders and treatment outcomes.

Methods: This prospective observational study was conducted at National Academy of Medical Sciences, Bir Hospital, Kathmandu, Nepal. A total of 113 consecutive adult patients admitted with a primary diagnosis of HF, made by consultant cardiologists, were enrolled between January 2024 and April 2025. Critically ill or non-consenting patients were excluded. Psychiatrist diagnosed anxiety and depressive disorders using clinical interview per ICD-10 criteria. Demographic data and hospital outcomes were recorded. Statistical analysis was performed using SPSS version 23, with p-value<0.05 considered statistically significant.

Results: The mean age of participants was 58.13±14.23 years (range 26-86 years), with 57.5% females and 42.5% males. The study population comprised 17.8% young adults, 47.8% middle-aged, 27.4% elderly, and 7.1% very elderly individuals. The overall prevalence of mental illness was substantial in heart failure patients-anxiety in 52.21% and depression in 31.85%. Gender and mental illnesses did not show statistically significant association (p-value=0.110).

Conclusion: Mental disorders are prevalent among heart failure patients in Nepal, consistent with global trends. These findings underscore the need for integrated psychiatric screening and management in cardiac care settings to optimize patient outcomes.

Keywords: heart failure; mental illness; Nepal; tertiary care.

INTRODUCTION

Heart failure (HF) represents a chronic debilitating end-stage of several cardiac diseases characterized by shortness of breath, edema, and fatigue, that affects millions of people worldwide.[1] Beyond its cardiovascular manifestations, HF is associated with poor functional status, impaired health-related quality of life, frequent hospitalizations, and substantial healthcare expenditures.[2] Despite advances in modern treatment modalities, mortality remains alarmingly high, with approximately 50% of patients dying within 5 years of diagnosis.[3] Heart failure is intricately linked with psychological morbidity. Mental illnesses, particularly anxiety and depressive disorders, are more prevalent in HF patients than in the general population, the global pooled prevalence of depression in HF patients being 31.3%.[4] These mental health conditions contribute to adverse

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cardiovascular outcomes that include poor treatment adherence, increased hospitalizations, prolonged hospital stays, and elevated mortality.[5,6] In a large proportion of patients, psychiatric comorbidities remain underdiagnosed and undertreated in cardiac settings, especially in low-resource countries. There is a critical lack of data on the prevalence and impact of these disorders among HF patients in Nepal. This study aims to bridge this knowledge gap, providing essential local evidence to advocate for holistic, integrated care models that address the mental health needs of cardiac patients, ultimately aiming to improve overall health outcomes and quality of life.

METHODS

This prospective observational study was conducted at the National Academy of Medical Sciences, Bir Hospital, Kathmandu, Nepal, in the cardiology department, following approval from the Institutional Research Board (IRB). The study received ethical clearance from the Institutional Research Board, National Academy of Medical Sciences, Bir Hospital. Written informed consent was obtained from all participants in Nepali. Patients' confidentiality was maintained throughout, with personal identifiers excluded from the dataset. The study period extended from January 2024 to April 2025. The study enrolled all consecutive patients aged 18 years and above admitted with a primary diagnosis of Heart Failure in the in-patient department of Cardiology. The diagnosis of HF was confirmed by consultant cardiologists based on clinical presentation, echocardiography, and other relevant investigations. The minimum sample size was calculated using the prevalence of depression in heart failure patients of 31.3%, at a 95% confidence level (Z-score=1.96) and margin of error of ±5%. A total of 113 patients were enrolled in the study. All admitted patients with HF were eligible. Critically ill patients unable to cooperate for a mental state examination and those not providing written informed consent were excluded. Following informed consent, psychiatrists from the Department of Psychiatry conducted comprehensive psychiatric evaluations. A semi-structured proforma was used to record demographic details (age, gender) and hospital outcomes (improvement, deterioration, death, referral). Mental disorders were diagnosed according to the International Classification of Diseases-10 (ICD-10) criteria through structured clinical interviews. Statistical analysis was performed using SPSS version 23.0. Demographic characteristics were presented as frequencies and percentages for categorical variables and mean ± standard deviation for continuous variables. Age and gender stratification was performed to examine age- and gender specific patterns of mental illness.

RESULTS

A total of 113 patients participated in the study. The mean age was 58.13±14.23 years, with ages ranging from 26 to 86 years (median age 60 years). The study population comprised 48 males (42.5%) and 65 females (57.5%). The age stratification of the study population allowed for examination of mental illness patterns across the lifespan. The largest proportion of patients fell within the middle-aged category (47.8%) (Table 1).

Table 1. Baseline demographic characteristics of study participants.

Variables	Frequency (%)
Age (in years)	58.13±14.23
Age Range (in years)	60 (26–86)
Age groups	
Young Adults	20(17.8)
Middle-aged	54(47.8)
Elderly	31(27.4)
Very elderly	8(7.1)
Gender	
Male	48(42.5)
Female	65(57.5)

Mental illness was documented across all age groups and both genders. Anxiety was seen in 52.21%, and depression in 31.85% of total heart failure population. Rest of the patients had no mental illnesses (Figure 1).

Depression was slightly more common in males (17.69% vs 14.16%) and so was anxiety in females (31.85% vs 20.35%). Analysis of mental illness distribution by gender revealed no statistically

significant association (p-value=0.110), suggesting that both male and female heart failure patients are equally vulnerable to developing mental health disorders (Figure 2).

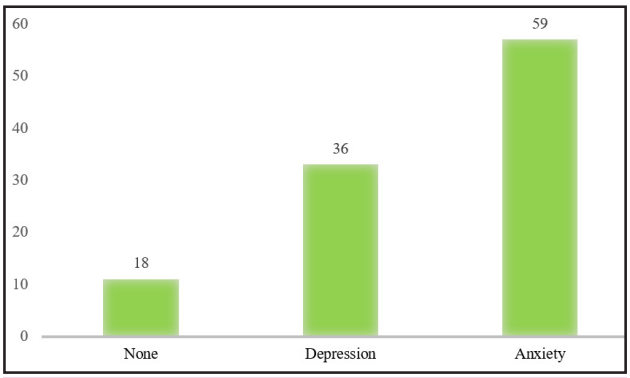

Figure 1. Mental disorders in heart failure patients.

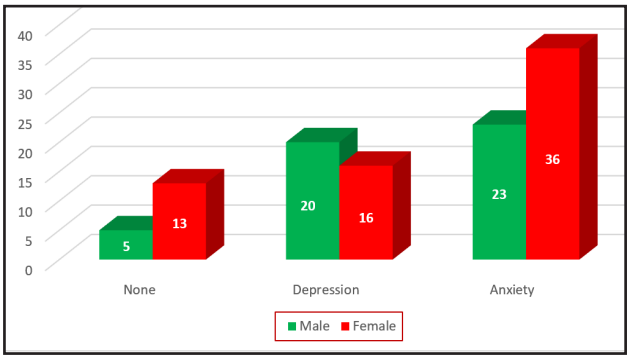

Figure 2. Mental Disorders in heart failure patients as per gender.

In males, anxiety was more frequently seen in young adults and middle-aged patients, while depression was common in elderly and very elderly population (p-value=0.024) (Figure 3).

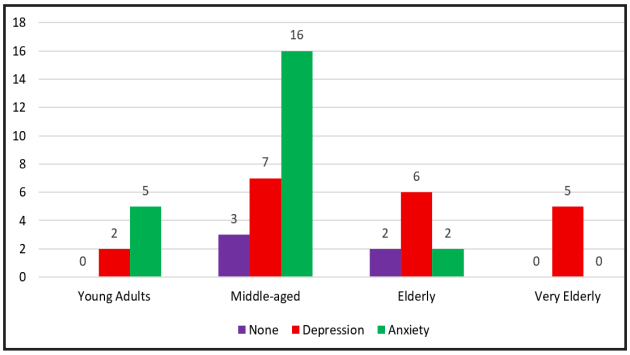

Figure 3. Mental disorders in male patients as per age groups.

In females, anxiety was more common in all age-groups except for the very elderly population, where depression was predominantly seen. In contrast to males, the distribution of mental disorders across age-groups in females was not statistically significant (p-value=0.443) (Figure 4).

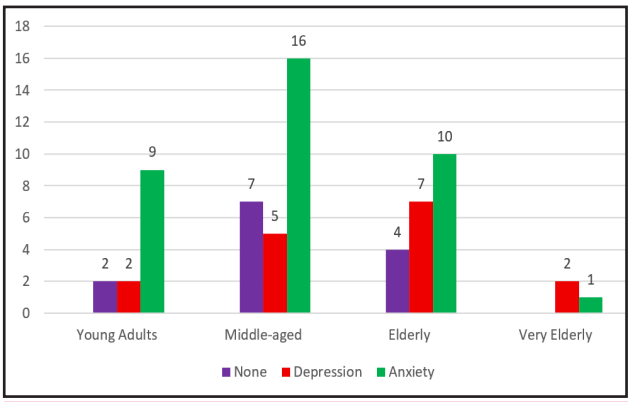

Figure 4. Mental Disorders in female patients as per age-groups.

Most of the patients (81.42%) had improvement in clinical outcomes and the rest had deterioration during their hospital stay.

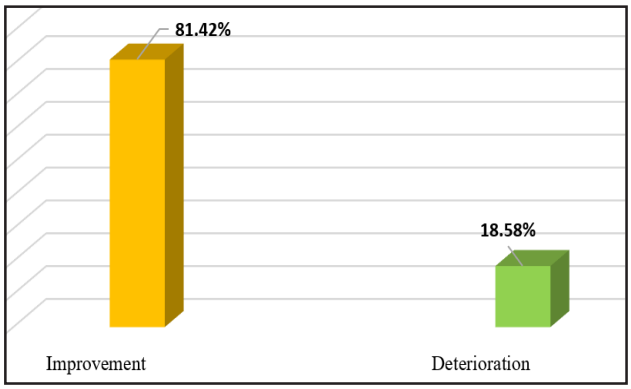

Figure 5. Outcomes of heart failure patients.

There was a significant association between hospital outcome and mental disorder (p-value<0.001). Those without mental disorder had improvement in all; patients with anxiety disorder had good response to treatment (89.83%), and those with depression had poor outcomes- the improvement rate was only 58.33% (Table 2).

Table 2. Patient outcomes as per mental illness.

Mental Illness	Outcomes		Total	p-value
	Improvement	Deterioration		
None	18 (100%)	0	18	<0.001
Depression	21(58.33%)	15	36	
Anxiety	53 (89.83%)	6	59	

DISCUSSION

This study is about systematic investigation of mental illness in heart failure patients in Nepal, revealing significant psychiatric comorbidity in this population. Our finding that a substantial proportion of patients had a diagnosable anxiety or depressive disorder underscores a critical and often overlooked aspect of cardiovascular care in our settings. Our findings align with international literature documenting elevated rates of mental disorders in cardiac patients,[7] while providing crucial context-specific data for the Nepalese healthcare system. The mean age of 58.13 years in our cohort reflects the significant impact of the disease on productive life. The slight female predominance (57.5%) resonates with a similar western study, where females outnumbered males (68.7%) and the mean age of the population was 50.1 years.[8] The preponderance of female population may reflect both the higher life expectancy of women and potential gender differences in healthcare-seeking behavior for cardiac symptoms in our setting.

The absence of significant gender differences in mental illness prevalence (p-value=0.110) contrasts with general population studies showing higher anxiety-mood disorders in women.[9] This unconventional finding in psychiatric comorbidity between genders among heart failure patients suggests that the physiological and psychological burden of cardiac disease may override typical gender-based differences in mental health epidemiology. However, western studies show significantly more anxiety/depression in women with heart failure,[10] which may be explained by the differences in cultural, social, geographical and genetic make-up between the cohorts.

The prevalence of anxiety in young and middle-aged-, and of depression in elderly and very elderly males was statistically significant (p-value=0.024); however, the association of mental disorder in females as per age-groups was not statistically significant (p-value=0.443). More women tended to have anxiety. Two large meta-analyses found that the estimated overall prevalence of depression in HF was approximately 20% to 30%[11], which is close to our finding of 18.58%. In a study from South Africa, the prevalence of anxiety in heart failure patients was 53.4%[12]; this aligns with our finding of 52.21%. Above 80% of the patients in our study had improvement in their symptoms. All those without mental illnesses had improvement in heart failure symptoms; among those with mental illnesses, depression was associated with poorer outcomes as compared to anxiety. This finding is akin to the finding of South African study, which revealed that both conditions had been associated with poor outcomes with more robust evidence for depression.[12]

Clinical Implications

Our findings underscore the necessity for integrated mental health screening in cardiac care settings. The American Heart Association recommends routine depression screening for cardiovascular patients, yet implementation remains limited in resource-constrained settings like Nepal. Simple, validated screening tools such as the Patient Health Questionnaire-9 (PHQ-9) for depression and Generalized Anxiety Disorder-7 (GAD-7) for anxiety can be readily incorporated into routine cardiac assessments. Early identification and treatment of mental disorders in heart failure patients may improve multiple outcomes. Pharmacological interventions with selective serotonin reuptake inhibitors (SSRIs) have demonstrated safety in cardiac populations,[13] while cognitive-behavioral therapy and cardiac rehabilitation programs incorporating psychological support show promise in improving both mental health and cardiovascular outcomes.[14]

Healthcare System Considerations

In Nepal's healthcare context, several barriers impede recognition and treatment of mental illness in cardiac patients. These include limited mental health resources, stigma surrounding psychiatric diagnosis, fragmented care delivery, and absence of integrated care models. Addressing these challenges requires:

1. Education and Training: Enhanced training for cardiologists and cardiac nurses in recognizing psychiatric symptoms and for appropriate referral pathways.

2. Collaborative Care Models: Development of consultation-liaison psychiatry services in cardiac units, enabling prompt psychiatric assessment and treatment.
3. Patient Education: Culturally appropriate psychoeducation addressing the mind-heart connection and normalizing mental health treatment.
4. Policy Development: Integration of mental health screening protocols into national cardiac care guidelines.

Limitations

Several limitations warrant consideration. The single-center design limits generalizability to Nepal's diverse population. The cross-sectional assessment of mental disorders does not capture temporal relationships or causality. Reliance on clinical interviews, while rigorous, may have missed subclinical psychiatric symptoms. The relatively short study duration precluded assessment of long-term outcomes such as readmission rates and mortality. The study did not assess severity of heart failure using standardized classifications (e.g., NYHA functional class), potentially obscuring dose-response relationships between cardiac dysfunction severity and psychiatric comorbidity. Future research should incorporate objective cardiac function measures, validated psychiatric rating scales, and longitudinal follow-up.

CONCLUSIONS

This study establishes significant prevalence of mental illness among heart failure patients in Nepal, consistent with global evidence. The absence of gender-based differences in psychiatric comorbidity suggests universal vulnerability among cardiac patients regardless of sex. These findings emphasize the critical need for integrated mental health screening and management within cardiac care settings. Implementation of routine psychiatric assessment, collaborative care models involving psychiatrists and cardiologists, and culturally adapted psychological interventions represent essential steps toward comprehensive heart failure management in Nepal. Such holistic approaches promise to improve not only mental health outcomes but also cardiac prognosis, quality of life, and healthcare utilization. As Nepal undergoes epidemiological transition with rising cardiovascular disease burden, addressing the mental health needs of cardiac patients must become a healthcare priority. This study provides baseline data to guide policy development, clinical practice enhancement, and future research in this vital intersection of cardiology and psychiatry.

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