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Prevalence of depressive and anxiety symptoms and their sociodemographic correlates among adult clinical population in Pakistan

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Abstract

Background Depression and anxiety contribute substantially to the mental health burden in low- and middle-income countries, yet clinic-based evidence from Pakistan remains limited. This study examined the distribution of depressive and anxiety symptom severity and their sociodemographic correlates in outpatient mental health clinics in Pakistan.

Methods This cross-sectional study included 267 participants recruited through consecutive sampling from four urban outpatient mental health clinics in Pakistan. Depression and anxiety were assessed using Hamilton Depression Rating Scale-17 and Generalized Anxiety Disorder Scale-7, respectively. Symptom severity was categorized as low, moderate, and high based on cut-offs (HDRS-17: 0–13, 14–26, ≥ 27 ; GAD-7: 0–9, 10–14, ≥ 15). Sociodemographic correlates included gender, age, marital status, educational attainment, employment status, and socioeconomic status. Multinomial logistic regression was used to estimate adjusted associations.

Results Moderate-to-high symptom severity was common for both depression and anxiety. For depression, 64.8% of participants had high depressive symptom severity and 22.3% had moderate symptom severity. For anxiety, 32.6% had high anxiety symptom severity and 30.3% had moderate symptom severity. In adjusted analyses, unemployment was significantly associated with higher depression severity (OR = 2.55, 95% CI: 1.23–5.29). Low socioeconomic status was associated with moderate anxiety severity (OR = 6.08, 95% CI: 1.97–8.75), while middle socioeconomic status was associated with higher anxiety severity (OR = 6.11, 95% CI: 2.79–13.23). Gender, age, marital status, and education showed no consistent adjusted associations.

Conclusion This study extends clinic-based mental health evidence from Pakistan by showing that depressive and anxiety symptom severity is strongly patterned by socioeconomic disadvantage. The findings shift attention from individual symptom burden alone to the broader social conditions shaping clinical mental health presentations.

Keywords Depression, Anxiety, Prevalence, Distribution, Sociodemographic correlates, Pakistan



1 Introduction

Depression and anxiety are leading global mental health disorders. According to recent epidemiological data, the global prevalence of depressive and anxiety disorders has reached 332.40 million and 359.20 million cases, respectively, in 2021, which represents 63.1% of the total worldwide mental health disorders [1]. This burden is particularly pronounced in low and middle income countries, including South Asian region, where rapid urbanization, persistent poverty, socioeconomic and gender inequalities, domestic violence, and political instability contribute to elevated psychological distress [2]. These countries face significant challenges in monitoring population-level mental health and disability data due to limited infrastructure and resources. As a result, mental health surveillance relies heavily on household surveys, where methodological inconsistencies, particularly in the assessment of prevalence and risk factors can lead to incomplete or unreliable estimates [3]. These alarming trends underscore the critical need for comprehensive epidemiological studies to assess symptom patterns and examine associated sociodemographic factors, essential steps toward developing targeted, evidence-based interventions and policy developments.

Pakistan, an emerging South Asian nation, faces a relatively high burden of depression and anxiety disorders. Findings from multiple prevalence studies conducted across diverse populations suggest high prevalence rates. A recent survey found that 52.8% of 1177 university students in Pakistan had depressive symptoms [4]. Similarly, another study found that among 400 adults screened for depressive symptoms, 57.0% tested positive. These findings underscore the substantial psychological burden of depression among urban Pakistani adults [5]. On the other hand, a recent survey of 17,773 adults in Pakistan, revealed that 24.81% had reported anxiety symptoms [6]. Another study of 9,331 adults found that 31% of men and 59.3% of women experiencing anxiety [7]. These findings suggest that further research should be conducted to assess the latest trends in depression and anxiety in Pakistan.

Research on depression and anxiety in Pakistan has increased; however, high-quality epidemiological data from clinical settings using validated tools are still limited. Existing research studies, e.g., Muneer et al. [4] predominantly employ brief screening instruments with limited samples, focusing on specific urban subgroups. Critically, most data on Pakistan predates the COVID-19 pandemic and subsequent economic shocks, including the current 3.5% inflation rate down from 11.8% in 2024 [8]. These factors have likely exacerbated mental health burdens in the country. This situation stresses the need for updated research that examines the relationships between these factors and depression–anxiety symptom severity. While past studies, e.g., Rehman et al. [9] and Hashmi et al. [10] have primarily focused on prevalence rates and clinical risk factors, few have systematically assessed socioeconomic determinants of these mental health conditions. Importantly, these determinants may not operate uniformly across contexts. Rather the sociocultural factors such as gender norms, economic dependency, stigma surrounding mental illness may amplify or modify the relationship between socioeconomic disadvantage and depression–anxiety severity. For example, research indicates mental health stigma (which vary by gender) remains a major barrier to help-seeking in Pakistan [11]. Additionally, sociocultural norms and gendered expectations in Pakistan shape mental health experiences and access to support [12]. Therefore, these sociocultural and economic influences may provide an important contextual framework for interpreting why

the observed associations between sociodemographic factors and depression–anxiety symptom severity may be more pronounced in this Pakistani clinical setting.

These research gaps highlight an urgent need for methodologically robust investigations into depression and anxiety symptom distribution and its socioeconomic correlates in Pakistan. This study addresses these gaps by employing the Hamilton Depression Rating Scale (HDRS-17)—a gold-standard clinician-administered tool [13] and the Generalized Anxiety Disorder Scale (GAD-7) [14] to assess depression-anxiety symptoms in a sample of 267 respondents. By incorporating demographic (age, gender and marital status), and socioeconomic (education, employment, and economic status), this study enabled multivariate analysis to identify independent sociodemographic correlates of depression and anxiety symptoms among a clinical population in Pakistan. Beyond providing updated data on depression-anxiety symptoms, this study explains the contextual and structural correlated of mental health in Pakistan. The findings hold both academic and policy relevance, offering actionable insights for targeted mental health strategies in education, employment, and community-based psychosocial support systems.

2 Methods and materials

2.1 Study design

Given the collection of single timepoint data, this study utilized a cross-sectional quantitative survey design [15]. This study is reported in accordance with the STROBE guidelines for cross-sectional studies [37].

2.2 Study sample and eligibility

Given the unavailability of reliable population-level data on the exact number of depression and anxiety patients in Pakistan, probability sampling was not feasible. Consequently, the study employed consecutive sampling technique with a rolling recruitment strategy [16]. This approach involved systematically enrolling every eligible participant who met the inclusion criteria during the study period until reaching the target sample size of 267 respondents, which was estimated through formula provided by Daniel and Cross [17]:

$$n = \frac{Z^2 \cdot p \cdot (1 - p)}{d^2}$$

where n is required sample size, Z represents the Z-score of 1.96 corresponding to a 95% confidence level, p is the estimated proportion of 0.5 (used to maximize variability when the true proportion is unknown), and d is the desired margin of error of $\pm 5\%$ (0.05). Putting values into the given formula, an estimated sample size of ($n = 267$) was obtained:

$$270 = \frac{1.96^2 \cdot 0.5 \cdot (1 - 0.5)}{d^2}$$

$$270 = \frac{3.8416 \cdot (0.25)}{d^2}$$

$$270 = \frac{0.9604}{d^2}$$

Now to get the d^2 , the data was entered into the formula:

$$d^2 = \frac{0.9604}{270}$$

$$d^2 = 0.003556$$

Finally obtaining an estimated sample size of ($n=267$): $n = \frac{0.9604}{0.00356} = 267$

Thus, minimum 267 consecutive respondents were required for this study. This size was considered sufficient for performing desired statistical analysis. As a clinic-based survey using consecutive sampling, the sample is not intended to be representative of the whole clinical population in Pakistan.

Participants were eligible if they were adults aged 18–50 years, exhibited symptoms of depression and/or anxiety, and were willing and able to provide informed consent. Both male and female participants were included. The age range was restricted to minimize clinical heterogeneity, as older adults are more likely to have comorbid medical conditions that may confound the assessment of depressive and anxiety symptoms.

2.3 Study setting and participant recruitment

Mental healthcare clinics located in the urban capital cities of Peshawar, Islamabad, Abbottabad, and Rawalpindi, Pakistan, were identified through accessible professional and institutional networks to form a preliminary sampling pool. Due to the absence of an official registry of mental health clinics, a complete sampling frame could not be established. From this pool, one clinic in each city was selected using a simple random selection method (lottery method), resulting in four clinics included in the study. These clinics were urban outpatient mental health facilities providing secondary-level psychiatric and psychological care across both public and private sectors, with regular patient flow.

Participant recruitment was conducted during routine outpatient visits at the selected clinics using a non-probability consecutive sampling approach. Clinicians screened patients for eligibility, and those who exhibited symptoms of depression and/or anxiety and met the inclusion criteria were invited to participate. Eligible participants were provided with a written study information sheet, and written informed consent was obtained prior to participation. Participation was voluntary and did not influence the clinical care provided. Recruitment continued until the required sample size of 267 participants was achieved. Participants receiving ongoing treatment were not excluded, as treatment status was not used as an inclusion or exclusion criterion.

Ethical approval for this study was obtained from the Research Ethics Committee of Universiti Malaysia Sarawak, Malaysia, and the Research Ethics Committee of Khushal Khan Khattak University, Pakistan. All methods were carried out in accordance with relevant guidelines and regulations. Written informed consent was obtained from all participants prior to participation.

2.4 Data collection and assessment instruments

Symptom-related data was collected through face-to-face interviews with participants in a clinical setting by using the Hamilton Depression Rating Scale-17 (HDRS-17) [13] and the Generalized Anxiety Disorder-7 (GAD-7) [14]. The HDRS-17 and GAD-7 assess the severity of depressive and anxiety symptoms rather than clinical diagnoses. The existing literature reports that both of these instruments demonstrate strong psychometric

properties. The Cronbach's α for depression scale range from 0.70 [18] to 0.74 [19]. Likewise, the anxiety scale has good internal consistency, ranging from 0.80 [20] to 0.91 [21]. Scoring of both scales adhered to established guidelines. For the HDRS-17, symptom severity was categorized as 0–13 (low), 14–26 (moderate), and ≥ 27 (severe), while for the GAD-7, scores were categorized as 0–9 (low), 10–14 (moderate), and 15–21 (severe), based on commonly used clinical cut-off thresholds reported in the literature [11, 12, 16]. Since both are standardized scales therefore, no pilot testing was conducted. Moreover, full versions of the HDRS-17 and GAD-7 are not reproduced in this manuscript due to copyright restrictions. Finally, data on the demographic (age, gender and marital status), and socioeconomic (education, employment, and economic status) was also collected during the interview. Socioeconomic status was assessed using the Kuppuswamy Socioeconomic Status Scale [22].

Both tools were administered in English, which is an official language of Pakistan and widely used in clinical settings. Given that assessments were clinician-administered, trained clinicians ensured that all participants fully understood each item, providing clarification where necessary to minimize comprehension bias. Each participant was assessed once and completed the survey in a single session. Data collection was carried out between February 1, 2025, and June 30, 2025. To minimize data entry errors, responses were recorded immediately during the interviews using standardized scoring sheets. All clinicians involved were trained and qualified clinical psychologists with substantial experience in mental health assessment.

2.5 Potential sources of bias

As the current study employed a non-probability consecutive sampling approach in outpatient clinical settings, there is a potential risk of selection bias, as participants seeking clinical care may not be representative of the broader population with depression and anxiety. Additionally, the use of clinician-administered interviews may introduce interviewer-related bias. To minimize this, standardized assessment instruments were used, and all interviews were conducted by trained and qualified clinical psychologists following consistent administration procedures. Information bias was further reduced by recording responses immediately during interviews using standardized scoring sheets.

2.6 Data analysis

Data was initially analyzed using the SPSS-21 version. Descriptive statistics like mean, percentage, and standard deviation were employed to present demographic and socioeconomic information. Pie charts were used to illustrate the prevalence and distribution of depression and anxiety symptom severity. Moreover, the chi-square test was utilized to evaluate association between depression, anxiety, and socioeconomic (education, employment, economic status) and demographic (age, gender, and marital status) variables because the outcome variable is categorical.

Subsequently, multinomial logistic regression analyses [23] were conducted by using Python (version 3.14.2) to identify independent correlates of depression and anxiety. Depression and anxiety severity categories were analyzed as outcome variables, while sociodemographic factors (age, gender, marital status) and socioeconomic (education, employment, socioeconomic status) variables as independent correlates. Prior to conducting analysis, the assumptions of multivariate analysis were verified. This included

checking for multicollinearity and ensuring the independence of observations. Multicollinearity among independent variables was assessed using variance inflation factors. A threshold of $VIF < 5$ was used to indicate absence of problematic multicollinearity [24]. Although these variables are conceptually related, they were retained in the model as they represent distinct sociodemographic constructs.

Additionally, the data were examined to ensure no high intercorrelation between independent variables and no repeated measures or clustering effects [25]. The level of depression and anxiety was categorized into three levels (i.e., lower severity, moderate severity and higher severity). Moreover, all outcome and independent variables were treated as categorical variables in the analysis, which helped to deal with any potential violations of the proportional odds assumption. All independent variables were entered simultaneously into the models. During analyses, the low symptom category was set as the reference group for the outcome variable. Regression coefficients (β) and Odds Ratios were estimated to assess the strength and direction of associations between independent variables and outcome categories.

Given this analytical framework, attention was directed toward selecting the most appropriate regression model for the ordinal outcome variables. Although the outcome variables were ordinal in nature, multinomial logistic regression was employed because the proportional odds assumption required for ordinal models was not satisfied. Preliminary assessment indicated that the relationship between independent and outcome categories was not consistent across thresholds. Therefore, the multinomial approach was selected as a more flexible method.

3 Results

3.1 Demographic and socioeconomic characteristics

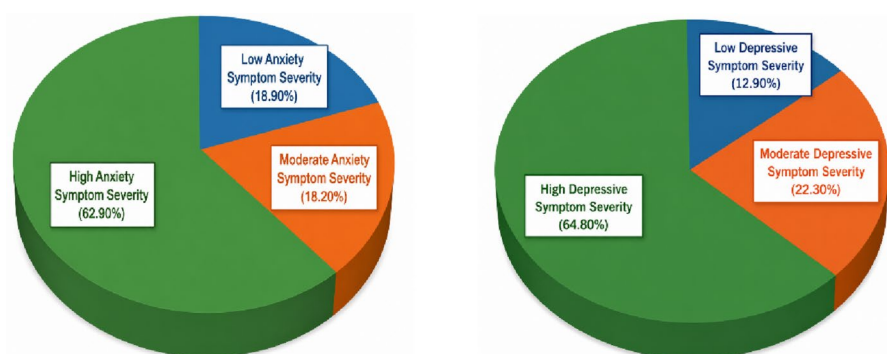
Table 1 shows the demographic and socioeconomic characteristics of the participants in this study. These participants were recruited from four clinics situated in urban cities of Pakistan, with the largest proportions from Rawalpindi (40%) and Peshawar (30%). Gender wise, the majority of participants were male (62.20%), while females accounted for 37.8%. Age wise, most participants (67%) were between 18 and 33 years old, and a correspondingly high proportion (55.3%) were unmarried. Education, employment, and socioeconomic status showed overlapping but distinct distribution patterns within the sample. Over half of the participants (58.7%) were either illiterate or had limited education, and lower educational attainment was more frequently observed among unemployed participants. Additionally, nearly all participants (95%) had low or middle economic status. Overall, the sample was characterized by a higher proportion of female participants, younger age groups, lower educational attainment, high unemployment, and predominantly low to middle socioeconomic status.

3.2 Distribution of depression and anxiety

Figure 1 presents the distribution of depression and anxiety symptom severity among participants, displayed as percentage breakdowns in pie charts on the following page. It is clear from the pie chart that 32.60% of participants had high anxiety symptom severity, while 30.30% had moderate anxiety symptom severity. Similarly, 64.80% had high depressive symptom severity, 22.30% had moderate depressive symptom severity, and 12.90% had low depressive symptom severity. These findings suggest that a significant

Table 1 Demographic and socioeconomic characteristics of respondents ($n = 267$)

Variables	<i>n</i>	%
Clinic wise participants		
Rawalpindi	104	37.70
Peshawar	83	30.00
Islamabad	47	17.30
Abbottabad	42	15.00
Gender		
Male	172	62.20
Female	104	37.80
Age		
18–23 Years	74	26.80
24–28 Years	63	22.80
29–33 Years	48	17.40
34–38 Years	46	16.70
> 38 Years	45	16.30
Marital status		
Married	123	44.70
Unmarried	143	51.70
Divorced	06	2.20
Widowed	04	1.40
Education		
Illiterate	102	37.00
Matric	68	24.60
Intermediate	48	17.40
Undergraduate	42	15.20
Postgraduate	16	5.80
Employment status		
Employed	98	35.60
Unemployed	178	64.40
Socioeconomic status		
Low	130	47.10
Middle	132	47.80
High	14	5.10

**Fig. 1** Distribution of depressive and anxiety symptom severity among respondents. Figure designed in MS Excel and exported as a high-resolution image, 300 DPI from Canva

portion of the participants experienced high levels of anxiety and depressive symptom severity

3.3 Sociodemographic correlates of depression and anxiety symptom

The bivariate chi-square test results indicated that gender, educational attainment, employment status, and socioeconomic status were significantly associated with symptom severity, whereas age showed no consistent association across outcomes. Marital status demonstrated variable associations across depression and anxiety severity categories. Detailed results of these analyses are presented in Supplementary File C. Given that all sociodemographic variables were included simultaneously in the multinomial logistic regression models, interpretation of findings is based on adjusted analyses presented in forthcoming sections.

3.4 Sociodemographic factors associated with depression

After running multinomial logistic regression analyses, no evidence of problematic multicollinearity was identified ($VIF < 5$). In adjusted analyses, unemployment was significantly associated with higher depression severity compared with employment status ($OR = 2.55$, 95% CI: 1.23–5.29, $p = 0.010$). Socioeconomic status emerged as the most consistent correlate of depression severity. Relative to high socioeconomic status, both low and middle socioeconomic status were significantly associated with increased depression severity across outcome categories. Low socioeconomic status was associated with moderate and higher depression severity ($OR \approx 4.44$ – 5.75 , $p \leq 0.004$), while middle socioeconomic status showed similarly strong associations ($OR \approx 4.41$ – 7.03 , $p \leq 0.004$). No consistent statistically significant associations were observed for gender, age, marital status, or educational attainment in the adjusted models. (Complete details are provided in Supplementary File B).

3.5 Sociodemographic factors associated with anxiety

In adjusted multinomial logistic regression analyses, low socioeconomic status was significantly associated with moderate anxiety severity compared with high socioeconomic status ($OR = 6.08$, 95% CI: 1.97–8.75, $p = 0.002$), while middle socioeconomic status was significantly associated with higher anxiety severity ($OR = 6.11$, 95% CI: 2.79–13.23, $p = 0.001$). Unmarried status was also associated with moderate anxiety severity ($OR = 2.04$, 95% CI: 1.00–4.12, $p = 0.048$). No consistent statistically significant associations were observed for gender, age, educational attainment, or employment status in the adjusted models.

4 Discussion

To our knowledge, this study is among the few in Pakistan to examine sociodemographic and economic correlates of depressive and anxiety symptom severity in a clinical sample, as prior research has largely focused on clinical correlates. In this clinic-based sample, a high proportion of participants fell within the moderate-to-high symptom severity categories for depression (64.8%) and anxiety (62.9%), indicating a substantial burden of psychological symptoms among treatment-seeking adults. These findings should be interpreted as reflecting symptom burden within a non-probability clinical sample rather than prevalence of depressive or anxiety disorders in the general population.

The findings of this study are consistent with realities of Pakistan. The sample consisted largely of male respondents. Although descriptive and bivariate patterns indicated higher levels of depressive and anxiety symptom severity among female participants, gender was not independently associated with depression or anxiety severity in the adjusted analyses. This suggests that the observed differences may reflect underlying socioeconomic conditions rather than a direct effect of gender. Prior studies consistently report high depressive and anxiety symptoms among women, reflecting a disproportionate mental health burden. For example, depression prevalence was higher among female cancer patients (31%, 95% CI 26%–36%) than among male cancer patients (26%, 95% CI 21%–31%), and the prevalence of depression among cancer patients increased by an average of 0.6% per year [26]. In the context of Pakistan, it revealed significant predictive relationships with gender (for depression Odd Ratio was 1.411, $p = 0.007$ and for Anxiety Odd Ratio was 2.43, $p = 0.001$), suggesting that women were more likely to suffer from these symptoms [27]. However, the present study did not find an independent association after adjustment. This suggests that previously observed gender differences may be partly explained by underlying contextual factors rather than gender alone. A study found disability adjusted life years varied significantly. Females experienced 3.81% (95% confidence interval), compared to 2.37% (95% confidence interval) in males [28]. The observed gender disparity in mental health prevalence raises concerns about potential overtreatment of women for psychiatric conditions [29] and to address the gendered mental health burden in Pakistan, a multi-sectoral approach is needed.

This study also identified several other sociodemographic correlates. In adjusted analyses, unemployment and lower socioeconomic status were the most consistent factors associated with higher depression and anxiety symptom severity. Although descriptive patterns suggested higher symptom levels among individuals with lower educational attainment and certain marital status groups, these associations were not statistically significant after adjustment. While some studies suggest unmarried individuals experience greater depressive symptoms due to reduced social support [30]. However, in Pakistani context, this appears more complex. In this setting, marital responsibilities combined with financial strain may increase psychological distress [31]. Furthermore, unemployment and low economic status emerged as the most consistent factors associated with higher depression and anxiety symptom severity in the adjusted models. These associations may be explained by mechanisms related to chronic financial insecurity and persistent stress, as suggested in prior literature [32, 33, 34]. These factors are closely interrelated in real-world settings; however, the multivariable analysis allowed estimation of their independent associations while accounting for their overlap. These associations may be further influenced by limited institutional and social support systems. Extensive research evidence supports this finding [29, 30].

Depression and anxiety may also be shaped by various cultural and societal factors in Pakistan, which were not directly measured in the present study. However, these factors including mental health stigma remains a major barrier to disclosure mental health problems and seek professional help in Pakistan [35]. Moreover, family system may simultaneously serves as protective resources for dealing with mental health problems [36]. These cultural and contextual factors may help interpret observed patterns of symptom severity, particularly in relation to socioeconomic disadvantage, rather than indicating independent causal effects. However, since stigma, family dynamics,



Fig. 2 Demographic and socioeconomic pathways to depression and anxiety in Pakistan. Figure designed using Canva and exported as a high-resolution image, 300 DPI

and related sociocultural variables were not explicitly assessed in this study, its findings should be interpreted as associations rather than evidence of specific causal pathways.

The present study has provided critical insights into the current mental health landscape of Pakistan by suggesting that contextual stressors may contribute to clinical presentations of psychological symptoms in this setting. The findings of this study suggest that financial insecurity, may contribute to the clinical presentation of psychological symptoms in Pakistan. This suggests the importance of considering broader social and economic contexts when interpreting mental health symptoms in clinical practice. This may have implications for how psychological symptoms are interpreted and managed in Pakistani clinical settings. Findings of this study highlights the importance of considering underlying social and economic conditions alongside individual-level clinical care when developing mental health policies and interventions in Pakistan.

4.1 Implications of study

The findings of this study have important implications for clinical practice, mental health policy, and public health planning in Pakistan. Figure 2 visually represents the key

implications of this study by illustrating the pathway through which structural and contextual factors contribute to psychosocial stress mechanisms, including financial insecurity, family strain, and social stigma. These stressors, in turn, may be associated to adverse mental health outcomes such as depression and anxiety. Furthermore, the diagram highlights potential intervention and policy entry points, thereby translating the study findings into actionable strategies for prevention and management.

At the clinical level, the strong associations between symptom severity and socioeconomic disadvantage underscore the need for context-sensitive assessment practices. Routine mental health evaluations in clinical and primary care settings could incorporate brief screening for employment status, financial stress, and educational disadvantage alongside symptom-based assessments. Such an approach would allow clinicians to distinguish between purely symptom-driven presentations and distress rooted in social and economic adversity, thereby reducing the risk of over-medicalization. In practice, this may involve combining standard psychological treatment (e.g., brief psychotherapy or medication where indicated) with targeted psychosocial referrals, such as linking unemployed patients to vocational counseling, financial guidance services, or community support resources.

At the community and service-delivery level, the findings support the expansion of task-sharing and stepped-care models, in which trained non-specialist providers (e.g., primary care staff, community health workers, or supervised counselors) deliver low-intensity psychosocial interventions for individuals experiencing socioeconomic stress-related distress. Peer-support groups, problem-solving therapy, and stress-management interventions delivered through primary care clinics or community centers may offer scalable and culturally acceptable alternatives in low-resource settings. Such models are particularly relevant in Pakistan, where specialist mental health services are limited and unevenly distributed.

At the policy level, the findings suggest that closer integration between mental health services and social protection systems may be relevant in this context, although this requires further investigation. Mental health screening and referral pathways could potentially be integrated within existing social welfare and employment-related programs; however, the feasibility and effectiveness of such approaches require further empirical evaluation. For example, individuals identified as unemployed or economically vulnerable could be offered concurrent access to psychosocial support services through primary care or community-based programs. Addressing structural determinants, such as poverty and job insecurity, alongside clinical care may have the potential to influence depression and anxiety symptom severity, although this cannot be determined from the present study.

From a public health perspective, these findings highlight the importance of shifting from an exclusively clinic-centered model of care toward integrated mental health strategies that align clinical interventions with social and economic support mechanisms. Mental health services in Pakistan may better address underlying drivers of psychological distress by coordinating with employment support, social welfare programs, and community-based psychosocial resources—though this requires further evaluation.

4.2 Limitations and future research recommendations

While this study has provided valuable insights into mental health conditions in Pakistan. Since participants were recruited from outpatient clinics, the findings may not generalize to community populations, individuals not seeking treatment, or patients attending tertiary psychiatric facilities. Some of its limitations must be recognized. First, the cross-sectional survey design prevented establishing causal relationships between socioeconomic factors and mental health outcomes. Future research should adopt longitudinal designs to better understand the temporal and relationship between socioeconomic adversity and mental health deterioration. Second, the study employed non-probability consecutive sampling in clinical settings, which may have introduced selection bias by over-representing individuals seeking care for psychological distress. Future studies should employ probability-based community sampling or multi-stage stratified sampling designs. Although measures were implemented to minimize potential sources of bias, including the use of standardized assessment instruments, trained clinicians, and standardized scoring procedures, residual selection and interviewer-related biases cannot be completely excluded.

Third, the study was conducted in urban clinical settings, which may limit representation of rural populations that experience distinct socioeconomic and contextual stressors. Future research should incorporate regionally comparative designs that include both urban and rural settings. Fourth, sociocultural variables were not specifically examined in this study, despite their potential role in shaping depression and anxiety symptom severity in the Pakistani context. Future research should incorporate these variables to better understand their associations with mental health outcomes. Fifth, this study employed clinician-administered assessment tools, potentially introducing interviewer-related bias. To address this, trained clinicians conducted all interviews using standardized, validated instruments, which were administered verbatim and scored as per established guidelines. Sixth, the study employed non-probability consecutive sampling in clinical settings, which may have introduced selection bias by over-representing individuals actively seeking care for psychological distress. Future research should use more rigid probability sampling methods to ensure a more representative sample. Finally, this study focused on selected socioeconomic and demographic variables, while other relevant factors such as housing conditions, social support networks, and exposure to domestic violence were not assessed. Future research should incorporate these variables to better understand their associations with depression and anxiety symptom severity.

5 Conclusion

This study demonstrates that depression and anxiety symptom severity among this clinical sample in Pakistan was associated with indicators of socioeconomic disadvantage, particularly unemployment and lower socioeconomic status emerging as the most consistent correlates in adjusted analyses. By moving beyond descriptive prevalence and identifying independent sociodemographic correlates within a clinical sample, this study provides updated, context-specific evidence on how structural disadvantage shapes the severity of mental health symptoms in Pakistan.

These findings contribute to the literature by highlighting that symptom severity in clinical populations is not solely a function of individual pathology but is closely intertwined with socioeconomic conditions. This challenges purely symptom-focused

interpretations and underscores the importance of integrating socioeconomic context into clinical assessment and mental health care. Ultimately, improving mental health outcomes in Pakistan may require approaches that extend beyond traditional clinical models to address the structural conditions that sustain psychological distress. Without such integration, efforts to reduce the burden of depression and anxiety are likely to remain limited in impact.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12982-026-02578-7>.

Supplementary Material 1.

Supplementary Material 2.

Supplementary Material 3.

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Author contributions

A.K. conceptualized the study, conducted the literature review, collected and analyzed the data, and drafted the original manuscript. A.M, being the supervisor, supervised the research process and provided critical methodological guidance. All authors reviewed and approved the final manuscript prior to submission.

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Data availability

All non-copyrighted data supporting the findings of this review is available from the corresponding author upon reasonable request.

Code availability

Not applicable.

Declarations

Ethics approval and consent to participate

This study was part of a large PhD research project for which initial ethical approval was obtained from the Research Ethics Committee of Universiti Malaysia Sarawak, Malaysia. Since data collection was carried out in Pakistan, additional ethical approval was obtained from the Research Ethics Committee of Khushal Khan Khattak University, Karak, Pakistan, on 1st February 2025 (Notification No. 01/ERC/02-2025). All methods were carried out in accordance with relevant guidelines and regulations. The study was conducted in accordance with the ethical standards of the institutional research committees and the principles of the Declaration of Helsinki. All participants gave written informed consent to participate in this study through informed consent form.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Accordance statement

All procedures performed in this study were conducted in accordance with the ethical standards of the responsible institutional ethics committees and the Declaration of Helsinki.

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