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# A Comparative Study of Gender Differences in Depression and Anxiety among Adolescents in Chitral

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## Abstract

Adolescence is an important evolving phase of life with susceptibility to anxiety and depression. Global evidence reports that gender differences exist in depression and anxiety. But there are very few studies exploring these conditions in rural areas of Pakistan. The purpose of this study is to explore gender differences in depression and anxiety amongst adolescents in Chitral. Validated Urdu versions (PHQ-9) and (GAD-7) were used in this study to assess the severity of depression and anxiety symptoms. Through a cross-sectional design, 500 adolescents (241 females and 259 males) were recruited from different private and government colleges in Chitral through the convenience sampling technique. Chi-square analysis shows significant gender differences in both anxiety severity, $\chi^2$ (3, N = 500) = 20.05, $p < .001$, and depression severity, $\chi^2$ (4, N = 500) = 15.92, $p = .003$. Female participants reported higher rates of both minimal and severe symptoms of anxiety and depression, while male participants reported higher rates of moderate symptoms of depression and anxiety. These findings align with international research and also highlight the specific cultural dynamics of Chitral, Pakistan. Gender-sensitive, institution-based interventions are needed to address gender differences amongst adolescents and improve their mental health.

**Keywords:** Adolescence, Gender Differences, Depression, Anxiety, Pakistan, Chitral

## Introduction

Adolescence is a critical and rapidly evolving stage of life marked by rapid cognitive, physical, and socio-emotional changes. It is a period when most mental health problems arise; more than half of lifetime mental health problems begin before the age of 20 (Kieling et al., 2024; Natsuaki et al., 2011; Sawyer et al., 2018). It is estimated that one in seven individuals aged between 10 and 19 years suffer from a psychological health problem (WHO, 2025). Among these conditions, anxiety and depression are common, which cause considerable disability, educational disturbance, and long-term psychosocial disturbance (Thapar et al., 2012). In recent years, evidence has shown that worries and emotional distress increase among adolescents. An inclusive meta-analysis of 29 countries described that around 21% of adolescents suffer from symptoms of depression. This rate is much higher in low- and middle-income countries; this burden

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has increased further in the aftermath of the COVID-19 pandemic (Alizadeh et al., 2023; Racine et al., 2021). New stressors were introduced in the modern world, like academic pressure, climate-related anxiety, social media pressure, and the lasting effect of COVID-19, which are intensifying adolescent mental health (Haidt, 2024).

Consequently, depression and anxiety now constitute important contributors to disability-adjusted life years among adolescents globally, underscoring their significance not only as clinical concerns but also as major social and developmental challenges (Kieling et al., 2024). Adolescent mental health does not affect all groups in the same way. A considerable body of international research highlights consistent gender differences in the manifestation, prevalence, and severity of anxiety and depression (Bøe et al., 2021; Campbell et al., 2021). Meta-analytic evidence specifies that compared to male adolescents, female adolescents are two times more likely to suffer from depression and anxiety (Salk et al., 2017). Research conducted in several countries consistently shows that girls who tend to internalize their problems report higher levels of emotional distress and psychological vulnerability across different cultural settings (Campbell et al., 2021). Although these gender differences are recognized, they cannot be labeled by a single reason. Instead, they are formed by a complex interaction of biopsychosocial factors. From a biopsychosocial perspective, biological changes such as puberty, the development of secondary sex characteristics, and hormonal fluctuations interrelate with social influences, including peer pressure, societal gender opportunities, and concerns related to body image. All these factors together can heighten girls' emotional understanding, predominantly in response to interpersonal stress (Forney et al., 2019; Levinson et al., 2024). Socialization processes, at the same time, strongly influence how adolescents understand, experience, and express psychological distress. Social Role Theory proposes that culturally defined gender roles create different opportunities and pressures for girls and boys. Girls are often encouraged to be compliant, nurturing, and emotionally attentive to others, while boys are more often socialized to appear strong, suppress vulnerability, and express independence (Eagly, 1987; Kite, 1996). These differing expectations can shape not only emotional experiences but also how distress is expressed and managed.

These gender roles and expectations can cause psychological distress among girls. On the other hand, adolescent boys do not express their emotions easily with others, because of the stigma that males' expression of emotions may be considered as a sign of weakness for them (Islam, 2023). Thus, gender differences in depression and anxiety are not only an individual psychological problem, but also reflection of social, cultural, and structural inequalities. Different factors contributing to adolescent's mental health are, stigma related to mental health problems, limited access to mental health services (Patel et al., 2018). Despite prevalence of psychological problems, very few mental health services are available in our country. Only 500 psychiatrists are available in the

whole country, with a ratio of 0.19 per 100,000 persons, which ranks among the lowest globally (Sikander, 2020). One -quarter of our population falls in this group and this huge gap between need and demand in mental health services needs attention (Abdullah & Shaikh, 2023; Butt et al., 2025). Unfortunately, in Pakistan, access to age-appropriate and gender-sensitive mental health services is limited for adolescents, especially in rural and remote areas. Research constantly shows that anxiety and depression are very common among school and college students (Khalid et al., 2019; Ibbad et al., 2022; Seemi et al., 2023). Evidence from research also suggests that girls in urban settings experience higher levels of emotional and behavioral problems compared to boys (Farooq et al., 2023). However, mostly current studies focus on major metropolitan areas such as Karachi and Lahore, and limited knowledge is available regarding the mental health challenges faced by adolescents living in smaller, remote, rural, and marginalized regions.

Chitral is a remote, isolated district in northern Khyber Pakhtunkhwa, and presents a particularly important context for investigation. The region is marked by harsh weather conditions, limited healthcare infrastructure, economic constraints, and strong traditional social norms, especially regarding gender roles and expectations. These factors shape the everyday experiences of people in various psychological ways (Pierce, 2025). Recent research in Chitral reported high levels of psychological distress among adolescents (Zaman & Khan, 2025). However, this study did not explore gender differences with respect to the prevalence and severity of depression and anxiety. Exploring gender differences could help in the development of gender-sensitive, effective interventions for adolescents in Chitral.

## Review of the Literature

Adolescence is considered a multifaceted developmental period during which individuals are particularly vulnerable to emotional and psychological distress. Anxiety and depression are common mental health problems that occur in this stage, indicating nearly one in four experiences these symptoms (Alizadeh et al., 2023; Racine et al., 2021). These conditions do not only influence individual mental health, but they are also linked with poor interpersonal relationships, academic functioning, and overall mental health and risk for adulthood life (Thapar et al., 2012; Kieling et al., 2024). Recent global data on adolescent mental health suggested that the burden of adolescent mental health problems increases because of globalization and post-COVID stressors; other factors, such as media exposure, academic pressure, social evaluation, and uncertainty about the future, are important contributing factors for psychological distress in adolescents (Haidt, 2024). Depression and anxiety are universal phenomena; their symptoms and severity are shaped by social, cultural, and structural contexts. Different researches show that gender differences exist in anxiety and depression among adolescents. Girls report a high level of depression and anxiety compared to boys, especially in mid-adolescence and on ward

(Campbell et al., 2021; Salk et al., 2017). Different studies have shown that these gender differences in depression and anxiety occur in different settings and cultures, which suggests that it may be a combination of psychological, biological, and social processes, not specific to a particular factor alone. Biologically, different hormonal changes have been associated with increased emotional responsiveness among girls, which may make them vulnerable to anxiety and depression (Forney et al., 2019; Li et al., 2023). However, these explanations alone are not adequate to account for the degree and persistence of the gender difference. On the other hand, Social Role Theory argues that culture assigns unequal emotional and relational weights to females, while encouraging males to adopt norms of suppression of emotions and self-reliance (Eagly, 1987; Kite, 1996).

Patterns of socialization play an important role in determining how adolescents experience and express psychological distress. Boys are often discouraged from showing emotional expression verbally and may express their distress through behavioral problems as an alternative. On the other hand, girls are generally more likely to internalize their psychological problems, particularly interpersonal relationships, which can increase their risk of depression and anxiety (Islam, 2023). As a result, gender differences observed in the prevalence and severity of mental health problems may reflect not only genuine differences in emotional experiences, but also differences in how socially acceptable it is for girls and boys to express complex emotions. Considerably high number of research on gender and adolescent mental health comes from high-income countries. However, there is increasing recognition that gender differences may be even more noticeable in low- and middle-income countries (LMICs), where poverty, social disparities, inadequate health care facilities, and limited access to mental health services intensify psychological problems (Patel et al., 2018). In many LMIC contexts, girls often face additional challenges, including early marriage, restricted autonomy, limited access to education, and heavy domestic responsibilities compared to boys.

Structural and cultural pressures can contribute to long-lasting stress and long-term emotional pain. These dynamic forces suggest that gender differences in anxiety and depression in LMICs must be understood within wider systems of cultural norms, social power, and institutional inattention. Despite the high burden of psychological health problems, children and adolescent mental health services in most LMICs remain very poor. Due to this treatment gap, many problems remain unrecognized and untreated, resulting in long-term economic consequences (Patel et al., 2018). Evidence from Pakistan indicates that anxiety and depression are common among adolescents. Different cross-sectional studies show that 20% to 50% of adolescents suffer from anxiety and depression (Khalid et al., 2019; Ibbad et al., 2022; Seemi et al., 2023). Other studies show a high level of emotional distress among female adolescents

compared to males (Farooq et al., 2023). These findings are in line with international literature but must be understood from Pakistan's specific socio-cultural perspective. In Pakistani society, gender roles are different. Girls are more restricted to home, more dependent on family in decision making, and avoid social gatherings; these constraints increase psychological distress among females, and they have limited opportunities to express their feelings to release stress. On the other hand, boys are often socialized to be more socially active and independent, which may provide them with greater chances to express emotions and seek support when needed (Islam, 2023). These social rewards can sometimes act as protective factors and help reduce psychological distress to some extent. In Pakistan, majority of studies on adolescents' mental health are based on urban populations.

There is a gap in understanding the psychological issues of adolescents living in rural, mountainous, or geographically isolated regions like Chitral, where access to quality education, mental healthcare services, and social services is limited. Therefore, such areas are characterized by higher levels of poverty, fewer educational opportunities, and stronger adherence to traditional social norms. These circumstances may not only increase anxiety and depression symptoms but also expand gender inequalities. Chitral is one of the remote and marginalized districts in northern Khyber Pakhtunkhwa.

This region has a harsh winter climate and limited accessibility of mental health services, which create significant barrier to diagnosis and treatment of anxiety and depression among adolescents. In addition, social life in Chitral is strongly shaped by traditional cultural expectations and clearly defined gender roles, which are likely to influence the psychological health of adolescents. A recent study conducted in Chitral reported 70 % of adolescents suffer from psychological distress (Zaman & Khan, 2025). These findings point towards a serious mental health concern in the region. However, the study did not examine gender differences in patterns of psychological distress, leaving an important dimension of inequality unexplored. There remains a clear gap in research investigating gender-based differences in the prevalence and severity of depression and anxiety among adolescents in this context. Therefore, the present study aims to find this gap by scientifically examining gender differences in the severity of anxiety and depression among adolescents in Chitral using validated assessment tools.

## Research Methodology

### Design and Setting

This study was conducted in Chitral, a district of KPK, Pakistan, by using a cross-sectional survey method.

## Sample

500 adolescents were recruited from different colleges by using a convenience sampling method. These adolescents were 259 males and 241 females, aged between 16 and 19 years.

## Measures

The symptoms of depression were measured using the Urdu version of the PHQ-9. This scale has established psychometric properties with a Cronbach's alpha value of 0.91 (Ahmad et al., 2018). The scale consists of a 4-point Likert scale with a total of 9 items, with 0 not at all to 3 nearly every day. This scale yields total scores from 0 to 27. Standard cutoff points were used to categorize symptom severity: 0-4, no**;** 5-9 mild**;** 10-14 moderate**,** 15-19 moderately severe**,** and20-27 severe depression (Kroenke et al., 2001).

Symptoms of anxiety were measured by using the Urdu-validated (GAD-7) scale, which has recognized strong psychometric properties among the Pakistani population and setting (Ahmad et al., 2017). This is a 4-point Likert scale with 0 not at all to 3 nearly every day and consists of 7 items, thus yielding a total score ranging from 0 to 21. Standard cutoff points commonly used to categorize symptom severity are: 0-4, no 5-9**,** mild**,**10-14, moderate, and15-21, moderately severe to severe anxiety (Spitzer et al., 2006).

## Procedure

The participants of the study were contacted after taking written approval from the college management. Students were contacted during college hours, and the information leaflet of the study, which explained the nature of the study along with a consent form, were shared. Those students who gave consent were requested to fill out the questionnaire individually.

## Ethical Consideration

This study was conducted after the approval of the Institutional Bioethical Committee of the University of Karachi. The objective of the study was explained to the participants before data collection. Participant informed consent was taken, they were told that their involvement in this study was voluntary and their information would be kept confidential, and they had the right to withdraw from the study at any time.

## Analysis

Data were examined using SPSS version 26, descriptive statistics and chi-square tests were computed, and statistical significance was determined at the $p < .05$ level.

## Results

**Table 1: Demographic characteristics and frequency of variables**

| Variable | Category | Frequency | Percent |
|---|---|---|---|
| **Age** | 16 | 33 | 6.6 |
| | 17 | 278 | 55.6 |
| | 18 | 153 | 30.6 |
| | 19 | 36 | 7.2 |
| **Gender** | Male | 259 | 51.8 |
| | Female | 241 | 48.2 |
| **Marital status** | Married | 21 | 4.2 |
| | Single | 479 | 95.8 |
| **Education** | 1st Year | 238 | 47.6 |
| | 2nd Year | 262 | 52.4 |
| **Type of college attended** | Government | 314 | 62.8 |
| | Private | 186 | 37.2 |

**Table 2: Prevalence of severity of depression in males and females (N = 500)**

| Gender | Minimal | Mild | Moderate | Moderately Severe | Severe | Total |
|---|---|---|---|---|---|---|
| **Female** | 63 (26.1%) | 63 (26.1%) | 60 (24.9%) | 38 (15.8%) | 17 (7.1%) | 241 (48.2%) |
| **Male** | 41 (15.8%) | 63 (24.3%) | 103 (39.8%) | 39 (15.1%) | 13 (5.0%) | 259 (51.8%) |
| **Total** | 104 (20.8%) | 126 (25.2%) | 163 (32.6%) | 77 (15.4%) | 30 (6.0%) | 500 (100%) |

***Not:*** $\chi^2(4, N = 500) = 15.92, p = .003$. Symptom severity: 0-4 no/minimal, 5-9 mild**,** 10-14 moderate**,** 15-19 moderately severe**,** and 20-27 severe depression.

**Table 2** presents the severity of depression by gender. According to these findings, females had slightly higher proportions of minimal (26.1%) and severe (7.1%) depression, while males showed higher rates of moderate depression (39.8%). Overall, depression severity varied across gender, with females tending toward more extreme symptom levels.

**Table 3: Prevalence of severity of anxiety in males and females (N = 500)**

| Gender | Minimal/No | Mild | Moderate | Severe | Total |
|---|---|---|---|---|---|
| Female | 61(25.3%) | 80 (33.2%) | 58 (24.1%) | 42(17.4%) | 241 (48.2%) |
| Male | 56(21.6%) | 109 (42.1%) | 79(30.5%) | 15 (5.8%) | 259 (51.8%) |
| Total | 117 (23.4%) | 189 (37.8%) | 137 (27.4%) | 57 (11.4%) | 500 (100%) |

***Note:*** $\chi^2(3, N = 500) = 20.05, p < .001$. Symptom severity: 0-4 no, 5-9 mild**,** 10-14 moderate**,** and15-21 severe anxiety.

**Table 3** shows a significant gender difference in anxiety severity, with females reporting higher levels of moderate and severe anxiety than males, $\chi^2(3, N = 500) = 20.05, p < .001$.

## Discussion

This study shows a significant gender difference in the prevalence of severity of depression and anxiety, where female adolescents show higher levels of severe symptoms of anxiety and depression, and males adolescents show higher levels of mild and moderate symptoms in both depression and anxiety. These results highlight not only the prevalence of anxiety and depression in both genders but also show differences in the severity of problems experienced and manifested by the male and female participants.

These findings are generally consistent with both national and international literature, indicating that adolescent girls are more vulnerable to internalizing disorders and are more likely to experience severe and persistent forms of depression and anxiety (Campbell et al., 2021; Salk et al., 2017; Farooq et al., 2023; Mendle et al., 2007). Pakistani studies conducted in urban and peri-urban settings have similarly reported higher rates of moderate to severe emotional distress among female adolescents. A study conducted by Ibbad found that overall, 53.2% school students reported depression and anxiety, out of which 78.8% were females (Ibbad et al., 2022). A similar study was also conducted by Seemi, who noticed that females were more in the moderate to severe category of anxiety than males (Seemi et al., 2023). This result may reflect that in Pakistani culture, especially in rural and remote areas, the expression of emotions is not appreciated. Moreover, stigma related to mental health is another factor that may have been the cause of severe symptoms and increased psychological suffering, especially among females (Islam, 2023; Thornicroft et al., 2022). The present findings show that gender-based mental health disparities are not limited to urban contexts but may be even more obvious in low-resource and socially conservative settings.

These findings can be understood by social role theory, which states that cultural expectations from males and females enforce different emotional demands and behavior from males and females (Eagly, 1987; Kite, 1996). In societies like Chitral, where females have limited access to education, and social participation, may experience suppression of emotion, isolation, and hopelessness, which may consequently, cause severe symptoms of anxiety and depression. An earlier study conducted on adults in Chitral has shown that women are more likely to suffer from anxiety and depression compared to men (Mumford et al., 1996).

Males reported a high level of mild to moderate symptoms of anxiety and depression, which needs careful interpretation. Male adolescents in this context may experience considerable emotional problems, but they are less likely to admit it due to strong cultural norms that discourage emotional expression among males. In many parts of Pakistan, emotional control is closely tied to ideals of masculinity, and the open expression of psychological issues may be perceived as a sign of weakness (Islam, 2023). This may explain the underreporting of symptom severity among boys.

The social ecology of Chitral likely plays an important role in shaping these outcomes. Compared to boys, who have opportunities for outdoor activities, generally enjoy greater freedom of movement, social interaction, and recreational activities; girls often spend more time within the boundaries of home, experience less peer engagement, and have fewer opportunities for stress-relieving activities. Physical activity, peer support, and social connectedness are well-established protective factors for adolescent mental health (Han et al., 2025). Absence of social support and opportunities for girls in this setting may explain the higher levels of severe psychological symptoms in female participants.

These findings must also be considered within the broader context of structural neglect of adolescent mental health in Pakistan, where limited mental health facilities are available, particularly in rural and mountainous regions; consequently, most of the adolescents experience emotional issues and receive no professional support (Sikander, 2020; WHO, 2020). Our findings highlight the need for the provision of mental health services in such regions as well. It is suggested that mental health providers and policymakers highlight the importance of community and school-based mental health programs in remote areas of Pakistan. These programs need to be gender sensitive. For girls, interventions need to focus on increasing social support from parents, family, and teachers, providing space for safe expression of feelings, and addressing gender norms that limit their participation in the community. For boys, efforts should aim to encourage help-seeking behavior, avoid substance use, challenge norms around emotional suppression, increase emotional literacy, and teach healthy coping strategies. Moreover, the findings highlight the early identification of problems through screening and a proper referral system.

## Limitations of the Study

One of the limitations of this study is the use of a self-reported assessment tool instead of clinical diagnostic interviews, although these tools are validated, data may be affected by social desirability, especially in a society where emotional expression is shaped by gender norms. Different confounding variables, such as academic stress, family structure and environment, socio-economic conditions, adverse life events, and trauma, may influence the findings; these variables were not evaluated in this study. Finally, this study includes only college-going adolescents, which may affect the generalizability of the findings. Future research must be designed by considering these factors.

## Conclusion

According to this study, depression and anxiety are highly prevalent among adolescents in Chitral. This study also reveals gender differences in the severity of anxiety and depression; severe levels of depression and anxiety are more prevalent in females, and mild to moderate levels of anxiety and depression are more prevalent in male adolescents. These findings indicate that gender has a role in the manifestation of the level of severity of anxiety and depression in traditional and resource-limited contexts. Different factors may play a role in this regard for girls to have more severe symptoms of depression and anxiety, which may be because of a restricted environment, limited opportunities to social participation, lack of outdoor activities, and social pressure. Whereas, mild and moderate level depression and anxiety in male participants may be a reflection of limited emotional expression and avoiding help-seeking behaviour (Robson et al., 2025). The findings of this study propose the need for culturally sensitive, gender-based school and community psychosocial intervention for adolescents in Chitral. This study further suggests the need for mental health literacy for students and parents, early screening and accessible psychosocial intervention, and a proper referral system for adolescents. Overall, this study provides a contextually grounded and gender-informed understanding of the levels of anxiety and depression of adolescents in Chitral, Pakistan.

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