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Assessment of Depression and Anxiety among Patients with Chronic Diseases: A Cross-Sectional Study

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ABSTRACT

***Background**: Depression and anxiety are common psychological comorbidities among patients with chronic diseases and significantly influence treatment adherence, quality of life, and clinical outcomes. Chronic illnesses impose long-term physical, emotional, and financial stress, increasing vulnerability to mental health disorders, particularly in low- and middle-income countries where mental health services are often underintegrated into routine care.* ***Objective:** To assess the prevalence and severity of depression and anxiety among patients with chronic diseases attending outpatient healthcare facilities in Lahore.* ***Methods**: A cross-sectional study was conducted among 160 adult patients with clinically diagnosed chronic diseases attending selected public and private outpatient facilities in Lahore. Data were collected using a structured questionnaire comprising sociodemographic and clinical variables and the Hospital Anxiety and Depression Scale. Descriptive statistics and inferential analyses were performed to estimate prevalence and examine associations with disease duration and multimorbidity.* ***Results**: Depressive symptoms were identified in 42.5% of participants, while anxiety symptoms were present in 48.1%. Moderate to severe depression was observed in 26.3% of patients, and moderate to severe anxiety in 31.9%. Patients with disease duration exceeding five years and those with multiple chronic conditions demonstrated significantly higher odds of both depression and anxiety.* ***Conclusion**: Depression and anxiety are highly prevalent among patients with chronic diseases in Lahore and are strongly associated with longer disease duration and multimorbidity. Routine mental health screening and integration of psychosocial support into chronic disease management are essential to improve patient outcomes*
***Keywords:** Depression; Anxiety; Chronic Diseases; Mental Health; Cross-Sectional Study*

INTRODUCTION

Depression and anxiety are increasingly recognized as major comorbidities among patients living with chronic diseases, contributing substantially to disability, impaired functioning, and elevated healthcare utilization (1). The World Health Organization identifies depression as a leading cause of global disease burden and emphasizes that mental health conditions frequently coexist with long-term physical illnesses, worsening clinical outcomes and quality of life (1). Chronic diseases such as diabetes mellitus, hypertension, cardiovascular disorders, chronic respiratory illnesses, and chronic kidney disease impose persistent symptom burden, ongoing self-management demands, and fear of complications, all of which can precipitate or exacerbate psychological distress (2).

Patients with chronic diseases demonstrate higher rates of depression and anxiety compared with the general population, and these conditions are associated with poorer adherence to medication, reduced engagement with lifestyle modification, and increased risk of hospitalization and mortality (2,3). Evidence suggests that depression can independently worsen functional status and accelerate the trajectory of chronic disease complications, while anxiety may heighten symptom vigilance, increase perceived illness severity, and impair coping mechanisms (4). Importantly, comorbid depression and anxiety are not only clinically consequential but also frequently underdetected in routine outpatient care due to time constraints, limited mental health training among clinicians, and social stigma surrounding psychological symptoms, particularly in low- and middle-income countries (3,5).

In Pakistan, the growing prevalence of chronic diseases has occurred alongside limited integration of mental health screening within chronic disease services, resulting in missed opportunities for early identification and management of psychological comorbidities (6). Urban populations, including those in Lahore, may be particularly vulnerable due to high patient volumes in outpatient services, constrained consultation times, and financial pressures related to long-term treatment (6,7). While international studies have documented wide-ranging prevalence estimates of depression and anxiety in chronic disease populations, locally generated evidence using standardized screening tools remains limited, especially for mixed chronic disease cohorts in outpatient settings (2,7). This scarcity of context-specific data restricts the ability of clinicians and health systems to plan integrated care pathways that address both physical and mental health needs.

Therefore, this study aimed to determine the prevalence and severity of depression and anxiety among adult patients with chronic diseases attending outpatient healthcare facilities in Lahore using the Hospital Anxiety and Depression Scale, and to describe the distribution of these conditions across key clinical characteristics.

MATERIAL AND METHODS

This cross-sectional observational study was conducted over a six-month period among adult patients with chronic diseases attending outpatient departments of selected public and private healthcare facilities in Lahore. A cross-sectional design was chosen because it is appropriate for estimating the prevalence and severity distribution of common mental health conditions in defined clinical populations at a single time point and for describing their patterns across participant characteristics (8).

The study population comprised patients aged 18 years and above with a clinician-confirmed diagnosis of at least one chronic disease for a minimum duration of six months, including diabetes mellitus, hypertension, ischemic heart disease, chronic respiratory disease (e.g., asthma or chronic obstructive pulmonary disease), or chronic kidney disease. Patients with previously diagnosed psychiatric disorders predating the onset of chronic illness, those with cognitive impairment limiting reliable questionnaire completion, and critically ill patients requiring urgent care were excluded to reduce information bias and ensure validity of self-reported responses. Participants were recruited using convenience sampling during routine clinic hours. Eligible patients were approached consecutively, provided a brief explanation of study objectives and procedures, and enrolled after obtaining written informed consent (9).

Data were collected using a structured questionnaire comprising two components. The first component recorded sociodemographic and clinical variables including age, gender, type of chronic disease, number of chronic conditions (single vs multimorbidity), and duration of illness categorized as 6 months–2 years, 3–5 years, and more than 5 years. The second component assessed symptoms of depression and anxiety using the Hospital Anxiety and Depression Scale, a validated 14-item instrument containing two subscales of seven items each for anxiety (HADS-A) and depression (HADS-D) (10). Each item is scored from 0 to 3, producing subscale scores ranging from 0 to 21. Standard cut-offs were applied to categorize symptom severity: scores of 0–7 were considered normal, 8–10 mild (borderline abnormal), 11–14 moderate, and 15–21 severe (10). For prevalence estimation, participants scoring ≥8 on the respective subscale were classified as having depressive symptoms or anxiety symptoms.

To enhance data quality, trained data collectors administered the questionnaire in a standardized manner and ensured privacy during completion. Responses were recorded anonymously using coded forms, and participants were assured that refusal would not affect their care. Potential confounding factors relevant to psychological morbidity in chronic disease populations, including gender, illness duration, and multimorbidity, were measured a priori to support stratified and association analyses (11).

The sample size of 160 was selected based on feasibility within the study period and expected prevalence estimates of depression and anxiety among chronic disease populations reported in prior literature, providing adequate precision for descriptive prevalence reporting (2,3). Data were entered and analyzed using SPSS version 25.0. Continuous variables were summarized using means and standard deviations, while categorical variables were reported as frequencies and percentages with 95% confidence intervals where appropriate. Group comparisons of depression and anxiety prevalence across key strata (e.g., gender, duration of illness, multimorbidity) were planned using chi-square tests, and univariable odds ratios with 95% confidence intervals were estimated to quantify associations. Missing values were handled using complete-case analysis due to minimal item nonresponse (12).

Ethical approval was obtained from the relevant institutional ethics review committee prior to study initiation. All procedures were conducted in accordance with the Declaration of Helsinki. Confidentiality was maintained by restricting access to the dataset to the research team and storing anonymized data in password-protected files to ensure reproducibility and data integrity (9,13).

RESULTS

A total of 160 patients with chronic diseases were enrolled. Males represented 55.0% of the sample (n = 88; 95% CI: 47.3–62.5) and females 45.0% (n = 72; 95% CI: 37.5–52.7). Regarding illness duration, 33.8% had chronic disease for 6 months–2 years (n = 54; 95% CI: 26.6–41.6), 38.7% for 3–5 years (n = 62; 95% CI: 31.2–46.6), and 27.5% for more than 5 years (n = 44; 95% CI: 20.9–34.9), indicating that 66.2% of participants had been living with chronic disease for at least 3 years (Table 1).

Overall, depressive symptoms (HADS-D ≥8) were identified in 42.5% of participants (n = 68; 95% CI: 34.8–50.6), while anxiety symptoms (HADS-A ≥8) were observed in 48.1% (n = 77; 95% CI: 40.2–56.0). In absolute terms, anxiety exceeded depression by 5.6 percentage points (48.1% vs 42.5%), corresponding to 9 additional cases (77 vs 68) within the cohort (Table 2). Severity distribution demonstrated that 57.5% of participants were categorized as normal for depression (n = 92), whereas 16.2% had mild depression (n = 26), 15.0% moderate depression (n = 24), and 11.3% severe depression (n = 18). For anxiety, 51.9% were normal (n = 83), while 16.2% were mild (n = 26), 19.4% moderate (n = 31), and 12.5% severe (n = 20). Combined moderate-to-severe symptom burden was 26.3% for depression (n = 42) and 31.9% for anxiety (n = 51), indicating that approximately one in

three patients experienced clinically relevant anxiety severity and about one in four experienced moderate-to-severe depressive symptomatology (Table 3).

Marked gradients were observed across illness duration strata. Depression prevalence increased from 29.6% in the 6 months–2 years group (16/54) to 43.5% among those with 3–5 years duration (27/62) and to 56.8% among those with more than 5 years duration (25/44). Compared with the shortest-duration group, participants with illness duration >5 years had over threefold higher odds of depression (OR = 3.14; 95% CI: 1.42–6.92). A similar pattern was seen for anxiety, rising from 33.3% (18/54) to 48.4% (30/62) and reaching 65.9% (29/44) in those with >5 years duration; the odds of anxiety in the longest-duration group were nearly four times higher than the reference category (OR = 3.81; 95% CI: 1.71–8.47). The overall association between disease duration and psychological morbidity was statistically significant (p = 0.003), supporting a progressive increase in symptom burden with longer chronic disease duration (Table 4).

Multimorbidity showed strong associations with both outcomes. Depression was present in 31.5% of patients with a single chronic disease (29/92) compared with 57.4% among those with two or more chronic conditions (39/68), corresponding to an almost threefold elevation in odds (OR = 2.92; 95% CI: 1.52–5.59). Anxiety followed an analogous trend, affecting 37.0% with single morbidity (34/92) and 63.2% with multimorbidity (43/68), again demonstrating nearly threefold higher odds in the multimorbidity group (OR = 2.89; 95% CI: 1.52–5.48), with a highly significant association (p < 0.001) (Table 5).

Table 1. Sociodemographic and Clinical Characteristics of Participants (n = 160)

Variable	Category	n (%)	95% CI	p-value†
Gender	Male	88 (55.0)	47.3–62.5	—
	Female	72 (45.0)	37.5–52.7	—
Duration of chronic disease	6 months–2 years	54 (33.8)	26.6–41.6	—
	3–5 years	62 (38.7)	31.2–46.6	—
	>5 years	44 (27.5)	20.9–34.9	—

Table 2. Prevalence of Depression and Anxiety among Patients with Chronic Diseases

Condition	n (%)	95% CI	p-value*
Depression (HADS-D ≥8)	68 (42.5)	34.8–50.6	<0.001
Anxiety (HADS-A ≥8)	77 (48.1)	40.2–56.0	<0.001

Table 3. Severity Distribution of Depression and Anxiety (HADS)

Severity	Depression n (%)	Anxiety n (%)	p-value†
Normal (0–7)	92 (57.5)	83 (51.9)	—
Mild (8–10)	26 (16.2)	26 (16.2)	—
Moderate (11–14)	24 (15.0)	31 (19.4)	—
Severe (15–21)	18 (11.3)	20 (12.5)	—

Table 4. Association of Depression and Anxiety with Duration of Chronic Disease

Duration	Depression n (%)	OR (95% CI)	Anxiety n (%)	OR (95% CI)	p-value
6 months–2 years	16 (29.6)	1.00 (Ref)	18 (33.3)	1.00 (Ref)	—
3–5 years	27 (43.5)	1.83 (0.88–3.78)	30 (48.4)	1.88 (0.93–3.82)	0.041
>5 years	25 (56.8)	3.14 (1.42–6.92)	29 (65.9)	3.81 (1.71–8.47)	0.003

Table 5. Association of Multimorbidity with Depression and Anxiety

Condition count	Depression n (%)	OR (95% CI)	Anxiety n (%)	OR (95% CI)	p-value
Single chronic disease	29 (31.5)	1.00 (Ref)	34 (37.0)	1.00 (Ref)	—
≥2 chronic diseases	39 (57.4)	2.92 (1.52–5.59)	43 (63.2)	2.89 (1.52–5.48)	<0.001

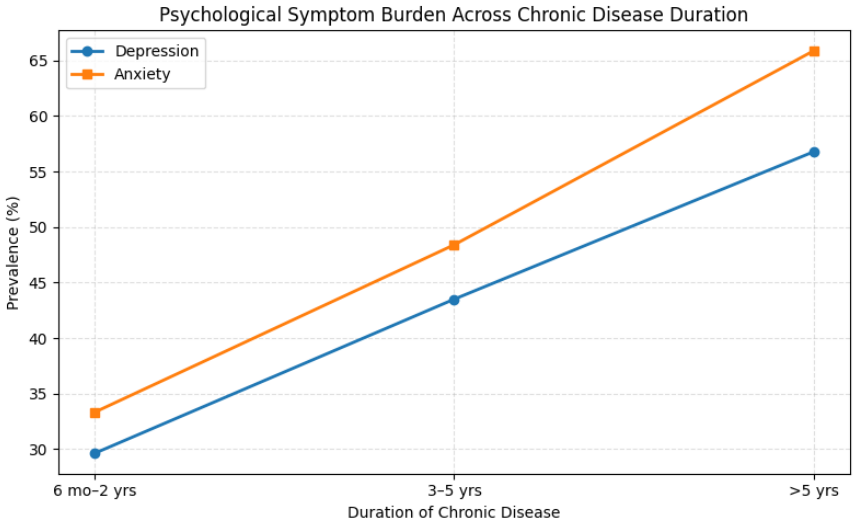

Figure 1 Psychological Symptom Burden Across Chronic Disease Duration

The figure demonstrates a clear, duration-dependent increase in psychological symptom burden among patients with chronic diseases. Depressive symptoms rose progressively from 29.6% among patients with disease duration of 6 months–2 years to 43.5% in those with 3–5 years, reaching 56.8% among individuals living with chronic disease for more than 5 years. Anxiety symptoms followed a steeper trajectory, increasing from 33.3% in the shortest-duration group to 48.4% in the intermediate group and peaking at 65.9% among patients with disease duration exceeding 5 years. Across all duration categories, anxiety prevalence consistently exceeded depression prevalence by 3.7–9.1 percentage points. The parallel upward trends indicate a cumulative psychological burden associated with prolonged exposure to chronic illness, with anxiety showing greater sensitivity to increasing disease duration.

DISCUSSION

The present cross-sectional study demonstrates a substantial burden of depression and anxiety among patients with chronic diseases attending outpatient healthcare facilities in Lahore. Nearly half of the participants exhibited symptoms of anxiety, and more than two-fifths reported depressive symptoms, with approximately one-quarter experiencing moderate-to-severe depression and nearly one-third experiencing moderate-to-severe anxiety. These findings confirm that psychological morbidity is highly prevalent among individuals with chronic illnesses and represents a significant yet often underrecognized component of disease burden in routine clinical care (14).

The prevalence estimates observed in this study are comparable to those reported in international and regional literature, which consistently show higher rates of depression and anxiety among patients with chronic diseases than in the general population (2,4). Chronic disease-related stressors, including persistent symptoms, uncertainty regarding disease progression, treatment complexity, and fear of complications, likely contribute to sustained psychological distress (15). In addition, cultural stigma surrounding mental health and limited access to psychological services in low- and middle-income countries may further exacerbate symptom persistence and underdiagnosis (6,16).

A key finding of this study is the strong association between longer duration of chronic disease and increased prevalence of both depression and anxiety. Patients with disease duration exceeding five years had more than threefold higher odds of depressive symptoms and nearly fourfold higher odds of anxiety symptoms compared with those with shorter disease duration. This duration-dependent gradient suggests a cumulative psychological impact of chronic illness over time, potentially mediated by progressive functional limitations, treatment fatigue, and repeated exposure to disease-related stressors (17). Similar associations between illness chronicity and psychological morbidity have been reported in patients with diabetes, cardiovascular disease, and chronic respiratory conditions (18).

Multimorbidity emerged as another significant correlate of psychological distress, with patients affected by two or more chronic conditions demonstrating nearly threefold higher odds of both depression and anxiety. The presence of multiple chronic diseases may amplify psychological burden through increased symptom load, polypharmacy, financial strain, and greater disruption of daily functioning (19). These findings reinforce growing evidence that multimorbidity represents not only a physical health challenge but also a major mental health concern requiring integrated care approaches (20).

The higher prevalence of anxiety compared with depression across all disease duration categories observed in this study is noteworthy. Anxiety may be particularly sensitive to uncertainty surrounding disease prognosis, fear of

complications, and perceived loss of control, which are common experiences among patients with chronic illnesses (21). Persistent anxiety may, in turn, exacerbate depressive symptoms, reduce adherence to treatment, and increase healthcare utilization, underscoring the clinical importance of early identification and intervention (22).

From a clinical and public health perspective, these findings highlight the need for routine mental health screening within chronic disease management programs, particularly in outpatient settings. The use of brief, validated screening tools such as the Hospital Anxiety and Depression Scale can facilitate early detection of psychological distress and prompt referral for appropriate psychosocial interventions (10,23). Integrating mental health services into chronic care models has been shown to improve both psychological well-being and physical health outcomes (24).

Several limitations of this study should be acknowledged. The cross-sectional design precludes causal inference, and the use of convenience sampling may limit generalizability beyond the study settings. Additionally, reliance on self-reported screening measures rather than diagnostic interviews may overestimate prevalence. Despite these limitations, the study provides valuable context-specific evidence on the mental health burden among patients with chronic diseases in Lahore and underscores the urgent need for integrated, patient-centered care strategies (25).

CONCLUSION

This study demonstrates that depression and anxiety are highly prevalent among patients with chronic diseases attending outpatient healthcare facilities in Lahore, with a considerable proportion experiencing moderate to severe symptoms. Anxiety was more common than depression across all categories of disease duration, and both conditions showed a strong, graded association with longer illness duration and the presence of multiple chronic conditions. These findings highlight the cumulative psychological burden imposed by chronic illness and underscore the importance of addressing mental health as an integral component of chronic disease care. Routine screening for depression and anxiety using validated instruments, coupled with timely referral and integrated psychosocial support, should be incorporated into chronic disease management services to improve patient adherence, quality of life, and overall health outcomes. Future longitudinal studies are warranted to establish causal pathways and to evaluate the effectiveness of integrated mental health interventions within chronic care settings..

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