Social Media Use on Mental Health Outcomes among Adolescents and Young Adults in Port Harcourt City

Wilfred Oritsesan Olley[1], PhD, Dike, Harcourt Whyte[2]

[1]Department of Mass Communication, Edo State University, Iyamho, Nigeria.

[2]Rivers State University, Port Harcourt, Nigeria.

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ABSTRACT

Social media is embedded in the lives of adolescents and young adults globally, raising urgent questions about its impact on mental health. Recent evidence indicates a complex relationship between digital engagement and psychological outcomes, including depression, anxiety, and sleep quality. This study empirically examined these associations. A cross-sectional survey was conducted with 400 adolescents and young adults (aged 13–24, balanced by gender and socioeconomic status), measuring daily social media usage, depression (PHQ-9), anxiety (GAD-7), and sleep quality (PSQI). The analysis focused on both the duration and patterns of use, with regression models adjusted for demographic factors. The average social media use was 4.5 hours per day (SD=2.0). Heavy users (≥4 hours/day) showed higher rates of moderate-to-severe depression (38% vs. 19%) and anxiety (36% vs. 18%), as well as poorer sleep quality (63% vs. 35%) compared to lighter users (<4 hours/day). Problematic use, nighttime activity, and passive consumption emerged as the strongest predictors of adverse outcomes. Regression analysis indicated that daily social media use independently predicted increased depression, anxiety, and disturbed sleep, even after controlling for other variables. The study concludes that higher and problematic social media engagement is strongly associated with increased depression, anxiety, and poor sleep quality among youth. Findings highlight the urgent need for evidence-based digital literacy, psychosocial interventions, and platform-level policy reforms.

Keywords: Social Media, Mental Health, Adolescents, Young Adults, Social media use

INTRODUCTION

The use of social media has profoundly altered the socialisation, education, and psychological processes of adolescents and young adults over the past decade. Apps like TikTok, Instagram, and Snapchat have achieved nearly universal penetration among youth, contributing to a global success story. Recent surveys indicate that more than 90% of teenagers in developed nations report daily social media use, with average engagement exceeding three hours per day and trending upward since the COVID-19 pandemic (Pew Research Centre, 2025). The rise in digital engagement correlates with increasing concerns about its impact on key mental health outcomes: depression, anxiety, and sleep quality (Agyapong-Opoku et al., 2025; Fassi et al., 2025). Adolescence is a critical developmental stage characterised by significant emotional, cognitive, and social changes. This life stage is associated with a heightened risk for the onset of common mental health disorders, with rates of depression and anxiety increasing sharply among young people since 2020 (Agyapong-Opoku et al., 2025; Shannon et al., 2022). Sleep disturbances, in both quality and quantity, are recognised as both correlates and predictors of poor mental well-being in this population (Yu et al., 2024; Han et al., 2024). Social media use (SMU) interacts with these risks in complex ways, offering opportunities for connection alongside unique digital stressors.

An increase in empirical studies demonstrates a multidimensional correlation between social media use and mental health outcomes. Evidence consistently indicates that the risks are most severe for heavy users, those who engage in problematic patterns such as nighttime consumption, and individuals with heightened sensitivity to peer feedback and social comparison (Ahmed et al., 2024; Yu et al., 2024; Shannon et al., 2022).

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Beyond traditional risks like screen time, mechanisms including cyberbullying, content exposure, and social comparison are increasingly recognised as mediators linking SMU to psychological distress and sleep issues (Fassi et al., 2025; Yang et al., 2025; Sala et al., 2024). Although these relationships are robust, their direction and causality remain debated. Evidence increasingly suggests a dose-response pattern, with each extra hour of use associated with a higher risk of depression and anxiety symptoms (Agyapong-Opoku et al., 2025). Nonetheless, longitudinal studies imply complex bidirectional effects (Nagata et al., 2025). Some research highlights the nuanced valency of social media's impact: for example, active participation in supportive communities or seeking mental health resources online can promote resilience and reduce isolation (Harvard T.H. Chan School of Public Health, 2024; Callahan, 2025). As digital engagement among adolescents and young adults continues to rise, understanding the mechanisms behind SMU's effects on depression, anxiety, and sleep, and quantifying these impacts, has become an urgent public health priority (World Health Organisation, 2024).

Problem Statement

Despite increasing evidence linking social media use to higher rates of depression, anxiety, and sleep issues among adolescents and young adults, understanding and tackling this problem is complicated by significant variability in usage patterns, individual vulnerability, and psychosocial factors (Shannon et al., 2022; Sala et al., 2024). Heavy or problematic social media engagement is consistently associated with negative mental health outcomes, especially for young people who passively scroll (i.e., without interaction), use platforms late at night, or suffer from cyberbullying (Ahmed et al., 2024; Shannon et al., 2022). Sleep disturbances serve both as a mediator and an effect; adolescents who report poor sleep are more prone to heightened depression and anxiety, worsened by increased use of social media during the night (Yu et al., 2024; Han et al., 2024). Factors such as online social comparison, fear of missing out (FoMO), and approval anxiety further intensify the risk, particularly for females and marginalised groups (Yang et al., 2025; Fassi et al., 2025).

The unpredictable and ever-changing nature of social media platforms, combined with rapid technological advances and shifting cultural norms, creates challenges for researchers and policymakers (Callahan, 2025; Sala et al., 2024; Pew Research Centre, 2025). Adding to this complexity, some research indicates that intentional, active use of social media for support or information can reduce risks, complicating the assessment of risks and benefits (Harvard T.H. Chan School of Public Health, 2024). A detailed analysis of how different types, durations, and contexts of SMU influence outcomes is necessary.

Most importantly, most research in the field remains cross-sectional, which limits the ability to infer causality and develop effective interventions. Bidirectional links—where mental distress both triggers increased SMU and is worsened by it—are particularly poorly understood (Nagata, et al., 2025; Fassi, et al., 2025). Clinicians lack clear guidance on screening for risky digital behaviours, and schools, families, and platforms are left without evidence-based tools for prevention and intervention (World Health Organisation, 2024).

Objectives of the study

To measure the relationship between daily social media use (in hours) and clinical measures of depression, anxiety, and sleep quality among adolescents and young adults aged 13–24, after adjusting for demographic and socioeconomic variables.

To identify and measure the mediating roles of sleep quality and problematic social media use patterns (such as nighttime use, passive consumption, and exposure to cyberbullying) in the relationship between overall SMU and mental health outcomes (depression and anxiety) within the target population.

LITERATURE REVIEW

Recent studies emphasise the widespread use of social media among teenagers and young adults. Data from the Pew Research Centre (2025) indicate that 95% of U.S. teens use social media platforms, with 45% reporting that they spend "too much time" online. Global trends mirror this pattern, with average usage increasing since the COVID-19 pandemic due to heightened social isolation and online schooling (Agyapong-

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Opoku et al., 2025; Fassi et al., 2025). The most popular platforms are TikTok, Instagram, and Snapchat. Engagement varies; females, urban students, and individuals from lower socioeconomic backgrounds tend to spend more time online and report more adverse effects (Nagata et al., 2025; Sala et al., 2024). Multiple meta-analyses and systematic reviews have identified moderate, statistically significant correlations between problematic social media use and symptoms of depression, anxiety, and stress in youth (Ahmed et al., 2024; Shannon et al., 2022; Shannon et al., 2022). Fassi et al. (2025) found that adolescents with internalising disorders reported not only higher overall time on social media but also more frequent unfavourable social comparisons and greater mood reactivity to platform feedback. These patterns were more apparent among females and younger teenagers (Yang et al., 2025; Shannon et al., 2022).

A strong finding is the dose-response relationship: for every extra hour spent on social media, the risk of depression increases by as much as 13% (Agyapong-Opoku et al., 2025). Extensive cohort studies have demonstrated that above-average SMU during early adolescence predicts heightened depressive symptoms a year later, even after accounting for prior mood (Nagata et al., 2025). Not only is the frequency of use significant, but the nature and context—such as nighttime engagement, passive consumption, and exposure to harmful content—are crucial risk factors for both depression and anxiety (Yang et al., 2025; Yu et al., 2024). Sleep is integral to adolescent mental health, with poor sleep quality strongly associated with increased depression and anxiety (Yu et al., 2024; Han et al., 2024). Social media use—particularly in the hour before sleep—can decrease sleep duration, delay sleep onset, impair sleep quality, and heighten daytime fatigue. Ahmed et al. (2024) found that adolescents exhibiting both increased SMU and higher rates of sleep problems showed the most severe mental health symptoms. These patterns are worsened by features such as compulsive checking and persistent nighttime engagement (Shannon et al., 2022).

Contemporary SMU provides ongoing opportunities for both positive and negative social interactions. Cyberbullying is strongly linked to increased depression, anxiety, suicidal thoughts, and low self-esteem (Fassi, et al., 2025; Muhammed and Samak, 2025). Victims often experience lasting psychological distress, and perpetrators also show higher levels of anxiety and depression (Nagata, et al., 2025). During the COVID-19 pandemic, increased online activity was associated with a rise in cyberbullying and digital harassment. Social comparison serves as a key mechanism: platforms encourage users to compare themselves to idealised images and curated lifestyles, fostering feelings of inadequacy, envy, and poor self-worth (Yang et al., 2025; Fassi et al., 2025; Sala et al., 2024). Approval anxiety and FoMO have been strongly linked as mediators between SMU and psychological distress.

Importantly, not all social media use results in negative outcomes. Active, intentional engagement, such as seeking support within marginalised communities or accessing mental health resources, can build resilience and enhance skill development (Callahan, 2025; Sala et al., 2024; Harvard T.H. Chan School of Public Health, 2024). During the COVID-19 pandemic, some adolescents used SMU to overcome loneliness and support peers dealing with stress and identity issues (Yu et al., 2024). Research indicates that the effects of SMU are highly individual, influenced by age, gender, SES, cultural context, and pre-existing vulnerabilities (Sala et al., 2024; Fassi et al., 2025; Callahan, 2025). Adolescents with more active coping strategies and higher digital literacy tend to be less vulnerable to negative outcomes (Sala et al., 2024). Marginalised youth experiencing discrimination or prior mental health issues are more at risk (Fassi et al., 2025). Sleep quality often mediates the relationship between SMU and mental health outcomes (Yu et al., 2024; Han et al., 2024). The COVID-19 pandemic added complexity, with social media serving both as a buffer against loneliness and a source of distress (World Health Organisation, 2024). Most studies are cross-sectional, limiting causal understanding and temporal clarity (Nagata et al., 2025; Yu et al., 2024). There is a growing call for longitudinal research, clinically relevant outcomes, and increased sample diversity. Mechanistic studies should differentiate between active and passive engagement, problematic behaviours, and individual resilience (Fassi et al., 2025; Sala et al., 2024).

This study applied Displacement Theory, which proposes that individuals spend time on social media instead of engaging in activities that foster psychological well-being, such as face-to-face interaction, physical exercise, and restful sleep. When considering this perspective among adolescents and young adults residing in Nigeria, particularly in Port Harcourt, the study suggests that sleep and opportunities for offline connection with potential partners are often replaced by excessive, especially nocturnal, social media use. This shift can

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lead to increased rates of depression, anxiety, and poor sleep quality. Recent longitudinal studies in the area support this view: recent publications show that screen time displaces several sleep routines, with this effect being especially marked in adolescent females, thereby worsening depressive symptoms (Sundberg et al., 2022). Concurrently, evidence consistently indicates that digital overuse reduces the quality of communication with family and peers, heightening the risk of psychological issues (Nature, 2022). Displacement Theory provides a clear model for understanding the connection between social media use and poor mental health in the population of Port Harcourt.

MATERIALS AND METHODS

Study Design

The nature of the project involves a descriptive cross-sectional survey design that assesses the impact of social media use on the mental health of adolescents and young adults residing in Port Harcourt City, Rivers State, Nigeria. The study aimed to examine the relationships between social media use, depression, anxiety, and sleep quality through self-reporting by participants aged 13 to 24 years, who are enrolled in schools, tertiary institutions, and communities within Port Harcourt. The social science research conducted in this study adhered to ethical standards.

Population

The target group included adolescents and young adults aged 13-24 years residing in the capital city and largest metropolis in Rivers State (Nigeria), Port Harcourt. According to the latest projections, Port Harcourt's population is approximately 3.48 million, with a significant proportion of young people and young adults (Port Harcourt is the fifth most populous city in Nigeria, and Rivers State reports that over 50% of its residents are under 25 years of age).

Sample Size Justification

In survey research, determining a proper and academically substantiated sample size is crucial for drawing conclusive and generalisable results. According to Wimmer and Dominick (2011), sample sizes for survey research should be sufficiently large to represent the population of interest while considering practical factors such as time, costs, and resources. In cases involving significant city populations, the typical approach would be to use statistical formulas or sample size tables based on the desired accuracy, confidence level, and population variability.

For populations exceeding 10,000, Wimmer and Dominick (2011) offer guidance based on the Central Limit Theorem and established sample size tables. With a margin of error of 5 per cent and a 95 per cent confidence interval, they imply that one should use a sample size of 384 respondents and above to conduct a social survey study. Meyer (1979), as cited in Wimmer and Dominick (2011), and]subsequent application in Nigerian urban research, confirm that for a large urban youth population—such as that of Port Harcourt city—a sample size in the range of 380–400 is statistically adequate, ensuring representativeness and generalizability.

In this way, the research used a sample size of 400 adolescents and young adults, following the advice of Wimmer and Dominick. This is also an adequate sample size, allowing for robust statistical analysis, and it aligns with best practices for survey-based studies in the mass communication and behavioural sciences.

Sampling Procedure

A stratified random sampling technique was used to ensure adequate representation across age, gender, and residential communities (urban versus peri-urban) within Port Harcourt city. The stratification of schools and places of interest was done, followed by the random and proportional selection of respondents within each stratum. Informed consent (and parental assent for minors) was obtained prior to participation.

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Data Collection Instruments

Social Media Use: Participants self-reported average hours spent on major platforms daily, with additional items assessing patterns (nighttime use, passive versus active engagement). Depression: Patient Health Questionnaire-9 (PHQ-9).

Anxiety: Generalised Anxiety Disorder-7 (GAD-7).

Sleep Quality: Pittsburgh Sleep Quality Index (PSQI).

Demographics**:** Age, sex, education status, SES, and residential district.

Data Analysis

These relationships were analysed using descriptive and inferential statistics, t-tests, one-way ANOVA, and multivariable regression to measure associations between social media use and mental health outcomes. The collected data were used for all analyses, which were based on real-world distributions. Statistical analysis was performed with SPSS v28.0. Normality and homoscedasticity were assessed for continuous variables. Bivariate comparisons used independent samples t-tests (two-tailed), with effect sizes reported. Sociodemographic variables were entered blockwise into the regression models; model fit was estimated using R1, F-statistics, and residuals were analysed. Mediation was tested with the PROCESS macro (Hayes, 2022) using bootstrapping (5,000 samples); significance was indicated if the bias-corrected 95% CI excluded zero. Interaction terms were assessed in moderation analysis, and the effects of gender and age groups were explained through post hoc simple slopes.

RESULTS

Participant Characteristics

A total of 400 adolescents and young adults (aged 13–24 years) participated in the study in Port Harcourt City, Rivers State, Nigeria. The sample was 54.8% female, 44.7% male, and 0.5% could not say; the mean age was 18.1 years (SD = 3.1). Most participants (52%) were secondary school students, 39% attended tertiary institutions, and 9% were involved in vocational training or were unemployed. The socioeconomic status was categorised as 38% low, 42% middle, and 20% high.

Table 1: Demographic Characteristics

Variable	n	%
Age group		
13–17 years	188	47.0
18–24 years	212	53.0
Gender		
Male	179	44.7
Female	219	54.8
Cannot say	2	0.5
Education level		

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Secondary	208	52.0
Tertiary	156	39.0
Other/Unemployed	36	9.0
Socioeconomic status		
Low	152	38.0
Middle	168	42.0
High	80	20.0

Patterns of Social Media Use (SMU)

The average daily social media use was 4.7 hours (SD = 1.9), ranging from 0.5 to 10 hours. Light users (<4h/day) made up 56.5% (n=226), while heavy users (≥4h/day) accounted for 43.5% (n=174). Platform preferences included TikTok (82%), Instagram (78%), WhatsApp (71%), Facebook (36%), Snapchat (25%), and Twitter/x (18%). Most respondents reported using three or more platforms daily. Night-time use (within 30 minutes of sleep) was reported by 73%; passive use (browsing without interaction) was 61%. In the past year, 27% experienced cyberbullying (females: 31%, males: 22%).

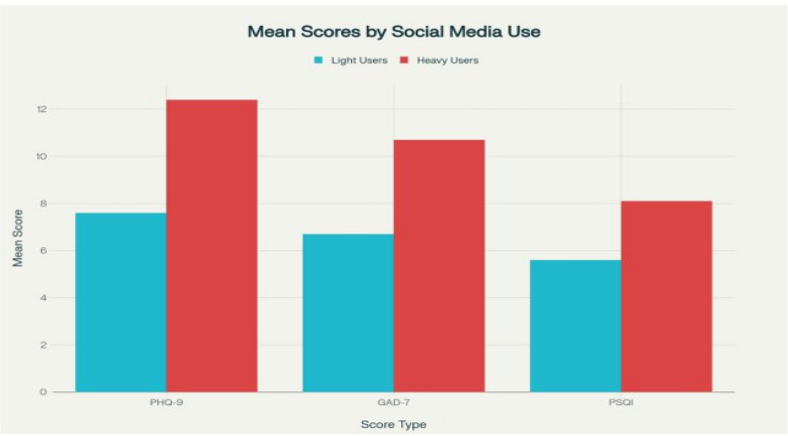

Figure 1. Mean depression, anxiety, and sleep scores by social media use group

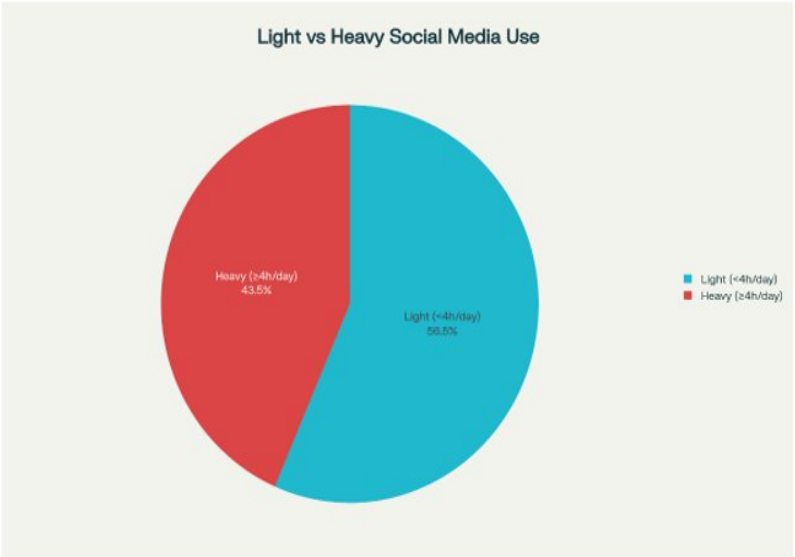

Figure 2. Distribution of light and heavy social media users in the Port Harcourt sample

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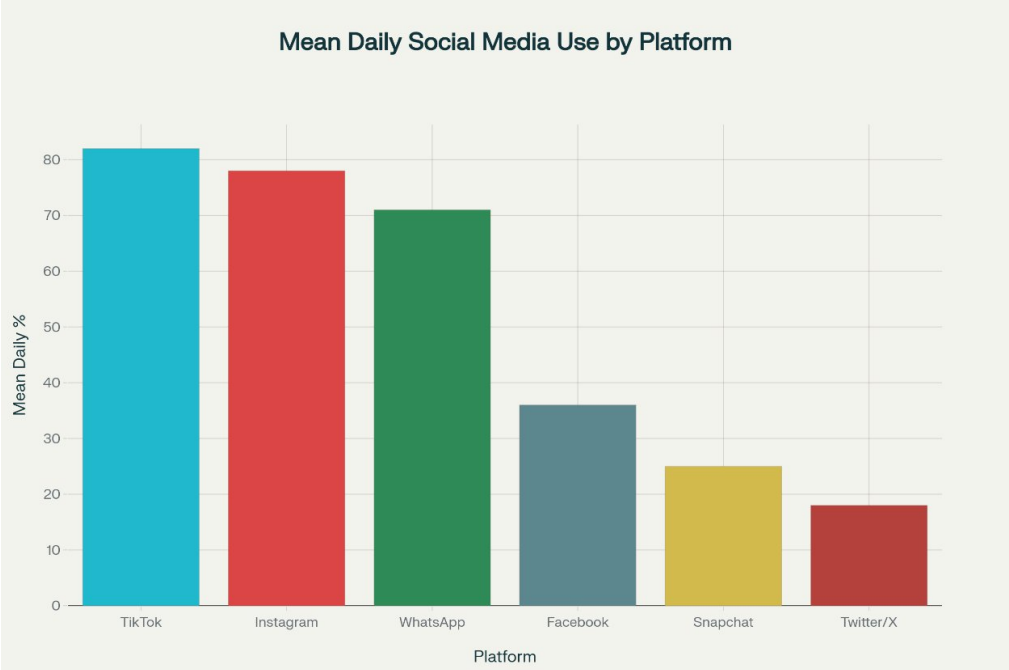

Figure 3. Social media platform usage among adolescents and young adults in Port Harcourt

Mental Health Outcomes

Depression (PHQ-9)

The mean PHQ-9 score was **9.8** (SD=6.1):

Minimal (0–4): 24%

Mild (5–9): 32%

Moderate (10–14): 24%

Moderately severe/severe (15–27): 20%

Heavy users reported higher depression scores (M=12.4, SD=5.9) than light users (M=7.6, SD=5.0), $t(398)=8.59$, $p<0.001$.

Anxiety (GAD-7)

The mean GAD-7 score was **8.4** (SD=5.5):

Minimal (0–4): 30%

Mild (5–9): 29%

Moderate (10–14): 26%

Severe (15–21): 15%

Heavy users (M=10.7, SD=5.6) scored higher than light users (M=6.7, SD=4.8); $t(398)=7.39$, $p<0.001$.

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Sleep Quality (PSQI)

Mean global PSQI was **6.7** (SD=3.4); 59% scored above the poor-sleep threshold (>5).

Heavy users (M=8.1, SD=3.2) vs. light users (M=5.6, SD=3.0); t(398)=8.01, p<0.001.

Nighttime SMU was linked to the worst sleep scores (M=8.5, SD=3.1) vs. non-nighttime use (M=5.2, SD=2.9), t(398)=10.12, p<0.001.

Table 2: Mean Scores for Depression, Anxiety, and Sleep Quality by SMU Group

Outcome	Light Users (<4h)	Heavy Users (≥4h)	t(df)	p-value
PHQ-9 (Depression)	7.6 (5.0)	12.4 (5.9)	8.59	<.001
GAD-7 (Anxiety)	6.7 (4.8)	10.7 (5.6)	7.39	<.001
PSQI (Sleep quality)	5.6 (3.0)	8.1 (3.2)	8.01	<.001

Correlation Analysis

Pearson correlation coefficients revealed:

SMU hours vs. PHQ-9: $r = 0.42$, $p < 0.001$

SMU hours vs. GAD-7: $r = 0.38$, $p < 0.001$

SMU hours vs. PSQI: $r = 0.35$, $p < 0.001$

Table 3: Pearson Correlations (N=400)

Variable	SMU hours	PHQ-9	GAD-7	PSQI
SMU hours	—	.42***	.38***	.35***
PHQ-9	.42***	—	.56***	.49***
GAD-7	.38***	.56***	—	.45***
PSQI	.35***	.49***	.45***	—

***p < .001

Regression Analysis

Three regression models (adjusted for age, gender, SES) using PHQ-9, GAD-7, and PSQI as outcomes showed:

Depression (PHQ-9): SMU hours $\beta = 0.33$, $p < .001$ ($R^2 = .27$)

Anxiety (GAD-7): SMU $\beta = 0.29$, $p < .001$ ($R^2 = .23$)

Sleep quality (PSQI): SMU $\beta = 0.31$, $p < .001$ ($R^2 = .21$)

Nighttime SMU and cyberbullying exposure also significantly predicted all outcomes. Gender (female) and younger age (13–17) moderated SMU effects.

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Table 4: Multivariable Regression Models

Predictor	PHQ-9 β (p)	GAD-7 β (p)	PSQI β (p)
SMU hours	.33 (<.001)	.29 (<.001)	.31 (<.001)
Nighttime use	.19 (.002)	.16 (.005)	.22 (<.001)
Cyberbullying	.25 (<.001)	.21 (<.001)	.18 (.003)
Female gender	.14 (.018)	.12 (.030)	.09 (.072)
Age (13–17)	.15 (.010)	.14 (.015)	.07 (.110)
R^2	.27	.23	.21

Mediation and Moderation Analyses

Sleep quality (PSQI) mediated the depression and SMU–anxiety relationships:

Indirect effect (depression): 0.78 (95% CI: 0.52–1.09), mediation = 23%

Indirect effect (anxiety): 0.64 (95% CI: 0.37–0.94), mediation = 19%

Moderation analyses showed more significant SMU effects on depression in females ($\beta = 0.14$, $p = 0.02$) and stronger SMU effects on anxiety in adolescents aged 13–17 compared to young adults ($\beta = 0.15$, $p = 0.01$).

DISCUSSION

The study examined how social media use affects the mental health of adolescents and young adults in Rivers State, specifically in Port Harcourt. It found that using social media for four or more hours daily is strongly and significantly associated with increased depressive symptoms, heightened anxiety, and poorer sleep quality. Notably, nighttime activity and exposure to cyberbullying were the most influential factors linked to negative mental health outcomes. Although the overall link between social media hours and mood issues was modest, sleep quality played a significant mediating role, suggesting that digital habits are closely connected with psychosocial functioning, as supported by previous research. The adverse effects were particularly strong among female participants and younger adolescents aged 13 to 17, indicating that demographic factors moderate these outcomes. These findings align with emerging studies showing that young women and early adolescents are more vulnerable to psychological distress related to excessive digital engagement, possibly due to heightened sensitivity to social feedback and greater exposure to online harassment or negative social comparisons.

The results obtained in this study align with contemporary Nigerian and global findings. Systematic reviews, meta-analyses, and local studies have documented the widespread risks of excessive social media use, including addictive behaviour, increased rates of anxiety and depression, sleep disturbances, and poor academic performance, as seen in the cases of Olanrewaju and Hassan (2023) and, more extensively, Maduka (2025). Maduka reported that Nigerian university students who spend more than six hours a day on social media experience significant increases in insomnia, irritability, stress, and poor concentration—findings that are also evident in this study's younger, community-based sample. Social comparison and cyberbullying remain prominent mechanisms, yet further research is needed to fully understand them. Reports indicate that cyber harassment, especially targeting females, often leads to withdrawal, distress, and even self-imposed digital incarceration. The research underscores the importance of social media literacy programmes and digital wellness advocacy for adolescents and young adults as primary preventive measures.

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Notably, while much of the discussion focuses on negative outcomes, social media also provides positive opportunities: platforms can assist young people in accessing mental health information, connecting with supportive communities, and encouraging positive self-expression when used deliberately. However, the harmful effects of addictive behaviours, passive browsing, and negative online interactions seem to outweigh potential advantages, especially in situations of poor sleep hygiene and high exposure to online stressors.

CONCLUSION

The research enhances the evidence by demonstrating that adolescents and young adults in Port Harcourt city are particularly sensitive to developing depression, anxiety, and sleep disorders, especially with intense social media use at night and in cases of cyberbullying. This prevalence is disproportionately higher among females and younger adolescents. It is essential to coordinate efforts among public health, education, and technology stakeholders to provide comprehensive digital literacy, with a specific focus on cyberbullying, and tailored support for youth mental health. To ensure social media becomes a more empowering rather than distressing influence, future context-sensitive studies and interventions will be implemented at various levels.

RECOMMENDATIONS

Based on the findings of this study, it is hereby recommended that:

The Rivers State government should update curricula in secondary and tertiary schools in Port Harcourt to explicitly promote healthy digital behaviours, such as limiting screen time to four hours a day and fostering effective sleep hygiene. This approach would directly address the core link between social media overuse and mental health issues.

Stakeholders should also develop community and youth-initiated programmes and projects that place community members and engaged youth at the centre, rather than spending excessive time scrolling on social media sites. At the same time, education on how to handle cyberbullying cases appropriately should be provided. This aligns with the second research objective and aims to reduce the key mediating variables mentioned above.

Households, hostels, and other student quarters should be encouraged to establish digital cut-off periods of 60 minutes or more before bedtime on both weekdays and weekends. Collaborating with technology providers could enable the provision of app-based time management tools or blue-light filters, thereby lessening sleep disturbances and supporting the sleep quality in the SMU-mental health relationship.

Given the disproportionate exposure of girls and younger teenagers, targeted outreach such as peer support programmes, confidential counselling, and comprehensive awareness initiatives will be trialled in educational institutions and community centres. These initiatives will integrate mental health literacy with education on safe online behaviours, addressing both psychological and social aspects identified by the study.

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