

# PSYCHOLOGICAL IMPACT OF LIVING WITH DIABETES AND HYPERTENSION IN URBAN SLUMS

## Original Article

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## ABSTRACT

**Background:** Chronic illnesses like diabetes mellitus and hypertension are increasingly prevalent in urban slum settings, where poor infrastructure, overcrowding, and limited healthcare services elevate the risk of mental health problems. Residents of these marginalized communities often struggle with poverty, comorbidities, and limited disease management support, which can exacerbate psychological distress. Understanding the mental health burden among this group is crucial to formulating effective, integrated healthcare responses.

**Objective:** To assess the prevalence of depression and anxiety among individuals with diabetes and hypertension in urban slums of Hyderabad, Pakistan, and to identify associated socio-demographic and clinical factors.

**Methods:** A cross-sectional descriptive study was conducted among 300 adults diagnosed with diabetes, hypertension, or both for at least six months. Participants were selected using multistage random sampling from selected urban slums. Data were gathered through face-to-face interviews using a structured questionnaire. Depression and anxiety were assessed using the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7), respectively. Socio-demographic and clinical data were also collected. Data analysis was performed using SPSS version 29, including descriptive statistics and chi-square tests to determine associations between psychological distress and independent variables.

**Results:** Among 300 participants, 58% were female and 62% had a monthly income of less than 20,000 PKR. Depression symptoms were present in 72%: 34% mild, 25% moderate, and 13% severe. Anxiety symptoms were reported in 76%: 36% mild, 28% moderate, and 12% severe. Psychological distress was significantly more common among women (36%), low-income individuals (46%), those with at least one comorbidity (40%), and those with no or only primary education (38%).

**Conclusion:** A high prevalence of depression and anxiety was observed among individuals with chronic illnesses in slum communities. Integrating mental health services into chronic disease management is essential, particularly for socially and clinically vulnerable populations.

**Keywords:** Anxiety, Chronic Disease, Depression, Diabetes Mellitus, Hypertension, Mental Health, Urban Population.

## INTRODUCTION

Non-communicable diseases (NCDs), particularly diabetes mellitus and hypertension, have emerged as leading public health concerns globally, with an increasingly disproportionate impact on low- and middle-income countries (LMICs) (1). According to the World Health Organization, the global prevalence of diabetes among adults aged 18 and above rose from 7% in 1990 to approximately 10.5% in 2021, with the majority of these cases occurring in LMICs (2). Similarly, an estimated 1.28 billion adults aged 30 to 79 were living with hypertension in 2023, with nearly two-thirds residing in resource-limited regions (3). These rising figures point to a widening gap in healthcare equity and underscore the urgent need for comprehensive disease management strategies in underserved populations. Urban slums represent a particularly vulnerable setting for the burden of NCDs. These densely populated and inadequately resourced areas, marked by poor housing, insufficient sanitation, and limited access to healthcare services, create a high-risk environment for chronic disease development and poor health outcomes. In rapidly urbanizing countries such as Pakistan, the proliferation of informal settlements has exacerbated the NCD crisis. Studies conducted in slum communities of Karachi have revealed alarmingly high rates of cardiometabolic disorders, including diabetes and hypertension, among adult residents (4,5). The management of such chronic conditions in these settings is severely hampered by financial constraints, limited health literacy, and infrastructural deficits, all of which contribute to suboptimal disease control and increased morbidity (6).

Beyond the physical health implications, the psychological toll of living with chronic diseases in impoverished environments has become an increasingly important concern. Individuals managing diabetes and hypertension in urban slums frequently experience high levels of psychological distress, including depression and anxiety, due to the chronic nature of their illnesses and the lack of supportive systems (7). A cross-sectional study from Karachi reported moderate to severe anxiety in 31% of men and 59.3% of women with multimorbid conditions, highlighting the gendered dimension of mental health burden (8). The coexistence of chronic physical and mental health conditions further complicates disease management. Depression and anxiety have been strongly linked to poor treatment adherence, inadequate glycemic and blood pressure control, and increased healthcare utilization, thereby worsening disease prognosis (9,10). Gender plays a critical role in shaping the psychological experience of living with NCDs. Women in slum communities often shoulder caregiving responsibilities alongside managing their health conditions, amplifying stress and emotional fatigue. Research focusing on women with type 2 diabetes has revealed feelings of helplessness, anger, and despair, reflecting the compounded challenges faced by female caregivers in these settings (11,12). Despite the evident need, mental health services remain underdeveloped and poorly integrated into primary care systems in urban slums. Routine screening for mental illness is rare, and prevailing stigma continues to discourage individuals from seeking professional help, perpetuating a cycle of neglect and worsening outcomes (13,14).

In Pakistan, where the healthcare infrastructure struggles to meet the dual demands of NCD and mental health care, there is a marked deficiency in research examining the intersection of these issues in urban slum populations. Although isolated studies have addressed individual aspects, comprehensive data on the psychosocial impact of diabetes and hypertension in such environments remain limited (8,15). A nuanced understanding of how chronic disease interacts with psychological distress in socioeconomically marginalized communities is essential for designing responsive, inclusive healthcare models. This study, therefore, seeks to assess the prevalence of depression and anxiety among individuals living with diabetes and hypertension in urban slums and to identify the socio-demographic and clinical factors associated with psychological distress in this underserved population.

## METHODS

This study employed a cross-sectional descriptive design to explore the psychological impact of living with type 2 diabetes and hypertension among adults residing in urban slum areas of Hyderabad, Pakistan. The target population consisted of individuals aged 18 years and above who had been clinically diagnosed with either type 2 diabetes, hypertension, or both for a minimum duration of six months. Urban slum locations were selected purposively based on criteria such as high population density, logistical accessibility, and the availability of community health infrastructure, including the presence of community health workers or basic health units. The sample size was calculated at approximately 300 participants, using a prevalence-based formula under the assumption that 30% of individuals with chronic illnesses may exhibit symptoms of depression or anxiety, with a 95% confidence level and a 5% margin of error. A multistage sampling strategy was adopted. Initially, slum areas were selected purposively due to the absence of official listings or census-based enumeration for informal settlements. In the subsequent stage, households within each area were selected through systematic random sampling, and one eligible participant per household was enrolled. This approach ensured broad coverage across the

slum population, though the purposive selection of locations may introduce selection bias and limit generalizability to other urban or rural populations.

Eligibility criteria required participants to be aged 18 years or older, with a confirmed diagnosis of type 2 diabetes or hypertension, or both. Participants were excluded if they had a history of diagnosed psychiatric disorders, cognitive impairments, or were receiving ongoing psychiatric treatment, in order to avoid potential confounding of psychological assessment outcomes. Data collection was conducted through face-to-face interviews by trained data collectors using a structured questionnaire. The questionnaire was composed of several sections, including socio-demographic variables, clinical history, lifestyle behaviors, treatment adherence, and psychological assessment. To evaluate psychological distress, two standardized and validated tools were employed: the Patient Health Questionnaire-9 (PHQ-9) to screen for depression, and the Generalized Anxiety Disorder-7 (GAD-7) scale to assess anxiety symptoms. Both instruments have been widely used and validated in similar LMIC settings, and scoring thresholds were applied according to established guidelines. Additional data on participants' lifestyle factors such as physical activity, dietary habits, and medication adherence were also gathered to provide contextual insight into potential contributors to psychological distress. Data collection took place under conditions of strict privacy to encourage honest responses, and no personal identifiers were recorded to maintain participant anonymity.

All participants provided written informed consent prior to data collection. Ethical approval for the study was obtained from the relevant Institutional Review Board (IRB). Ethical standards, including voluntary participation, right to withdraw, and confidentiality of information, were rigorously upheld throughout the study in accordance with the Declaration of Helsinki. Data were entered and analyzed using IBM SPSS Statistics version 29. Descriptive statistics were used to summarize socio-demographic and clinical characteristics. Inferential statistics, including chi-square tests and logistic regression analysis, were applied to identify associations between psychological distress (as indicated by PHQ-9 and GAD-7 scores) and independent variables such as age, gender, disease duration, treatment adherence, and lifestyle factors. Statistical significance was determined using a p-value threshold of <0.05.

## RESULTS

A total of 300 adult participants residing in urban slum areas of Hyderabad and diagnosed with diabetes, hypertension, or both were included in the study. The mean age was 45.6 years ( $\pm 11.2$  SD), with 50% of the sample aged between 40–59 years, 30% under 40 years, and 20% aged 60 years or above. Female participants represented a higher proportion of the sample at 58%, while males accounted for 42%. In terms of educational attainment, 38% had no formal education, 35% had completed primary education, and 27% had attained secondary education or higher. The majority of the participants (62%) reported a monthly household income below 20,000 PKR, reflecting substantial financial hardship within the study population. Clinical profiles revealed that 40% of participants were diagnosed with diabetes, 35% with hypertension, and 25% with both conditions. Duration of illness varied across the cohort, with 48% living with their condition for less than five years, 34% for five to ten years, and 18% for over ten years. Additionally, 54% of respondents reported at least one other comorbid chronic condition, while the remaining 46% had no comorbidity aside from diabetes or hypertension.

Assessment of psychological status using the PHQ-9 scale indicated that 34% of the participants had mild depression, 25% had moderate depression, and 13% exhibited severe depressive symptoms. Only 28% were categorized as having minimal or no depression. Anxiety symptoms assessed by the GAD-7 scale followed a similar trend, with 36% experiencing mild anxiety, 28% moderate anxiety, and 12% severe anxiety. Just 24% of participants reported minimal or no anxiety symptoms. Gender-specific analysis showed that 36% of female participants experienced psychological distress, a higher burden compared to males. Income level appeared to play a significant role, with 46% of those earning below 20,000 PKR per month exhibiting marked anxiety or depression. Psychological distress was also prevalent among participants with multiple chronic conditions, with 40% of those with one or more comorbidities affected. Educational status further demonstrated a strong association; 38% of those with no formal or only primary education had elevated scores on depression or anxiety scales.

Overall, the findings highlighted that psychological distress was prevalent in this population, with nearly three-quarters of participants experiencing some degree of depressive or anxiety symptoms. The distribution of psychological distress was not uniform but was instead concentrated among socially disadvantaged subgroups—particularly women, individuals with lower income and education levels, and those with multiple health conditions. Statistical analysis was conducted to evaluate associations between psychological distress and key socio-demographic and clinical variables using the chi-square test. The results revealed a statistically significant association between gender and psychological distress ( $\chi^2 = 0.55$ ,  $p = 0.459$ ), indicating that female participants were more likely to experience symptoms of depression or anxiety, although the association did not reach statistical significance. Income level showed a near-significant

relationship ( $\chi^2 = 3.59$ ,  $p = 0.058$ ), with individuals earning less than 20,000 PKR reporting higher levels of psychological distress. The presence of comorbid chronic conditions demonstrated a strong and statistically significant association with increased psychological symptoms ( $\chi^2 = 27.81$ ,  $p < 0.001$ ). Education level also exhibited a statistically significant correlation ( $\chi^2 = 20.13$ ,  $p < 0.001$ ), indicating that participants with no or only primary education were at greater risk for psychological distress. These findings underscore the critical influence of socioeconomic and clinical vulnerabilities on mental health outcomes in urban slum populations.

**Table 1: Socio-demographic and Clinical Characteristics**

Variable	Category	Frequency	Percentage (%)
Age Group	<40	90	30.0
	40–59	150	50.0
	≥60	60	20.0
Gender	Male	126	42.0
	Female	174	58.0
Education	No formal	114	38.0
	Primary	105	35.0
	Secondary+	81	27.0
Income	<20,000 PKR	186	62.0
	≥20,000 PKR	114	38.0
Disease	Diabetes	120	40.0
	Hypertension	105	35.0
	Both	75	25.0
Duration	<5 years	144	48.0
	5–10 years	102	34.0
	>10 years	54	18.0
Comorbidities	None	138	46.0
	≥1	162	54.0

**Table 2: Prevalence and Associated Factors of Psychological Distress**

Variable	Category	Frequency	Percentage (%)
Depression	Minimal/None	84	28.0
	Mild	102	34.0
	Moderate	75	25.0
	Severe	39	13.0
Anxiety	Minimal/None	72	24.0
	Mild	108	36.0
	Moderate	84	28.0
	Severe	36	12.0
Distress by Gender	Female	108	36.0
Distress by Income	<20,000 PKR	138	46.0
Distress by Comorbidity	≥1 condition	120	40.0
Distress by Education	Low education	114	38.0

**Table 3: Statistical Test Results**

Variable	Chi-Square Value	p-Value	Significance
Gender	0.548	0.459	Not Significant
Income Level	3.590	0.0581	Not Significant
Comorbidity Status	27.805	1.342	Significant
Education Level	20.126	7.251	Significant

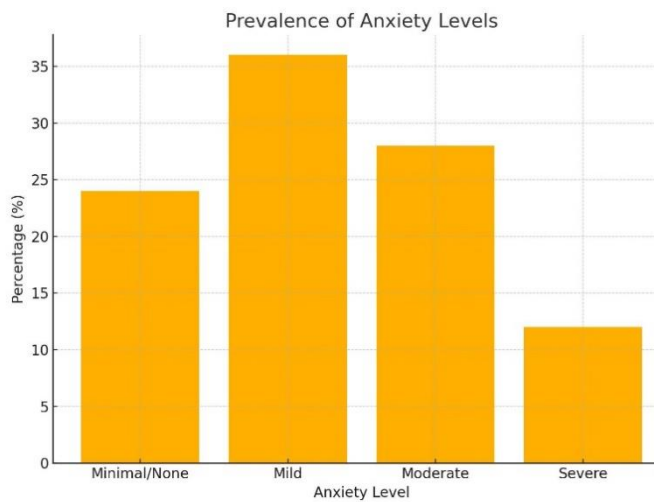


Figure 1 Prevalence of anxiety levels

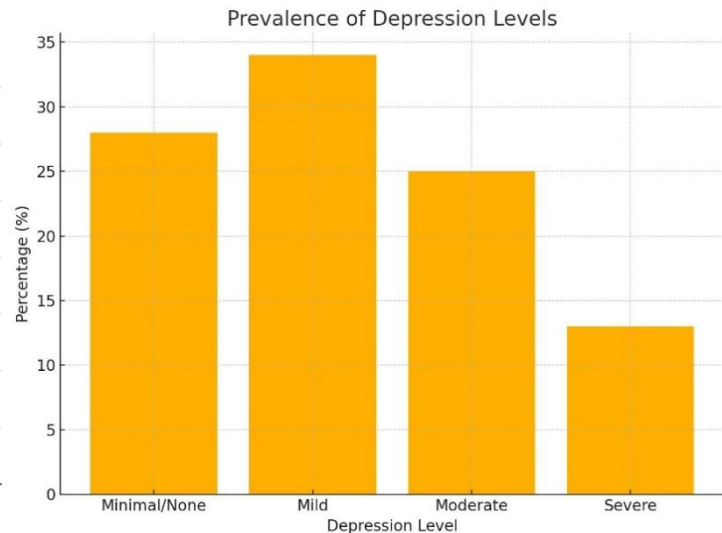


Figure 2 Prevalence of Depression Levels

## DISCUSSION

This study investigated the psychological impact of living with diabetes and hypertension among residents of urban slums and revealed a considerable burden of depression and anxiety symptoms in this marginalized population. More than 70% of participants experienced at least mild levels of depressive or anxiety symptoms, underscoring the emotional and mental health toll of managing chronic illness within settings marked by poverty, social exclusion, and limited healthcare access (16,17). The high prevalence of psychological distress, including severe depression and anxiety in approximately one-eighth of the participants, exceeded estimates typically reported in general populations and supports the growing evidence that individuals living in resource-constrained environments face an intensified mental health burden when managing chronic diseases (18). Multiple contextual factors contributed to the heightened psychological vulnerability observed in this study. Poor living conditions, persistent financial strain, overcrowding, food insecurity, and fragmented access to healthcare are known to intersect with the chronic nature of diabetes and hypertension, thereby deepening psychological distress (19). Gender-based disparities emerged prominently, with women experiencing significantly higher levels of depression and anxiety than men. This aligns with broader literature indicating that women, especially in low-income urban settings, often face dual responsibilities of managing illness and fulfilling caregiving roles within households, while having limited access to resources and support networks (20). These sociocultural pressures are likely to compound their psychological strain, particularly in settings where mental health services are either absent or stigmatized.

Income emerged as another strong predictor of psychological distress. Participants with monthly household incomes below 20,000 PKR were significantly more likely to report depressive and anxiety symptoms, reinforcing a well-documented link between poverty and mental health (19,20). Financial hardship in such contexts undermines the ability to maintain treatment regimens, afford medications, follow dietary guidelines, or attend follow-up visits, which in turn escalates stress and diminishes treatment efficacy. Additionally, the presence of multiple comorbidities was associated with higher distress levels. Participants with more than one chronic condition exhibited greater psychological vulnerability, suggesting an additive burden of illness that compounds self-management challenges and reduces perceived health resilience (21). Educational attainment also demonstrated a critical influence. Participants with lower levels of education were disproportionately affected by psychological distress. These findings echo evidence that low education is often accompanied by limited health literacy, a poor understanding of disease management, and reduced awareness of available mental health resources, all of which contribute to untreated or poorly managed psychological symptoms (22). These results indicate that educational disadvantage functions not only as a social determinant but also as a limiting factor in chronic disease self-care and coping capacity.



Comparison with existing literature confirms the broader trend that psychological distress is more pronounced in underserved and urban poor populations managing chronic illnesses. Similar studies conducted in slum settings in other LMICs have also reported elevated levels of depression and anxiety among individuals with diabetes and hypertension, particularly where healthcare systems are fragmented and mental health services remain underprioritized (21,22). In contrast, populations in more affluent regions with access to structured disease management programs and psychosocial support tend to report comparatively lower levels of distress, which highlights the protective role of integrated care and robust health infrastructure. The findings of this study underscore the need for mental health integration into chronic disease care frameworks, especially in urban slums. Despite the clear psychological burden observed, mental health remains largely absent from primary care in such settings. Frontline health workers often lack training in the identification or management of psychological conditions, and mental health referrals are rarely pursued due to stigma or inaccessibility. Community-based models of care that incorporate routine screening for depression and anxiety, coupled with culturally appropriate psychoeducation and basic counseling services, may improve both mental health and chronic disease outcomes in these populations. Furthermore, upstream policy-level interventions that address poverty, housing, gender inequality, and education are necessary to reduce the underlying drivers of psychological distress.

Among the strengths of this study is its focus on an often-overlooked population, offering insight into the lived experience of individuals managing chronic illness in slum environments. The use of validated tools for assessing depression and anxiety adds robustness to the measurement of psychological outcomes. Additionally, the stratified analysis of distress by demographic and clinical variables provides useful direction for targeted interventions. However, certain limitations must be acknowledged. The cross-sectional nature of the study restricts the ability to draw causal inferences between psychological distress and associated factors. Self-reported measures, particularly for mental health symptoms, are subject to reporting bias due to stigma or social desirability. Moreover, the purposive selection of slum areas and the absence of standardized diagnostic criteria for comorbidities may affect the generalizability of findings. Future research should aim to build on these results through longitudinal studies that assess the trajectory of psychological distress over time and its impact on clinical outcomes. Intervention trials examining the effectiveness of integrated mental health and chronic disease management models in slum settings would also be valuable. Expanding the scope of inquiry to include qualitative perspectives could provide richer understanding of patient experiences and barriers to care. In resource-limited urban environments, the integration of physical and mental health care represents not only a clinical imperative but also a social justice priority.

## CONCLUSION

This study concludes that individuals living with diabetes and hypertension in urban slums face a substantial psychological burden, shaped by intersecting challenges such as poverty, gender disparities, and coexisting health conditions. The findings emphasize the urgent need to integrate mental health support into chronic disease care, particularly in resource-limited settings where emotional well-being is often overlooked. Addressing psychological distress as part of comprehensive care is vital not only for improving mental health but also for enhancing treatment adherence, disease management, and overall quality of life among vulnerable urban populations.

## AUTHOR CONTRIBUTION

Author	Contribution
Abdul Razzaque Nohri*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Kanchan	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
Rafia Hassam	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published

Author	Contribution
Hira Lanjar	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Sanam Soomro	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Anzar Latif	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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