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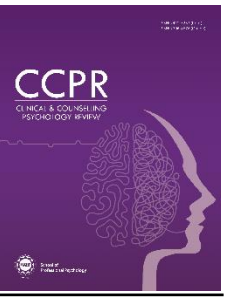

Title: **Disparities of Depression and Anxiety among Medical Students**

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Disparities of Depression and Anxiety among Medical Students

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Abstract

The current study sought to assess the gender differences in relation to anxiety and depression among medical students. This cross-sectional study took a sample consisted (*N*=240) of medical students (males: *n*=104 and females: *n*=136) with a mean age of 22.9 years (*SD*=2.13). For assessment, Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) were used. Data was stored and analyzed in SPSS version 2.1. Findings demonstrated that 32.4% students scored at the minimal range of depression, while 30.3% scored at mild depression level, 23.4% were at moderate level of depression, and 13.9% students scored at severe depression level. Approximately, 27.4% students scored at minimal range of anxiety, students with mild anxiety were 33.6%, and 20.3% students were at moderate anxiety level, while 18.7% students scored at severe level of anxiety. By applying independent sample t-test to determine gender differences, results demonstrated no significant gender differences in depression ($p > .05$). However, a significant difference was found for anxiety where male students exhibited higher levels of anxiety than females ($p < .05$). Moreover, depression and anxiety were significantly higher among hostelite students than day-scholars ($p < .05$). It was concluded that a marked number of medical students had clinically significant symptoms of depression and anxiety. The frequency was higher among hostelite students than day-scholars, and male students experienced more anxiety than female students. The study findings highlighted gender and residential presentation of the students as a risk factor of depression and anxiety among the medical students.

***Keywords*:** anxiety, depression, medical students, mental health

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Introduction

Depression and anxiety are the most common mental health conditions globally (Bellos et al.,2013). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM–5), persistent feelings of sadness (depressed mood), loss of interest or pleasure, diminished energy, and lack of concentration are the main symptoms of depression (American Psychiatric Association, 2013). While uncertainty, excessive worry, fear arising from anticipation, muscle tension, restlessness, irritability, increased heart rate, rapid breathing, sweating, and difficulty in concentration and sleep are the leading symptoms of anxiety (American Psychiatric Association, 2013).

Depression and anxiety are common mental health concerns affecting medical students worldwide. The demands and stressful situations encountered during medical education and training create a unique environment that significantly impacts the mental well-being of students. The academic workload, including exams, coursework, and long study hours, are linked to increased stress levels among medical students. Balancing multiple roles, such as studying, personal life, and clinical commitments, may lead towards psychological distress, depression, and symptoms associated with anxiety (Dyrbye et al., 2006). Moreover, high levels of perfectionism, characterized by unrealistic expectations and fear of failure, have been correlated with higher rates of depression and anxiety among medical students (Hu et al., 2019). However, effective coping strategies, such as emotional regulation, problem-solving, and seeking social support, may mitigate the negative impact of stressors on the mental well-being of medical students (Mosley et al., 2019). Strong support systems, including friends, family, and peers, may serve as protective factors against depression and anxiety among medical students (Houkes et al., 2011).

The ratio of mental health issues is rapidly increasing in Pakistan. Furthermore, the occurrence of depression and anxiety among Pakistani medical students has been a growing concern in recent years. Ihsan et al. (2025) found the marked prevalence of depressive symptoms among Peshawar medical students, including a lack of interest in activities (35%), sleep disturbances (35%), feelings of hopelessness (32.5%), fatigue (37.5%), and difficulty concentrating (30%). Additionally, a concerning portion (25%) reported thoughts of self-harm as well. Khan et al. (2024)

reported that about 40.65% of nursing students were found to have anxiety and depressive symptoms. Jamali et al. (2024) revealed that over 59.1% of their study participants experienced anxiety, with female medical students having a higher prevalence rate than male students. The prevalence of depression among medical students was nearly 77.3% with increasing prevalence among females at 84.2% than males at 72%.

Moreover, Gul et al. (2024) found the prevalence of mixed depression and anxiety symptoms among medical students at about 19.4% with 26.2% borderline cases. However, no significant gender differences were observed. Several other studies have highlighted that the medical students are more vulnerable to develop mental health problems as compared to the general population (Rab et al., 2008; Rizvi et al., 2015).

Understanding the ratio of depression and anxiety among Pakistani medical students is crucial for several reasons. Firstly, medical education is known for its rigorous and demanding nature, which exposes students to high levels of stress. The transition from a regular undergraduate student to a medical student involves a significant increase in workload, academic pressure, and competition. This may lead to the development of mental health issues, that is, depression and anxiety. Research conducted in other countries indicated that medical students have a higher risk to experience psychological distress as compared to students in other fields (Rotenstein et al., 2016). Secondly, depression and anxiety among medical students may have severe consequences. These mental health issues could adversely affect the academic performance of medical students, increase absenteeism, decrease productivity, and even lead towards substance abuse or suicidal ideation (Pacheco et al., 2017). Furthermore, there is a need for the latest update on the occurrence and gender differences in relation to depression and anxiety among Pakistani medical students to address their mental health-related issues. By identifying the extent of the problem, healthcare institutions and policymakers may develop appropriate interventions, support systems, and policies to promote the well-being of medical students, as well as enhance their academic performance. Hence, the current study explored the frequency of depression and anxiety and gender differences among medical students in Pakistan.

Hypotheses

- There is likely to be a marked frequency of depression and anxiety among medical students.
- There are likely gender differences in depression and anxiety among medical students.
- Hostelite students are likely to have more depression and anxiety than day-scholars.

Method

Study Design and Sample

This cross-sectional prospective research was conducted at a private medical college in Lahore city**.** The study duration was 3 months, from February 2023 to April 2023. The study enrolled 240 third-year medical students (males: *n*=104 and females: *n*=136) that were selected through convenience sampling strategy. The participants' age ranged between 22 to 25 years with a mean age of 22.9 years and standard deviation of 2.13.

Measures

Beck Depression Inventory (BDI)

Beck Depression Inventory (BDI) consists of 21 multiple-choice questions, developed by Beck, Steer, et al. in 1998. BDI is one of the most widely used psychometric tests to measure the severity of depression. Each item is scored from 0 to 3, total score of 0-9 is considered minimal range, 10-18 is mild, 19-29 is moderate, and 30-63 is severe depression. The BDI demonstrates high internal consistency, with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric populations, respectively (Beck, Steer, et al., 1988).

Beck Anxiety Inventory (BAI)

Beck Anxiety Inventory (BAI) is a 21-items multiple-choice self-report inventory, focusing primarily on somatic symptoms of anxiety. Each item is scored from 0 to 3 with a total score ranging from 0 to 63 where minimal level of anxiety (0–7), mild anxiety (8–15), moderate anxiety (16–25), and severe anxiety (26–63). BAI has been used in various studies and is a highly reliable measure for clinical diagnoses and research purposes. The reliability coefficient of BADI was found to be at .92 with

the test–retest reliability .75 (Beck, Epstein, et al., 1988). The original English version of both scales was employed on the study participants.

Procedure

The study was first approved by the institutional review board. A team, comprising one clinical psychologist and one PG trainee doctor, was prepared to collect data from medical students. The participants were ensured about the confidentiality of their personal information. Furthermore, a consent form with all the details about the research was given to them for signature. They were given rights to withdraw from participation and terminate at any point of study if they wish so. Students were also offered free mental health services by the hospital psychiatrists and psychologists, however, no student consulted. The collected data was stored and analyzed in SPSS version 24. Missing values were rated as 0, however, there were very few missing values and *p*-value< 0.05 was considered significant.

Results

In this study, a total of 240 medical students participated. Findings demonstrated that the mean score of BDI was 22.31 with 2.10 standard deviation. Whereas, the mean score of BAI was 24.10 with a standard deviation of 3.21. The percentage of students who scored at the minimal range of depression was 32.4%, while 30.3% scored at mild depression level, 23.4% were at moderate depression level, and 13.9% students scored at severe level of depression.

The percentage of students who scored at the minimal range of anxiety was 27.4%, students with mild anxiety were 33.6%, and 20.3% students were at moderate anxiety level, while 18.7% students scored at severe level of anxiety. The social demographic variables are mentioned in Table 1.

Table 1

Social Demographic Variables (N = 240)

Baseline Characteristic	*N*	*%*
Gender		
Male	104	43
Female	136	57

Baseline Characteristic	*N*	*%*
Family Background		
Rural	139	58
Urban	101	42
Family System		
Nuclear	169	70
Joint	71	30
Residential Status		
Hostelite	135	56
Day-scholar	105	44
Use of any Illicit Drug		
Yes	0	0
No	240	100
History of Psychiatric Illness		
Yes	19	8
No	221	92

By applying independent sample t-test for gender differences, results showed no significant gender differences in depression ($p>.05$). However, a significant difference was found for anxiety where male students exhibited higher levels of anxiety than female students ($p<.05$) (see Table 2).

Table 2

Mean Comparison between Male and Female Students on Depression and Anxiety Scales (N=240)

Variable	*Male*		*Female*		*t* (238)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Depression	23.35	3.43	24.22	3.34	10.20	.124	0.633
Anxiety	26.40	4.21	21.61	3.10	4.79	.012	4.132

Independent sample t-test was further performed to evaluate the residential status differences. It was found that depression and anxiety were significantly higher among hostelite students than day-scholars ($p<.05$) (see Table 3).

Table 3

Mean Comparison between Hostelite and Day-scholars on Depression and Anxiety Scales (N=240)

Variable	*Hostelite*		*Day-scholar*		*t* (238)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Depression	25.32	4.31	20.22	3.54	6.33	.011	1.595
Anxiety	24.43	3.14	19.91	2.12	1.51	.013	1.234

Discussion

The current study found a marked number of students with depressive and anxiety symptoms. Several researches have been carried out all over the world to evaluate the occurrences of depression and anxiety among medical students. A survey on university students suggests that nearly 19.5% of students have depression, while 43.7% have clinically significant anxiety (Rab et al., 2008). The prevalence of depression was recorded at 40.9% in another study on medical students, whereas the prevalence of anxiety symptoms was found at 74.2% (Rizvi et al., 2015). The symptoms associated with depression and anxiety were present in 45.5% of university students (Hashmi et al., 2014). Whereas, Ali et al. (2014) found a greater prevalence of depression and anxiety symptoms (73.8%) among university students and male students were found to be 1.85 times more depressed than female students. Khan et al. (2006) conducted a study on medical students in Pakistan, and the prevalence of significant depression and anxiety symptoms was at 47.4% and 56.1%, respectively. However, all these figures cannot be generalized to the whole population. This is because these figures were taken from the studies conducted on small samples, ranging from 66 to as high as 715.

The current study observed a significant gender difference for anxiety where male students exhibited higher levels of anxiety than female students. It is essential to note that there is limited research specifically analyzing the causal factors of high prevalence of anxiety among male medical students than females. However, it is widely acknowledged that medical students, in general, experience higher levels of anxiety as compared to the general population. Based on existing literature, there are some common factors that contribute to higher anxiety rates among male medical students. These include societal expectations; traditional gender roles and societal expectations in our culture may cause the higher

prevalence of anxiety among male medical students. Males are often associated with certain attributes, such as strength, independence, and resilience, which may create internal pressures to uphold these expectations even in the face of stressors. This may result in higher levels of anxiety as male medical students may be less comfortable seeking help or expressing emotions due to social norms and expectations (Eisler et al., 2019). Male medical students, similar to their female counterparts, face the challenge of balancing work and personal life together. However, familial responsibilities may further exacerbate the stress experienced by male students. For instance, they may have to support their family financially while simultaneously perceived to excel academically. This may lead towards increased anxiety and stress levels (Bennett et al., 2021; Hossain et al., 2023). Moreover, there is stigma surrounding mental health; in general, men may face greater stigma when it comes to seeking help for mental health issues including anxiety. Male medical students may experience similar barriers to seeking support due to the perception that asking for help or experiencing anxiety is a sign of weakness or vulnerability (Chatmon, 2020).

When comparing the residential or scholastic status, the results showed that depression and anxiety were significantly higher among hostelite students than day-scholars. There are several factors that may contribute to hostelite students experiencing more symptoms of depression and anxiety as compared to day-scholars. However, the circumstances of every individual vary, and not all hostelite students necessarily experience higher levels of depression and anxiety. Living away from home could lead towards decreased emotional support, which has been found to be a contributing factor of depression and anxiety (Mansoor & Ali, 2015). Students living in hostels often face additional stressors, such as adjusting in a new environment and managing daily tasks without familial guidance. Moreover, they may experience higher levels of academic pressure due to increased competition and the absence of parental supervision (Minchekar & Mangore, 2019; Moradi, 2008). Furthermore, hostel life can sometimes be socially isolating, as students are away from their usual social networks and may struggle to make new connections. Feelings of loneliness and social isolation have been linked to increased level of depression and anxiety (Ebesutani et al., 2015; Moeller & Seehuus, 2019).

Limitations and Suggestions

The current study was based on a small sample selected from one medical college only. There is a need to conduct large scale studies in order to figure out the prevalence and gender differences of depression and anxiety among Pakistani medical students. Furthermore, there is a need to identify several other factors contributing to the development of depression and anxiety among medical students. Moreover, it should also be explored why residing in the college dormitories is a contributing factor to self-reported depression and anxiety among students. Further studies are required to develop tailored interventions in order to address their mental health concerns.

Implications

The findings of the study can be used to understand the risk or contributing factors of anxiety and depression. In addition, these findings can be beneficial to develop interventions targeting specific stressors, enhance coping mechanisms, and provide accessible mental health resources. Educational institutions have a crucial role in promoting the mental health of medical students. For instance, awareness campaigns and workshops on stress management, self-care, and seeking help for mental health concerns, as highlighted by current findings, may help reduce the stigma associated with seeking support. Additionally, incorporating mental health education into the curriculum could provide students with the necessary knowledge and skills to prioritize their mental well-being.

Conclusion

The findings of the study highlighted that anxiety and depression are prevalent among medical students. The risk of developing clinically significant symptoms of depression and anxiety may vary across gender and residential presentation. Male students experience more anxiety than female students and the frequency of depression and anxiety is higher among hostelite students than day-scholars.

Conflict of Interest Statement

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

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