Published by
Saidu Medical College

OPEN ACCESS

Original Article

Association Between Social Media Usage Patterns and Social Anxiety Among Adolescents in Peshawar: A Cross-Sectional Study

Laiba Imran, Bibi Aliya, Wajiha Muhammad, Rukhsana Fazal, Gul-e-Lala Noman & Fatma Naeem

Rehman Medical College, Peshawar, Pakistan

https://doi.org/10.52206/jsmc.2026.16.2.1468

Abstract

Background: Social anxiety is a prevalent and debilitating mental health condition among adolescents, with global prevalence estimated at 3.6% and reported rates ranging from 9–34% in Peshawar. The rapid expansion of social media usage among young populations has raised concerns regarding its potential psychological impact, particularly in low- and middle-income countries where context-specific data remain limited.

Objective: To assess the association between social media usage patterns and social anxiety among school-going adolescents in Peshawar.

Methodology: A school-based cross-sectional study was conducted among 408 adolescents (204 males, 204 females) selected through multistage sampling from public and private schools. Data were collected using validated instruments, including the Social Anxiety Scale for Adolescents (SAS-A), Social Media Addiction Scale (SMA-S), and Passive and Active Use Measure (PAUM). Statistical analysis was performed using SPSS version 26, applying descriptive statistics, Chi-square tests, independent t-tests, one-way ANOVA, and Pearson's correlation coefficient.

Results: The mean daily social media usage was 3.1 ± 2.3 hours. Based on SAS-A scores, 13.7% of participants had high social anxiety, 60.3% moderate, and 26.0% low. Passive social media use demonstrated a statistically significant positive correlation with social anxiety ($r = 0.232$, $p < 0.001$), whereas active use showed no significant association. Significant differences were observed across school type and grade level, with higher anxiety levels among public school and higher-grade students.

Conclusion: Social anxiety is a significant public health concern among adolescents in Peshawar. Passive social media engagement is significantly associated with increased social anxiety, highlighting the need for targeted interventions and awareness programs to promote healthy digital behaviors.

Keywords: Adolescent, Social Media, Social Anxiety.

ISSN (P): 1819-4583
ISSN (E): 3007-9470

Copyright © Copyright (c) 2026 The authors retain the copyrights. Authors are permitted and encouraged to post their work online (e.g. in institutional repositories or on their website), as it can lead to productive exchanges, as well as greater citation of published work.

Citation:
Imran L, Aliya B, Muhammad W, Fazal R, Noman GL, Naeem F. Association Between Social Media Usage Patterns and Social Anxiety Among Adolescents in Peshawar: A Cross-Sectional Study. *J Saidu Med Coll.* 2026;16(2):365–371.

Corresponding Author:
Dr. Bibi Aliya
Associate Professor,
Department of Community Medicine,
Rehman Medical College, Peshawar,
Pakistan
orakzaialiya@yahoo.com

Funding:
The authors received no external funding for this study.

Conflicts of Interests:
The authors have declared that no competing interests exist.

Data Sharing Statement:
The data that support the findings of this study are available on request from the corresponding author. The data is not publicly available due to privacy or ethical restrictions.

Received: December 08, 2025
1st Revision: January 15, 2026
2nd Revision: March 26, 2026
Accepted: April 05, 2026

Check for updates

Introduction

Social media has emerged as a dominant mode of communication and interaction over recent decades, with millions of active users worldwide, including a rapidly expanding adolescent population in Pakistan. While these platforms offer significant benefits such as enhanced connectivity, information exchange, and social support, accumulating evidence indicates that excessive or maladaptive use is associated with adverse mental health outcomes, including anxiety, depression, and sleep disturbances [1]. Globally, approximately 10–20% of children and adolescents are affected by mental health disorders, with anxiety and depression demonstrating a concerning rise in prevalence in recent years [2].

Adolescence, particularly between the ages of 13 and 17 years, represents a critical developmental stage characterized by identity formation, emotional regulation, and evolving social relationships. During this sensitive period, individuals are especially vulnerable to environmental influences, including digital media exposure. Excessive or unregulated engagement with social media may lead to long-term psychological and social consequences, ultimately compromising overall well-being and quality of life [3].

The recognition of social anxiety as a significant mental health disorder has evolved substantially, with its inclusion in the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) by the American Psychiatric Association and its classification in the International Classification of Diseases (ICD) by the World Health Organization, highlighting its global clinical and public health importance [4,5]. Social anxiety is now considered a major contributor to the global burden of disease, necessitating increased research attention and targeted intervention strategies.

Concurrently, the digital landscape has undergone rapid expansion, leading to unprecedented levels of social media engagement among adolescents. Evidence suggests that up to 90% of adolescents aged 13–17 years actively use social media platforms such as YouTube, Instagram, and Snapchat, making these platforms integral to their daily lives [6]. While social media can promote learning, communication, and self-expression, excessive or maladaptive use has been associated with negative psychological outcomes, including increased social comparison, feelings of inadequacy, and social withdrawal—factors that may contribute to the development or exacerbation of social anxiety [7,8].

Emerging literature further indicates that not only the duration but also the nature of social media engagement plays a critical role in determining psychological outcomes. Adolescents who spend more than two hours per day on social media platforms are more likely to experience psychological distress and symptoms of social anxiety disorder [9]. Moreover, the distinction between active (interactive and participatory) and passive (observational and consumption-based) use has gained increasing attention, with passive engagement being more strongly associated with negative emotional outcomes and reduced well-being [10].

Despite the growing body of international evidence, most existing studies have been conducted in Western populations and predominantly among adults. There remains a significant gap in region-specific data, particularly in Pakistan, where sociocultural, economic, and educational factors may uniquely shape both social media usage patterns and mental health outcomes. In regions such as Peshawar, where adolescents are increasingly exposed to digital environments, context-specific research is essential to inform effective school-based interventions, parental awareness strategies, and public health policies.

Therefore, this study aims to assess the association between social media usage patterns and social anxiety among school-going adolescents in Peshawar, thereby providing locally relevant evidence to better understand and address this emerging public health concern.

Methodology

Study design

This study employed a cross-sectional descriptive design to investigate the association between social media usage and social anxiety among adolescents. The cross-sectional approach was appropriate for identifying patterns and correlations within a defined population at a single point in time.

Ethics

Ethical approval for the study was obtained from the institutional review committee (Ref: RMC/CMPH–REC/Approval 25-4 (3)). Permission was also sought from school administrations, and informed consent was ensured through official communication with parents. Participants were assured of confidentiality, anonymity, and voluntary participation throughout the study process.

Setting
The study was conducted between March and July 2025 in selected public and private schools located in Peshawar, Khyber Pakhtunkhwa (KP), Pakistan, representing a mix of educational environments and socioeconomic backgrounds.

Participants
The study population consisted of school-going adolescents enrolled in grades 6th, 7th, and 8th, aged between 11–15 years. This age group was selected as it represents early to mid-adolescence—a critical developmental stage characterized by increased social media engagement and heightened vulnerability to social anxiety. Students with diagnosed psychiatric illnesses, developmental disabilities, or those unwilling to participate were excluded.

Variables
The primary dependent variable was social anxiety, while independent variables included social media usage patterns (duration, active use, and passive use) and social media addiction. Demographic variables such as age, gender, grade level, and type of school (public/private) were also included.

Data sources/measurement
Data were collected using validated instruments. The Urdu version of the Social Anxiety Scale for Adolescents (SAS-A) was used to measure social anxiety, demonstrating strong psychometric properties and reliability. Social media addiction was assessed using the Social Media Addiction Scale (SMA-S), while usage patterns were evaluated using the Passive and Active Use Measure (PAUM) (11,12). Since no clinical cut-offs were established for the Pakistani SAS-A version, scores were categorized into low, medium, and high levels using tertile-based distribution, consistent with prior epidemiological studies (11). Data collection was conducted through structured, interview-based administration by trained researchers to ensure clarity and completeness. A pilot study comprising 10% of the sample size was conducted to refine the methodology; these data were excluded from final analysis. Internal consistency was confirmed with Cronbach's alpha values of 0.787 (SAS-A), 0.737 (SMA-S), and 0.778 (PAUM).

Bias
Efforts were made to minimize bias through the use of validated tools and trained data collectors. However, potential sources of bias included recall bias due to self-reported measures and selection bias arising from convenience sampling at the second stage. These limitations were acknowledged during analysis and interpretation.

Study size
The sample size was calculated using the Raosoft sample size calculator, assuming a 95% confidence level, 5% margin of error, population size of 10,000, and response distribution of 50%, yielding a minimum required sample of 384 participants (10). To account for potential non-response and incomplete data, the final sample size was increased to 408 participants.

Quantitative variables
Continuous variables such as social media usage time and scale scores (SAS-A, SMA-S, PAUM) were expressed as means and standard deviations. Categorical variables, including levels of anxiety and demographic characteristics, were presented as frequencies and percentages.

Statistical methods
Data were analyzed using SPSS version 26. Descriptive statistics were used to summarize demographic and key study variables. Inferential statistics included Chi-square tests to assess associations between categorical variables, with a significance level set at $p \leq 0.05$. Independent sample t-tests and one-way ANOVA were applied to compare mean differences across groups. Pearson's correlation coefficient was used to evaluate relationships between continuous variables, particularly the association between social media usage patterns and social anxiety scores.

Results

Participants
A total of 408 school-going adolescents were included in the study, with equal representation of males (n = 204) and females (n = 204). Participants were evenly distributed across public (n = 204) and private (n = 204) schools, as well as across grades 6, 7, and 8. The majority of participants (n = 351; 86%) reported active use of social media, while 57 (14%) reported no usage. This balanced distribution enhances the representativeness of the study population and allows for meaningful comparisons across gender, school type, and grade levels.

Descriptive data
Based on the Social Anxiety Scale for Adolescents (SAS-A), 13.7% of participants were categorized as having high social anxiety, 60.3% as moderate, and 26.0% as low (Figure 1). The average daily time spent on social media among participants was 3.1 ± 2.3 hours, indicating moderate to high engagement (Figure 2). The descriptive statistics for

key measurement tools are presented in Table 1, where the mean SAS-A score was 40.13 ± 11.67, the Social Media Addiction Scale (SMA-S) mean score was 24.02 ± 6.45, and Passive and Active Use Measure (PAUM) scores indicated higher passive engagement (9.85 ± 2.95) compared to active use (7.23 ± 3.01). These findings highlight a predominance of passive social media behavior among adolescents.

Outcome data

The distribution of social anxiety across school types revealed that students from public schools exhibited higher proportions of moderate and high anxiety levels compared to private school students (Table 2). Specifically, 11.8% of public school students had high anxiety compared to only 2.5% in private schools, with a statistically significant difference ($\chi^2(2) = 28.34$, $p < 0.001$). Similarly, variation across grade levels was observed (Table 3), where Grade 8 students demonstrated the highest proportion of severe social anxiety (42.9%) compared to Grades 6 and 7, with a statistically significant association ($\chi^2 = 9.74$, $p = 0.008$). Trends in social media addiction also showed increasing severity with advancing grade levels. Gender-based comparison indicated that females had significantly higher SMA-S scores than males (24.75 vs. 23.30; $p = 0.034$), although no significant gender differences were observed in SAS-A or PAUM scores.

Main results

Inferential analysis demonstrated a statistically significant positive correlation between passive social media use and social anxiety scores ($r = 0.232$, $p < 0.001$), as illustrated in Figure 3. In contrast, active social media use showed a weak and non-significant relationship with social anxiety. Independent sample t-tests and one-way ANOVA further confirmed significant differences in social media addiction scores across gender and grade levels, with post hoc Tukey HSD analysis revealing that Grade 8 students had significantly higher addiction scores compared to Grades 6 and 7 ($p = 0.020$) (Table 3). However, no significant differences were observed in social anxiety scores across grades using ANOVA. Overall, the findings suggest that passive engagement with social media is a key factor associated with increased social anxiety among adolescents, whereas active engagement does not exhibit a similar effect.

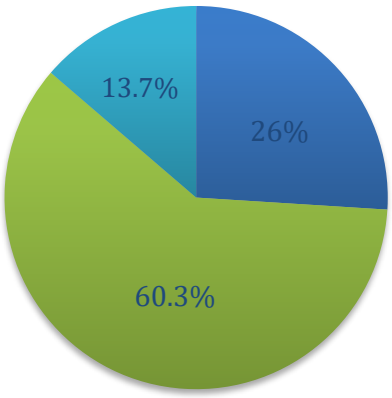


Figure 1: Social Anxiety Scores

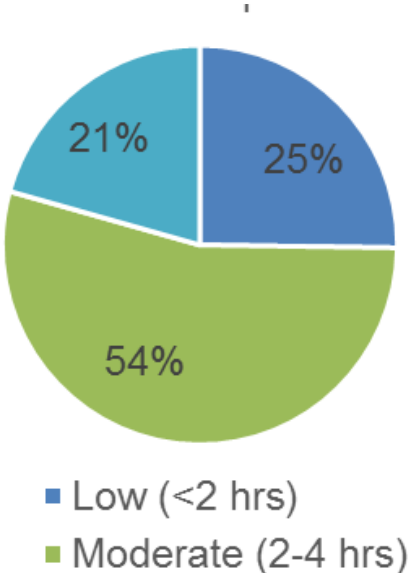


Figure 2: Duration of Social Media Usage

Table 1. Pattern of Social Media Usage, Social Media Anxiety & Addiction

Tool	Items	Range	Mean	Std. Dev	Max Score
SAS-A (Social Anxiety)	16	16–74	40.13	11.67	80
SMA-S (Addiction)	9	8–40	24.02	6.45	45
PAUM – Active	3	3–15	7.23	3.01	15
PAUM – Passive	3	3–15	9.85	2.95	15

Table: 2: Frequency of Social Anxiety among Students of Public and Private schools

Social Anxiety Score	Public School (%)	Private School (%)
Low	34.3	57.4
Medium	53.9	40.1
High	11.8	2.5

Table: 3: Frequency of Social Anxiety Scores (SAS-A scores) among students of different Grades

Grade	Low Anxiety Score (%)	Moderate Anxiety Score (%)	High Anxiety Score (%)
6	27.0	36.3	32.1
7	38.7	31.9	25.0
8	34.4	31.9	42.9

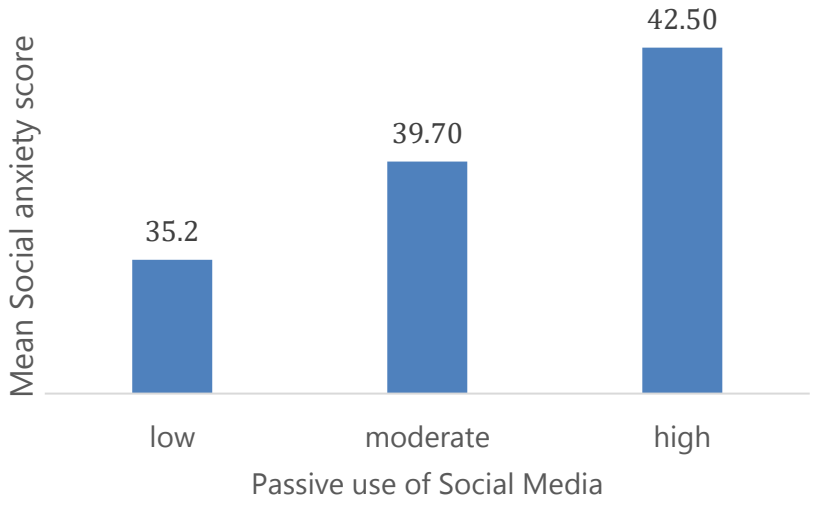


Figure 3: Relationship of Passive Social Media use and Social Anxiety score

Discussion

The present study examined the association between social media usage patterns and social anxiety among school-going adolescents in Peshawar. The findings indicate that adolescents spend a considerable amount of time on social media (3.1 ± 2.3 hours per day), with a substantial proportion demonstrating moderate to high levels of social anxiety. These findings underscore the growing relevance of social media as a potential psychosocial determinant of mental health among adolescents.

The prevalence of high social anxiety (13.7%) observed in this study aligns with findings from previous local research conducted in Pakistan, which reported comparable rates without significant gender differences [11,12]. Similarly, international studies have consistently demonstrated a positive association between increased social media use and elevated levels of social anxiety among adolescents and young adults [13,14]. These findings support the growing body of evidence suggesting that excessive engagement with social media platforms may contribute to adverse psychological outcomes.

A key finding of this study is the significant positive correlation between passive social media use and social anxiety. This is consistent with prior literature indicating that passive consumption of online content—such as browsing, scrolling, and observing others—can lead to increased social comparison, feelings of inadequacy, and reduced self-esteem, thereby exacerbating anxiety symptoms [15,16]. In contrast, active engagement, which involves direct interaction and communication, did not show a significant association with social anxiety in the present study, suggesting that the nature of engagement plays a critical role in determining psychological outcomes.

The study also revealed significant differences across school types, with public school students exhibiting higher levels of social anxiety compared to their private school counterparts. This may reflect underlying socioeconomic disparities, differences in access to resources, or variations in psychosocial support systems. Furthermore, higher-grade students demonstrated greater levels of both social anxiety and social media addiction, indicating a potential cumulative effect of prolonged exposure and developmental vulnerability.

These findings are further supported by studies conducted in similar settings. For instance, research from Nepal reported high levels of social media usage and associated anxiety among adolescents, particularly among females and higher-grade students [17]. Likewise, studies from Bangladesh and Sweden have demonstrated that prolonged social media use is significantly associated with increased anxiety symptoms, regardless of the type of usage [18,19]. Collectively, these findings reinforce the notion that both the duration and pattern of social media engagement are critical determinants of adolescent mental health.

The results of this study highlight the importance of distinguishing between passive and active social media use when assessing psychological outcomes. The findings emphasize the need for targeted interventions aimed at promoting healthy digital behaviors, improving emotional resilience, and raising awareness among adolescents, parents, and educators regarding the potential mental health implications of excessive and passive social media engagement.

Limitations

Several limitations of this study should be acknowledged. First, the cross-sectional design restricts the ability to establish causal relationships between social media usage and social anxiety, limiting the findings to associations only. Longitudinal studies are needed to determine temporal relationships and causal pathways. Second, the reliance on self-reported data may introduce recall bias and response bias, potentially affecting the accuracy of reported social media usage and anxiety levels. Third, the use of convenience sampling at the second stage of participant selection may limit the generalizability of the findings to the broader adolescent population.

Additionally, the categorization of social anxiety levels using tertile-based distribution, rather than clinically established diagnostic cut-offs, may limit the clinical applicability of the results. Although validated tools were used, cultural and contextual factors may also influence how adolescents perceive and report anxiety symptoms.

Conclusion

This study demonstrates a significant association between passive social media usage and social anxiety among school-going adolescents in Peshawar. The findings suggest that while social media is an integral part of adolescent life, its passive use may contribute to increased psychological vulnerability. Given the rising prevalence of social anxiety and the widespread use of digital platforms, there is an urgent need for evidence-based interventions aimed at promoting balanced and mindful social media use. Educational institutions, parents, and policymakers should

work collaboratively to develop strategies that enhance digital literacy, encourage active and meaningful engagement, and support adolescent mental well-being.

Authors' Contributions:

All authors meet the ICMJE criteria for authorship.

Author 1: Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 2: Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 3: Analysis and interpretation of data, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 4: Analysis and interpretation of data, critical revision, final approval, agreed to be accountable for all the work.
Author 5: Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Author 6&7: Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.

References

1. Sarwar S, Khan MA, Amjad N, Mehfooz Q, Sarrfraz F, Gulzar Z. Association between Addiction of Social Media and Depression among Medical Students. *Pakistan J Med Heal Sci.* 2022;16(8):768–9. https://doi.org/10.53350/pjmhs22168768
2. Keles B, McCrae N, Grealish A. A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents. *Int J Adolesc Youth* 2020;25(1):79–93. https://doi.org/10.1080/02673843.2019.1590851
3. Tang X, Liu Q, Cai F, Tian H, Shi X, Tang S. Prevalence of social anxiety disorder and symptoms among Chinese children, adolescents and young adults: A systematic review and meta-analysis. *Front Psychol.* 2022;13. https://doi.org/10.3389/fpsyg.2022.792356
4. Mendelson G. Diagnostic and statistical manual of mental disorders, fourth edition (DSM-IV). Vol. 29, *Australasian Psychiatry.* 1995;529–535.
5. Organization WH. The International Statistical Classification of Diseases and Related Health Problems (ICD-10). *Encycl Personal Individ Differ.* 2020;3798–3798.
6. Anderson M, Faverio M, Gottfried J. PI_2023.12.11-Teens-Social-Media-Tech_FINAL. *Pew Res Cent.* 2023;1–25.
7. Uhls YT, Ellison NB, Subrahmanyam K. Benefits and costs of social media in adolescence. *Pediatrics.* 2017;140:S67–70. https://doi.org/10.1542/peds.2016-1758E
8. Bhattarai P, Magar DR, Kafle B, Bhattarai P, Aryal UR, Sanjel S. Social media addiction and its psychological effects among school students: A cross-sectional study from Kathmandu, Nepal. *medRxiv.* 2025;2025.07.08.25331070. https://doi.org/10.1101/2025.07.08.25331070
9. Sampasa-Kanyinga H, Lewis RF. Frequent Use of Social Networking Sites is Associated with Poor Psychological Functioning among Children and Adolescents. *Cyberpsychology, Behav Soc Netw.* 2015;18(7):380–5. https://doi.org/10.1089/cyber.2015.0055
10. Thorisdottir I, Sigurvinsdottir R, Asgeirsdottir BB, Allegrante JP, Sigfusdottir ID. Social media use and symptoms of anxiety and depressed mood among adolescents. *Cyberpsychol Behav Soc Netw.* 2020;23(6):1–7. https://doi.org/10.1089/cyber.2019.0079
11. Bano Z, Ahmad R, Riaz S. Social Anxiety in Adolescents: Prevalance and Morbidity. *Pakistan Armed Forces Med J.* 2019;69(5):1057–60.
12. Mendes L, Leonido L, Pereira N, Morgado EG. Psychometric Validation of the Passive and Active Use Measure (PAUM) for Facebook and Instagram among a Portuguese Sample. *Spec Edukac i Rehabil.* 2025;24(1):21–59. https://doi.org/10.5937/specedreh24-48147
13. Yang F, Li M, Han Y. Whether and how will using social media induce social anxiety? The correlational and causal evidence from Chinese society. *Front Psychol.* 2023;14. https://doi.org/10.3389/fpsyg.2023.1217415
14. Anto A, Asif RO, Basu A, Kanapathipillai D, Salam H, Selim R, et al. Exploring the Impact of Social Media on Anxiety Among University Students in the United Kingdom: Qualitative Study. *JMIR Form Res.* 2023;7. https://doi.org/10.2196/43037
15. Elhai JD, Levine JC, Hall BJ. Problematic smartphone use and mental health problems: Current state of research and future directions. *Dusunen Adam - J Psychiatry Neurol Sci.* 2019;32(1):1–3. https://doi.org/10.14744/DAJPNS.2019.00001
16. Du M, Zhao C, Hu H, Ding N, He J, Tian W, et al. Association between problematic social networking use and anxiety symptoms: a systematic review and meta-analysis. *BMC Psychol.* 2024;12(1):1–22. https://doi.org/10.1186/s40359-024-01705-w
17. Aryal N, Rajbhandari A. Social media use and anxiety levels among school adolescents: a cross-sectional study in Kathmandu, Nepal. *BMJ Public Heal.* 2024;2(1):e000615. https://doi.org/10.1136/bmjph-2023-000615
18. Das S, Zubayer A Al, Snigdha MF, Uddin MF, Afridi MK, Kanak KFJ, et al. Social Media Use Time and Mental Health of Young Adults: A Cross-Sectional Study in Bangladesh. *Heal Sci Reports.* 2025;8(7):1–7. https://doi.org/10.1002/hsr2.71117
19. Erliksson OJ, Lindner P, Mörtberg E. Measuring associations between social anxiety and use of different types of social media using the Swedish Social Anxiety Scale for Social Media Users: A psychometric evaluation and cross-sectional study. *Scand J Psychol.* 2020;61(6):819–26. https://doi.org/10.1111/sjop.12673