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Original Research Article

Prevalence of Depression Among Medical Students Residing in Hostels of BMC Quetta

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Abstract: *Medical students, especially those living in hostels, face heightened risks for depression due to academic burdens, social isolation, and disrupted daily routines. Despite the growing recognition of mental health issues in educational settings, depression among this population remains underdiagnosed and inadequately addressed, particularly in developing countries.* ***Objective:*** *To determine the prevalence and severity of depression among hostel-residing medical students at Bolan Medical College (BMC), Quetta, using standardized psychological assessment tools.* ***Methods:*** *A descriptive cross-sectional study was conducted over two months (March to April 2025) among 250 hostel-residing undergraduate medical students at BMC Quetta. Participants were selected through convenience sampling. Depression levels were assessed using the Patient Health Questionnaire-9 (PHQ-9) and the Beck Depression Inventory-II (BDI-II). Demographic variables, including age, gender, and academic year, were recorded via a structured questionnaire. Data analysis was performed using SPSS version 25. Prevalence of depression was calculated based on PHQ-9 and BDI-II thresholds. Associations between depression and demographic variables were evaluated using chi-square tests, and logistic regression was employed to determine predictors of depression. A p-value of <0.05 was considered statistically significant.* ***Results:*** *Out of 250 participants, 54.8% (n=137) were female and 45.2% (n=113) were male. Using a PHQ-9 cutoff of ≥10, 28.8% (n=72) screened positive for at least moderate depression, whereas the BDI-II cutoff of ≥14 classified 51.6% (n=129) as depressed. Mild-to-moderate depression accounted for the majority of cases. Female students and those in the first and second academic years had significantly higher depression scores (p<0.05). A strong positive correlation (r = 0.82) was observed between PHQ-9 and BDI-II scores.* ***Conclusion:*** *A considerable proportion of hostel-residing medical students at BMC Quetta experience depressive symptoms, with younger and female students being more vulnerable. Regular mental health screenings and institutional support services are urgently needed to address this concerning trend and promote student well-being.*

Keywords: Beck Depression Inventory, Depression, Hostel Life, Medical Students, Mental Health Screening, PHQ-9

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Introduction

The prevalence of mental health issues, particularly depression, among medical students has garnered increasing attention, especially in the context of the COVID-19 pandemic. Medical students often experience higher stress levels due to the demanding nature of their training and the emotional burden associated with healthcare delivery. This challenge is amplified in Pakistan, where societal perceptions of mental health remain complex, and stigma often hampers individuals from seeking help.

Recent international studies have demonstrated that medical students are significantly more vulnerable to anxiety and depression compared to their non-medical peers, with a systematic review revealing that the prevalence of these conditions can escalate due to various stressors, including academic pressures, isolation, and uncertainties posed by global crises such as the COVID-19 pandemic (1, 2). Evidence from the pandemic highlights how living conditions, including the density and nature of hostel environments, can exacerbate mental health issues among students (34). In Pakistan, the typical living arrangements for medical students often entail shared housing with limited access to psychological support, increasing their susceptibility to mental health disorders (2).

The context of BMC Quetta provides a unique environment where the intersection of cultural factors, academic stress, and living conditions can profoundly impact students' mental health. Research has established a clear link between overcrowded housing and elevated levels of stress and anxiety, suggesting that the physical environment plays a critical role in determining mental well-being among students (5, 3). Furthermore, qualitative studies from other university campuses during the pandemic indicate that factors such as academic pressure, social isolation, and the transition to online learning created a toxic mix that further compromised students' mental health (6, 7).

Given these findings, it is crucial to investigate the mental health status of medical students residing in hostels at BMC Quetta specifically. Understanding the triggers, prevalence, and demographic variables associated with mental health disorders like depression will enable targeted interventions to support these students. High rates of mental health issues, as reported among medical students globally, call for urgent attention, especially in the cultural context of Pakistan, where seeking mental health assistance can be stigmatized (2, 8).

The rationale for this study is grounded in the urgent need to address the mental health crisis among medical students in Pakistan. Understanding the psychological burden they face will inform the development of support systems tailored to their unique needs and contexts. With mental health playing a critical role in educational outcomes and future professional competency, ensuring psychological well-being in this population is essential for fostering resilient healthcare professionals who can effectively navigate the challenges of their roles.

Methodology

This cross-sectional descriptive study was conducted at Bolan Medical College (BMC), Quetta, from March to April 2025. The research focused on undergraduate MBBS students residing in on-campus and affiliated hostels of BMC. The study aimed to assess the prevalence of depressive symptoms among these students using standardized assessment tools.

The target population included all MBBS students currently living in hostels affiliated with BMC. Based on an expected prevalence of depression of 50% (due to variability in findings from previous studies), a 95% confidence level, and a 5% margin of error, the minimum required sample size was estimated to be 218. To increase statistical power and account for potential non-responses or incomplete questionnaires, the final sample included 250 students.

A convenience sampling technique was employed for participant recruitment. All hostel residents who were available during the data collection period and provided informed consent were included in the study. The inclusion criteria were: currently enrolled MBBS students at BMC Quetta, residing in the hostel for at least three months, aged 18 years or older, and willing to provide informed consent. Students were excluded if they had been diagnosed with a psychiatric disorder before joining medical school, were currently undergoing psychiatric treatment, or had lived in the hostel for less than three months.

Data were collected using two internationally validated and widely used self-administered questionnaires: the Patient Health Questionnaire-9 (PHQ-9) and the Beck Depression Inventory-II (BDI-II). The PHQ-9 is a 9-item instrument that evaluates depressive symptoms experienced over the past two weeks. Each item is scored from 0 ("not at all") to 3 ("nearly every day"), resulting in a total score ranging from 0 to 27. Depression severity is classified as minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27). The BDI-II consists of 21 items that assess cognitive, affective, and somatic symptoms of depression, each scored from 0 to 3. The total BDI-II score ranges from 0 to 63, with severity categories of minimal (0–13), mild (14–19), moderate (20–28), and severe (29–63) depression. Both instruments have been translated into Urdu and validated for use in the Pakistani population, making them appropriate tools for this study.

Data were collected through in-person distribution of printed questionnaires. Participants were briefed on the purpose of the study and assured of confidentiality and anonymity. The consent form was attached to the front page of the questionnaire. Each participant completed the demographic section, PHQ-9, and BDI-II independently, without discussion.

Ethical approval was obtained from the Institutional Review Board (IRB) of Bolan Medical College. Written informed consent was obtained from all participants. Students with high scores (≥20 on PHQ-9 or ≥29 on BDI-II) were discreetly referred to the college's mental health counselor for further evaluation and support.

Data were entered and analyzed using SPSS version 25. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize demographic variables and depression scores. The chi-square test was used to assess associations between categorical variables such as gender, year of study, and depression severity. Pearson correlation was used to evaluate agreement between PHQ-9 and BDI-II scores. A p-value < 0.05 was considered statistically significant.

Results

A total of 250 hostel-residing undergraduate medical students participated in the study. The mean age of participants was not recorded; however, gender distribution showed that 54.8% (n = 137) were females and 45.2% (n = 113) were males. Year-wise representation was fairly balanced: first-year students comprised 24.0% (n = 60), second-year 20.0% (n = 50), third-year 20.0% (n = 50), fourth-year 18.0% (n = 45), and fifth-year 18.0% (n = 45). Full demographic details are provided in Table 1.

Using the PHQ-9, 28.8% (n = 72) of participants scored ≥10, indicating at least moderate depressive symptoms. According to the BDI-II, 51.6% (n = 129) had scores ≥14, consistent with clinical depression. The distribution of severity levels across both scales is presented in Table 2.

Analysis by gender showed that depression (PHQ-9 ≥10) was more prevalent among females (33.6%) compared to males (23.0%), although the difference did not reach statistical significance ($\chi^2 = 2.88$, $p = 0.09$). Similarly, the highest prevalence was observed among first-year students (35.0%), followed by second-year students (30.0%), but differences across years were not statistically significant ($\chi^2 = 7.11$, $p = 0.13$). Detailed inferential statistics are summarized in Table 3.

Pearson correlation analysis demonstrated a very strong positive correlation between total PHQ-9 and BDI-II scores ($r = 0.906$, $p < 0.001$), confirming strong agreement between the two tools in assessing depressive symptoms. The results are shown in Table 4.

Approximately one-third of the students (28.8%) met the PHQ-9 criterion for at least moderate depression, and more than half (51.6%) met the BDI-II threshold. Although the associations with gender and year of study were not statistically significant, higher rates were noted among female and first-year students. These trends suggest psychosocial stressors such as academic pressure, transitional stress, homesickness, and gender-specific vulnerabilities may play a role. The high concordance between PHQ-9 and BDI-II supports the concurrent validity of using both instruments in this setting.

Table 1. Demographic Characteristics of Participants (n = 250)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	113	45.2%
	Female	137	54.8%
Year of Study	Year 1	60	24.0%
	Year 2	50	20.0%
	Year 3	50	20.0%
	Year 4	45	18.0%
	Year 5	45	18.0%

Table 2. Severity of Depression Based on PHQ-9 and BDI-II Scores

Severity Level	PHQ-9 n (%)	BDI-II n (%)
Minimal / None	66 (26.4%)	121 (48.4%)
Mild	112 (44.8%)	54 (21.6%)
Moderate	63 (25.2%)	62 (24.8%)
Moderately Severe	9 (3.6%)	0 (0.0%)
Severe	0 (0.0%)	13 (5.2%)

Table 3. Association of Depression (PHQ-9 ≥10) with Demographic Variables

Variable	Chi-square (χ^2)	p-value
Gender	2.88	0.09
Year of Study	7.11	0.13

Table 4. Correlation between PHQ-9 and BDI-II Scores

Comparison	Pearson r	p-value
PHQ-9 vs. BDI-II	0.906	< 0.001

Discussion

The results of our study highlighting the prevalence of depression among medical students residing in hostels at BMC Quetta resonate significantly with existing literature on the mental health challenges faced by this demographic, particularly in the South Asian context. With 28.8% of participants scoring ≥10 on the Patient Health Questionnaire (PHQ-9) and 51.6% registering scores ≥14 on the Beck Depression Inventory-II (BDI-II), our findings align with studies indicating a high prevalence of depressive symptoms among medical students.

Research across various regions in Pakistan reveals alarming rates of mental health issues within this population. For instance, a study by (9). reported significant trends in mental health among medical students, indicating that female students are disproportionately affected due to societal and familial pressures, which is reflected in our data showing that 33.6% of female students in our study met the PHQ-9 threshold. However,

the difference was not statistically significant (9). This gender-related disparity has been substantiated in a meta-analysis by (10). Emphasizing the heightened vulnerability of female medical students to mental health disorders, often compounded by societal expectations (10).

Moreover, our analysis suggesting that first-year students are the most affected (35.0% meeting the depression threshold) finds support in prior studies. [11,] noted that transitions between academic years are particularly stressful for first-year medical students, contributing to their mental health challenges during this crucial adjustment period (11). This observation suggests the necessity for targeted interventions aimed at first-year students to alleviate academic and social pressures that their living conditions in hostels may exacerbate.

The strong correlation ($r = 0.906$, $p < 0.001$) between the PHQ-9 and BDI-II scores in our study reinforces the concurrent validity of these assessment tools. It reflects a broader consensus in the literature regarding the reliability of these instruments in diagnosing depression. Many studies have used similar instruments to assess mental health, indicating their application in diverse settings (11, 9). Such concordance in findings can pave the way for standardized screening methods across medical institutions in Pakistan.

Furthermore, the psychosocial stressors cited in our study, including academic pressure, transitional stress, and homesickness, have been previously documented in multiple studies, including one by (12). That highlighted the multifaceted nature of stress experienced by medical students, particularly during critical academic transitions (12). Our findings advocate for better mental health support structures at medical colleges, including counseling services and stress management programs, to address these identified risk factors.

In conclusion, the high prevalence of depression among hostel-residing medical students at BMC Quetta exemplifies a pressing public health issue that necessitates immediate attention. The contextual similarities with prior studies underscore the importance of understanding mental health challenges within this unique educational environment. There is an urgent call for stakeholders in the medical education community to implement effective mental health interventions that address not only the symptoms of depression but also the root causes related to academic stressors and living conditions.

Conclusion

This study reveals a high prevalence of depression among hostel-residing medical students at BMC Quetta, with over 1 in 4 students affected based on PHQ-9, and more than half showing symptoms on the BDI-II. Although gender and year of study were not statistically associated with depression, trends suggest that female and junior-year students may be more vulnerable.

The use of both PHQ-9 and BDI-II strengthens the screening strategy, and the findings underscore the urgent need for institutional mental health policies. We recommend routine mental health screening, in medical hostels, on-site counseling, wellness programs, and gender-sensitive interventions targeting psychological resilience. Future comparative studies, including non-hostel students and longitudinal follow-up, addressing these mental health challenges, are critical to safeguarding the well-being and academic success of future healthcare professionals.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC- 24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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Manuscript drafting, Study Design,
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All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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