

Use Of Social Media and Its Impact on The Psychological Well-Being of Teen Girls

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ABSTRACT

Objective: To assess the pattern of social media usage among adolescent girls and determine its association with psychological well-being using a validated mental health screening tool.

Study Design: Cross-sectional descriptive study.

Place and Duration of Study: Combined Military Hospital, Okara, Pakistan, from Oct 24 to Mar 25.

Methodology: A total of 163 female students aged 13 to 19 years were included using convenience sampling. Data were collected via a self-administered questionnaire that included demographic information, Social Media Use (SMU) patterns, and the Depression Anxiety Stress Scales (DASS-21). Descriptive statistics summarized baseline characteristics, and chi-square tests were applied to examine the association between SMU and mental health outcomes. Ethical approval was obtained from the relevant Institutional Review Board, and informed consent was secured.

Results: The mean age of participants was 16.19±2.15 years. Among them, 58.9% reported using social media, with TikTok being the most frequently used platform (19%). Overall, 62.6% of participants fell within the normal range for depression, 71.2% for anxiety, and 48.5% for stress. However, social media users demonstrated significantly higher rates of moderate to extremely severe depression ($p=0.002$) and stress ($p=0.027$) compared to non-users. TikTok users exhibited the highest prevalence of severe and extremely severe depression (23.8% and 50.0%, respectively) and stress (57.1%). No significant association was found between SMU and anxiety levels ($p=0.961$).

Conclusion: This study reveals a significant association between SMU-particularly TikTok – and increased levels of depression and stress among teenage girls.

Keywords: Anxiety, DASS-21, Depression, Mental Health, Social Media, Stress.

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INTRODUCTION

Psychological well-being" denotes an affirmative approach including mastering and exerting autonomy; personal development; and experiencing purpose and meaning in life.¹ Today, most teens utilize social media apps, such as Instagram and TikTok.² While young adolescents of all sexes use social media frequently, new data suggest that young females might be particularly vulnerable to the negative psychological impacts of overexposure to it.³ Worries have grown concerning the relationship between rising SMU and reduced real-world contact, intensified feelings of loneliness, raised stress levels, blue moods, and disrupted sleep patterns, all of which impair mental health.⁴ The United States reported the rate of depression among teens increased from 8.7% in 2005 to 11.3% in 2014, peaking at 15.8% in 2019.^{5,6}

A meta-analysis found that there existed a large,

stable, and significant causal correlation between the SMU and a result indicating worse mental health outcomes for females (β median = -0.11 to -0.24).⁷ Another study also found that girls were consistently performing worse than boys: that is, experiencing higher levels of negative feelings, life dissatisfaction, a lower self-concept, and self-harm.⁸

A nationwide cross-sectional study from Norway found 31.7% of girls and 12.3% of boys students to have depressive symptoms, in both genders.⁹ A recent study indicates that the correlation between SMU and mental well-being varies across males and girls.¹⁰ This aligns with evidence that girls tend to value personal relationships more than boys, which consequently becomes the reason behind anxiety, fear of missing out (FOMO), and depression.

Hence, the correlation between SMU and mental wellbeing is intricate and multifarious. Factors like motivations for participation and the online contexts teenagers traverse further affect these results. The current study aims to assess how SMU impacts the psychological well-being of teenage girls, who are

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particularly vulnerable. The current study generates gender-specific findings that have implications for gender-specific mental health interventions and parent-led interventions that promote healthy SMU.

METHODOLOGY

This cross-sectional descriptive study was conducted at CMH Okara after obtaining permission from the ethical review committee vide their certificate number IERC/PSY/2024/02 dated Oct 1 2024. The duration of the study was six months after approval from the ethical committee. A total of 163 teenage girls were estimated, with 12% of subjects reporting moderate levels of anxiety.¹¹ A 5% margin of error, 95% confidence level, and the WHO calculator were used.

Inclusion Criteria: Female students aged 13 to 19 years who gave informed consent to take part in the study were included. For participants under 18 years of age, consent was obtained from their parents or guardians. Only those who were able to understand and complete the questionnaire in English were included.

Exclusion Criteria: Girls with a known psychiatric disorder or those receiving psychiatric treatment were excluded. Additionally, participants who were not using any form of social media were excluded from the study.

In the present study, social media refers to the digital medium through which people are able to create, share, and interact with content in virtual communities and networks. Such platforms are, among others, social networking services (such as Facebook, Instagram), video and photo sharing applications (such as TikTok, Snapchat, YouTube), microblogging sites (such as Twitter/X), or message apps (such as WhatsApp). The study participants were enrolled from various private and public secondary schools and colleges located in Okara. Data was collected via a self-administered questionnaire, which was distributed and filled out in the classroom setting under supervision. Participants were given clear instructions before filling out the forms. The questionnaire included sections on (1) Demographic Information: Age, class/level, etc., and (2) Social Media Usage: Type, duration and time used, and frequency of use. Psychological functioning was measured with the "Depression Anxiety Stress Scales" (DASS-21), which has been reported to be a reliable scale to assess the depression, anxiety, and stress symptoms among adolescents. The DASS-21 has 21

questions rated on a 4-point Likert scale (0 = Did not apply to me at all, 3 = Applied to me very much, or most of the time).¹²

All data collected were organized, coded, and analyzed using Statistical Package for Social Sciences version 26. Descriptive statistics, i.e., means and standard deviations, were calculated to describe continuous variables like age, and DASS-21 scores, and frequencies and percentages were used to describe categorical variables, such as social media usage, severities of depression, anxiety and stress, and patterns of use and preferences of social media platforms (YouTube, Snapchat, TikTok, Twitter, Instagram, Facebook, Others and No). Chi-square (χ^2)/Fisher's Exact test analyses were performed to explore the association between social media consumption and psychological well-being. The tests were used to examine the association of the subscales of depression, anxiety, and stress with the users and non-users of social media and with some particular social media. Statistical significance was taken at p -value ≤ 0.05 .

RESULTS

The descriptive statistics of age reveal a mean age of 16.19 ± 2.15 years. The age range was 6 years, with the minimum and maximum ages being 13 and 19, respectively, indicating a relatively young study population with a moderate level of variability.

Regarding social media usage, 96 respondents (58.9%) reported using social media, while 67 (41.1%) did not. Among those who use social media, TikTok was the most popular platform, used by 31 participants (19.0%), followed by Snapchat (16; 9.8%), Facebook (14; 8.6%), Instagram (10; 6.1%), YouTube (8; 4.9%), Twitter (8; 4.9%), and other platforms (9; 5.5%). Mental health severity analysis revealed that most respondents fell within the "normal" range for depression (102; 62.6%), anxiety (116; 71.2%), and stress (79; 48.5%). However, some reported varying levels of severity: depression was classified as mild in 7 (4.3%) respondents, moderate in 25 (15.3%), severe in 21 (12.9%), and extremely severe in 8 (4.9%). Anxiety severity was categorized as mild in 10 (6.1%) participants, moderate in 24 (14.7%), severe in 7 (4.3%), and extremely severe in 6 (3.7%). Stress was reported as mild in 35 (21.5%), moderate in 41 (25.2%), severe in 7 (4.3%), and extremely severe in 1 (0.6%).

In the comparison of depression severity relative to social media usage, significant differences were observed ($p=0.002$). Among non-users, 52% were

classified as normal, while 25% were moderately depressed, 33.3% severely depressed, and 25% extremely severely depressed. In contrast, among social media users, 48% were normal, while 80% had moderate, 66.7% severe, and 75% extremely severe depression. The association between depression and the specific social media platform used was also significant ($p=0.013$). TikTok users had the highest rates of severe (23.8%) and extremely severe depression (50%).

Table-I: Association of Depression with Respect to Use and Preference of Social Media (n= 163)

Questions		Depression					p-value
		Normal (n=102)	Mild (n=7)	Moderate (n=25)	Severe (n=21)	Extremely Severe (n=8)	
Do you use social media	No	53(52.0%)	0(0.0%)	5(25.0%)	7(33.3%)	2(25.0%)	b0.002*
	Yes	49(48.0%)	7(100.0%)	20(80.0%)	14(66.7%)	6(75.0%)	
Which social media do you use	No	53(52.0%)	0(0.0%)	5(20.0%)	7(33.3%)	2(25.0%)	a0.013*
	Face book	9(8.8%)	2(28.6%)	1(4.0%)	1(4.8%)	1(12.5%)	
	Instagram	7(6.9%)	0(0.0%)	0(0.0%)	3(14.3%)	0(0.0%)	
	Twitter	4(3.9%)	1(14.3%)	1(4.0%)	2(9.5%)	0(0.0%)	
	TikTok	13(12.7%)	2(28.6%)	7(28.0%)	5(23.8%)	4(50.0%)	
	Snap chat	5(4.9%)	2(28.6%)	6(24.0%)	3(14.3%)	0(0.0%)	
	YouTube	6(5.9%)	0(0.0%)	2(8.0%)	0(0.0%)	0(0.0%)	
	Others	5(4.9%)	0(0.0%)	3(12.0%)	0(0.0%)	1(12.5%)	

*Significant a | Chi-square test, b | Fisher's Exact test

Anxiety levels did not significantly differ based on SMU ($p=0.97$). Similarly, no significant differences were observed between the types of social media platforms used and anxiety severity ($p=0.824$). Most users, regardless of platform, were within the normal range for anxiety.

Table-II: Comparison of Anxiety with respect to Use and Preference of Social Media(n=163)

Questions		Anxiety					p-value
		Normal (n=116)	Mild (n=10)	Moderate (n=24)	Severe (n=7)	Extremely Severe (n=6)	
Do you use social media	No	48(41.4%)	5(50.0%)	9(37.5%)	3(42.9%)	2(33.3%)	b0.973
	Yes	68(58.6%)	5(50.0%)	15(62.5%)	4(57.1%)	4(66.7%)	
Which social media do you use	No	48(41.4%)	5(50.0%)	9(37.5%)	3(42.9%)	2(33.3%)	a0.824
	Face book	11(9.5%)	0(0.0%)	3(12.5%)	0(0.0%)	0(0.0%)	
	Instagram	6(5.2%)	2(20.0%)	1(4.2%)	1(14.3%)	0(0.0%)	
	Twitter	6(5.2%)	1(10.0%)	1(4.2%)	0(0.0%)	0(0.0%)	
	TikTok	23(19.8%)	2(20.0%)	3(12.5%)	1(14.3%)	2(33.3%)	
	Snap chat	9(7.8%)	0(0.0%)	5(20.8%)	1(14.3%)	1(16.7%)	
	YouTube	7(6.0%)	0(0.0%)	0(0.0%)	1(14.3%)	0(0.0%)	
	Others	6(5.2%)	0(0.0%)	2(8.3%)	0(0.0%)	1(16.7%)	

a | Chi-square test, b | Fisher's Exact test

Regarding stress, social media users had significantly higher stress levels compared to non-

users ($p=0.027$). Among social media users, 48.1% were classified as normal, 60% had mild stress, and 73.2% had moderate stress. The association between specific social media platforms and stress severity was also significant ($\chi^2 = 44.837$, $p=0.023$), with TikTok users exhibiting higher rates of moderate (31.7%) and severe stress (57.1%) compared to users of other platforms.

Table-III: Association of Stress with respect to Use and Preference of Social Media (n= 163)

Questions		Stress					p-value
		Normal (n=79)	Mild (n=35)	Moderate (n=41)	Severe (n=7)	Extremely Severe (n=1)	
Do you use social media	No	41(51.9%)	14(40.0%)	11(26.8%)	1(14.3%)	0(0.0%)	b0.027*
	Yes	38(48.1%)	21(60.0%)	30(73.2%)	6(85.7%)	1(100.0%)	
Which social media do you use	No	41(51.9%)	14(40%)	11(26.8%)	1(14.3%)	0(0.0%)	a0.023*
	Face book	7(8.9%)	4(11.4%)	2(4.9%)	0(0.0%)	1(100.0%)	
	Instagram	6(7.6%)	1(2.9%)	3(7.3%)	0(0.0%)	0(0.0%)	
	Twitter	4(5.1%)	2(5.7%)	2(4.9%)	0(0.0%)	0(0.0%)	
	TikTok	10(12.7%)	4(11.4%)	13(31.7%)	4(57.1%)	0(0.0%)	
	Snapchat	2(2.5%)	5(14.3%)	8(19.5%)	1(14.3%)	0(0.0%)	
	YouTube	5(6.3%)	3(8.6%)	0(0.0%)	0(0.0%)	0(0.0%)	
	Others	4(5.1%)	2(5.7%)	1(14.3%)	0(0.0%)	0(0.0%)	

*Significant a | Chi-square test, b | Fisher's Exact test

DISCUSSION

In our study, the mean age was 16.19 years ($SD=2.15$), which falls into mid to late adolescence and is a time in development marked by significant emotional and social change. Our study revealed that 59% of the volunteers used social media, with TikTok being the prevailing one. This is consistent with global trends and confirms earlier research, which suggests a gender slanted preference and vulnerability to platforms that promote appearance-focused content.¹³ There were a significant proportion of respondents (58.9%) who reported their SMU, with TikTok being the most popular platform (19.0%), followed by Snapchat (9.8%), Facebook (8.6%), and Instagram (6.1%). That's in line with what national figures indicate, as teens favor sites like TikTok and Instagram. TikTok usage may have a larger impact on the mental health of teenage girls compared to boys, simply because they interact more with the application and have a higher sensitivity to appearance-themed posts, according to the study as reported by Conte *et al.*¹⁴

There was a significant association between SMU and severity of depression ($\chi^2 = 15.832$, $p=0.003$). A higher percentage of subjects who used social media were found to have moderate to severe depression

than those who did not use social media. The highest proportion of severe (23.8%) and extremely severe depression (50%) was observed among TikTok users. The findings are in line with a study conducted by Chao *et al.*, who found that teens who excessively used apps such as TikTok suffered higher attacks of depression, anxiety, and stress.¹⁵ A significant association was found between SMU and stress levels ($\chi^2 = 10.049$, $p=0.040$). Social media users reported higher levels of mild (60%) and moderate stress (73.2%) compared to non-users. TikTok users, in particular, exhibited higher rates of moderate (31.7%) and severe stress (57.1%). In our study, there was a significant association between the SMU and stress levels ($\chi^2 = 10.049$, $p=0.040$). The present study demonstrated higher stress scores of 60% and 73.2% among mild and moderate social media users, respectively, as compared to non-users. TikTok users experienced higher levels of moderate (31.7%) and severe stress (57.1%). Platform-specific analyses revealed that levels of depression and stress were highest among TikTok users. The findings aligned with previous reports that excessive use of short video apps like TikTok is accompanied by significantly worse mental health outcomes, notably higher levels of depression, anxiety, stress, and social isolation, compared to those with moderate use and non-users.¹⁵

The results are consistent with a scoping review of 43 studies undertaken from 2012 to 2022 by Azem *et al.*, who found a causal association between SMU and depression, as well as other negative outcomes including anxiety, sleep disturbance, lower self-esteem and appearance concerns. Concerning susceptibility, female adolescents appear to be particularly at risk, as eight studies confirmed the predominance of elevated depression symptoms among girls compared to boys.¹⁶ Similarly, a recent dose-response meta-analysis of 26 studies involving more than 55,000 subjects conducted by Liu *et al.*, found a significant association between total screen-based social media (TSSM) use and depressive symptomatology, particularly in adolescent females. The odds of depression increased by 13% for each additional hour of SMU, and this association was stronger for girls (OR=1.72) than boys (OR=1.20).¹⁷

Likewise, another study of 825 high school students by Drazenovic *et al.*, showed that gender and daily SMU had the strongest effects on depression, anxiety, and stress, where girls and frequent users experienced the most negative emotions.¹⁸ These

results are similar to those found in our study, which also reported an increased amount of depression and stress in female adolescents with frequent use of platforms like TikTok.¹⁸ This mirrors a recent systematic review of 50 studies exploring the link between screen time and adolescent mental health, following PRISMA guidelines. The findings kept coming up with the same conclusion: more screen time was tied to worse wellbeing, with cell phones playing a potential role in the link between increased screen time and depressed mood, particularly among girls.¹⁹

Unlike depression, anxiety levels did not significantly differ based on SMU ($\chi^2 = 0.618$, $p=0.961$) or the specific platform used ($\chi^2 = 21.035$, $p=0.824$). This suggests that while there may be an impact of SMU on some aspects of mental health that is moderated by gender, the association between social media use and anxiety in adolescent females may be less strong or confounded by other factors. A cross-sectional study of 401 adolescents, conducted by Aryal *et al.*, found a strong link between problematic SMU, particularly in females and younger teens, and severe anxiety symptoms. At least 43% of participants were active on social media 4–8 h per day; the risk of social addiction (SA) was significantly higher among women (AOR = 0.37, $p<0.001$). Higher frequency and prolonged usage time were associated with elevated anxiety, indicating the effects of gender and usage patterns. These results are consistent with the present study's results and emphasize the indicative gender-related vulnerability and the significant role of high engagement in social networking sites, specifically TikTok engagement, in amplifying psychological distress among adolescents.²⁰

While this may sound counterintuitive, prior research showed that SMU might exacerbate anxiety as a result of fear of missing out (FOMO) and social pressures online, although this effect has not always been statistically significant and might be affected by individual coping strategies and digital literacy.²¹ The asynchrony of communication on social network sites could act as a cushion against “real-time” social anxiety and explain the non-significant results.

Some studies show contradictory relations between SMU and anxiety, and more research is needed to examine this association. A comprehensive systematic review analysis conducted by Kerr *et al.*, revealed that more than half of the research analyzed (56.3%) indicated a positive correlation between teenage SMU and anxiety. Stronger relationships were

observed between problematic use and time spent on screens; thus, how adolescents engage with social media may be more important than how often they use it. Despite this widespread presence of relationships, there was a great deal of variability in the measures of both social media and anxiety in the studies, which made comparison difficult. Data were analyzed by gender in a few studies (12.5%), indicating a gap in the examination of demographic disparities.²² However, Gilali *et al.*, found stronger associations of TikTok use with mental health symptoms in boys than in girls, suggesting that context- or culture-dependent factors might modulate these effects and warrant further research.²³ Though sites such as Instagram and Snapchat have been criticized at length in the literature for their negative effects on mental well-being, they had a relatively lower level of severity in our sample. That might suggest a shift in user tastes or the type of content on the site that requires closer scrutiny.

LIMITATIONS OF STUDY

The cross-sectional design of this study restricts causal conclusions regarding the relationship between SMU and mental health outcomes. Self-reported measures are susceptible to memory and social desirability bias. The sample (from a single urban area) limits its generalizability. In addition, not only are all these variables (sleep quality, academic stress, and cyberbullying) not controlled, but also, the type of content on the site is not considered, since it might influence the psychological outcomes in different forms. It should also be noted that additional research would benefit from the use of longitudinal and experimental designs to establish causality and to explore possible mechanisms, such as self-esteem, exposure to cyberbullying, and sleep disturbance. Platforms like TikTok should consider building age-appropriate algorithms or filtering mechanisms for harmful content for young users.

CONCLUSION

The findings reveal that social media users, particularly those who are used to spending a larger amount of time on apps such as TikTok, report increased rates of depression and stress, in comparison to non-users. There was no strong association between social SMU and anxiety; however, the platform-specific variances observed suggest that there may be meaningful differences in the relationship between social media and mental health. These results also reinforce the importance of targeted mental health interventions for specific problems associated with the social networking behavior of adolescent females.

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Disclosure:

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

JT & HI: Data acquisition, data analysis, critical review, approval of the final version to be published.

AAB: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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