

Relationship Between Smartphone Use, Problematic Internet Use and Psychiatric Symptoms Among Young Adults: A Cross-Sectional Study

¹Dr. Harsha Singh, Assistant Professor, Department of Psychiatry, Career Institute of Medical Sciences, Lucknow, Uttar Pradesh, India.

²Dr. Kunwar Akhilesh, Assistant Professor, Department of Psychiatry, Autonomous State Medical College, Hardoi, India.

³Dr. Harish Ahmed, Senior Resident, Department of Psychiatry, Geims Hospital, Dehradun, India.

⁴Dr. Danish Qavi, Research Scientist, Visiting Research Scientist, Department of Neurology, Yale University.

Corresponding Author: Dr. Danish Qavi, Research Scientist, Visiting Research Scientist, Department of Neurology, Yale University.

How to citation this article: Dr. Harsha Singh, Dr. Kunwar Akhilesh, Dr. Harish Ahmed, Dr. Danish Qavi, “Relationship Between Smartphone Use, Problematic Internet Use and Psychiatric Symptoms Among Young Adults: A Cross-Sectional Study”, IJMACR– October– 2026, Volume – 9, Issue – 5, P. No. 110 – 123.

Open Access Article: © 2026 Dr. Harsha Singh, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non - commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Smartphones and internet-based technologies have become integral to the daily lives of young adults. Although they provide substantial educational, social and recreational benefits, excessive or problematic use has been associated with sleep disturbance, impaired functioning and psychological symptoms. The present study was undertaken to assess the relationship between smartphone use, problematic internet use and psychiatric symptoms among young adults.

Methods: A cross-sectional study was conducted among 65 young adults. Sociodemographic characteristics and patterns of smartphone and internet use were recorded using a structured questionnaire. Participants were

assessed for problematic smartphone/internet-use behaviours and psychiatric symptoms, particularly depression, anxiety and stress. Participants fulfilling the predefined criteria were categorized as positive or negative. Descriptive statistics were used to summarize the findings and to assess the relationship between technology-use patterns and psychiatric symptoms.

Results: Among the 65 participants, 22 (33.85%) were positive, while 43 (66.15%) were negative. The largest age group was 21–23 years (41.54%), and 52.31% were male. Social media was the commonest purpose of smartphone use (75.38%). More than half of participants (53.85%) reported spending more time online than intended, while 47.69% reported sleep interference due to internet use. Anxiety was the most frequently

observed psychiatric symptom (30.77%), followed by stress (26.15%) and depression (24.62%). The proportion of positive participants increased with daily smartphone use, from 10.00% among those using smartphones for <2 hours to 72.73% among those using them for >6 hours daily. Psychiatric symptoms were present in 51.52% of participants with problematic internet use compared with 15.63% of those without problematic internet use.

Conclusion: The study demonstrates a substantial coexistence of problematic smartphone/internet use and psychiatric symptoms among young adults. Greater daily smartphone exposure and problematic internet-use behaviours were associated with a higher proportion of positive psychiatric symptoms. Early identification of excessive digital-media uses and routine screening for anxiety, depression and stress may help identify young adults at risk. Larger longitudinal studies are required to establish the temporal and causal nature of these associations.

Keywords: Relationship, Smartphone Use, Problematic Internet Use , Psychiatric Symptoms .

Introduction

The rapid development of digital technology has transformed communication, education, entertainment, and social interaction. Smartphones and internet-based platforms have become an integral part of everyday life, particularly among young adults. These technologies provide convenient access to information, social networking, academic resources, entertainment, and professional activities. However, increasing dependence on digital devices has raised concerns regarding excessive or uncontrolled patterns of use and their potential impact on psychological well-being.

Smartphone use is not inherently harmful; however, problematic smartphone use is characterized by excessive engagement, difficulty controlling use, preoccupation with the device, and continued use despite negative consequences. Such patterns may interfere with academic performance, interpersonal relationships, daily activities, and sleep. Studies among college students have reported significant associations between problematic smartphone use and anxiety, depression, impulsivity, and poor sleep quality¹.

Problematic internet use (PIU) refers to excessive or poorly controlled internet use that results in psychological distress or impairment in important areas of daily functioning. The phenomenon has been increasingly investigated among adolescents and young adults because of the high level of internet exposure in these populations. Previous research has demonstrated associations between problematic internet use and depression, anxiety, loneliness, and reduced psychological well-being².

Young adulthood is an important developmental period characterized by major academic, occupational, interpersonal, and social transitions. During this period, individuals may experience academic pressure, uncertainty regarding career development, relationship difficulties, and changes in social roles. At the same time, young adults are among the most frequent users of smartphones, social media, and internet-based services. This combination makes young adults an important population for investigating the relationship between digital technology use and psychiatric symptoms.

Anxiety is one of the most commonly reported psychological symptoms associated with problematic digital technology use. Excessive internet engagement may contribute to social comparison, fear of missing out,

interpersonal conflicts, and difficulty disengaging from online activities. A systematic review and meta-analysis reported a significant association between problematic internet use and social anxiety among adolescents and young adults³. Similarly, studies examining smartphone use have identified relationships between problematic smartphone behavior and anxiety symptoms⁴. Depressive symptoms have also been frequently investigated in relation to problematic smartphone and internet use. A systematic review reported that problematic smartphone use was associated with adverse mental health outcomes, including depression and anxiety⁵. Studies among university students have further demonstrated associations between problematic smartphone use and depressive symptoms, although the strength of these relationships may vary according to population and measurement methods⁶.

Stress is another important psychological outcome that may be related to excessive digital technology use. Continuous online engagement may interfere with academic activities, interpersonal relationships, physical activity, and normal daily routines. Excessive social media use has been associated with depression, anxiety, and stress among adolescents and young adults⁷. These findings suggest that problematic digital behavior may be associated with broader psychological distress rather than with a single psychiatric symptom. Sleep disturbance may represent an important pathway linking excessive smartphone and internet use with psychological symptoms. Smartphone use during the evening and nighttime can delay sleep onset and reduce sleep duration. A systematic review of digital media use among late adolescents and young adults reported associations between digital media exposure and poorer sleep outcomes⁸. Similarly, research examining social

media use has identified relationships between excessive use, poor sleep quality, and adverse mental health outcomes⁹.

The relationship between digital technology use, sleep, and psychiatric symptoms is likely to be complex. Excessive smartphone use may contribute to sleep disturbance, while inadequate sleep may increase emotional vulnerability and contribute to anxiety, depression, and stress. Recent studies using objective measurements of smartphone use and sleep have suggested that the timing and pattern of smartphone use may be important in understanding these associations¹⁰.

It is therefore important to distinguish between frequent technology use and genuinely problematic use. Smartphones and internet services are now essential for education, employment, communication, and social interaction, meaning that high overall usage does not necessarily indicate psychological dysfunction. Instead, loss of control, functional impairment, psychological dependence, and continued use despite negative consequences may provide more meaningful indicators of problematic use.

The association between problematic internet use and psychiatric symptoms also has implications for mental health assessment. Individuals presenting with anxiety, depression, or stress may have substantial and potentially dysfunctional digital engagement. Identification of problematic smartphone or internet use during psychiatric assessment may therefore provide additional information regarding behavioral factors associated with psychological distress. Research has also explored psychological interventions targeting problematic internet use and related mental health symptoms¹¹. However, the existing literature does not demonstrate a uniform relationship between smartphone

use and psychiatric symptoms. Some studies have reported significant associations, whereas others have found weaker relationships after considering potential confounding factors. Differences in study populations, definitions of problematic use, assessment instruments, duration and purpose of use, and methods of measuring psychiatric symptoms may contribute to these differences^{10,12}. Social media is an important component of modern smartphone and internet use. Continuous access to social networking platforms may encourage repeated checking, prolonged engagement, social comparison, and fear of missing out. Systematic reviews have reported associations between problematic social media use and mental health problems, including depression, anxiety, and sleep disturbances, particularly among young people¹³. Recent evidence has continued to highlight the relationship between problematic smartphone use and sleep and psychological well-being among young adults. A recent systematic review and meta-analysis reported an association between smartphone addiction and poorer sleep quality in young adults¹⁴. Similarly, research on problematic internet use among adolescents and young adults has identified relationships with depression, anxiety, loneliness, and impaired well-being¹⁵.

Despite the increasing body of evidence, further research is required to understand the relationship between smartphone use, problematic internet use, and psychiatric symptoms in specific young adult populations. Differences in digital behavior, social circumstances, academic demands, and patterns of internet use may influence these relationships. Therefore, the present study was undertaken to assess the relationship between smartphone use, problematic internet use, and psychiatric symptoms among young

adults, with particular emphasis on anxiety, stress, and depression. The study aims to contribute to a better understanding of the psychological correlates of problematic digital technology use and may assist in the early identification of young adults experiencing psychological distress associated with dysfunctional digital behavior.

Materials and Methods

Study Design

The present study was conducted as a cross-sectional observational study to assess the relationship between smartphone use, problematic internet use, and psychiatric symptoms among young adults.

Study Population

The study included 65 young adults in the age group of 18–26 years. Participants were assessed for their sociodemographic characteristics, patterns of smartphone and internet use, problematic internet-use behaviours, and psychiatric symptoms, particularly depression, anxiety, and stress.

Study Procedure

After obtaining the required consent, relevant information was collected using a structured questionnaire. The questionnaire included:

- Sociodemographic characteristics
- Duration and pattern of daily smartphone use
- Purpose of smartphone/internet use
- Smartphone-use behaviours
- Problematic internet-use behaviours
- Psychiatric symptoms including depression, anxiety, and stress

Participants were also assessed for behaviours suggestive of problematic smartphone/internet use, such as spending more time online than intended, unsuccessful attempts to reduce internet use, interference

with academic/work responsibilities, use of the internet to escape negative mood, restlessness when unable to access the internet, sleep interference, and interpersonal problems.

Assessment of Smartphone and Internet Use

Daily smartphone-use duration was categorized as:

- <2 hours
- 2–4 hours
- 4–6 hours
- >6 hours

Additional behavioural characteristics assessed included checking the phone immediately after waking, smartphone use during meals, night-time smartphone use, difficulty reducing smartphone use, and discomfort when separated from the smartphone.

Problematic internet use was assessed based on predefined behavioural criteria, including excessive duration of use, inability to reduce use, neglect of responsibilities, mood-related internet use, withdrawal-like restlessness, sleep interference, and interpersonal difficulties.

Assessment of Psychiatric Symptoms

Participants were assessed for the presence of depression, anxiety, and stress. Based on the predefined study criteria, participants were categorized into positive or negative groups. The overall positive status represented the presence of at least one clinically relevant psychiatric symptom according to the study criteria.

Inclusion Criteria

- Young adults aged 18–26 years.
- Individuals who used smartphones and/or the internet.
- Participants willing to participate in the study.

- Participants able to provide the required information through the structured questionnaire.

Exclusion Criteria

- Individuals unwilling to participate.
- Individuals unable to complete the questionnaire adequately.
- Participants outside the specified age range.
- Individuals with incomplete study information.

Data Collection

Information obtained from the participants was recorded systematically. Sociodemographic variables and smartphone/internet-use characteristics were summarized along with the presence or absence of psychiatric symptoms.

Statistical Analysis

Data were analyzed using descriptive statistical methods. Categorical variables were expressed as frequency and percentage (n, %). The distribution of psychiatric symptoms was compared with smartphone-use duration and problematic internet-use status. The findings were presented in tables to demonstrate the relationship between digital technology use and psychiatric symptoms.

Results

A total of 65 young adults were included in the present cross-sectional study. The participants were assessed for sociodemographic characteristics, smartphone-use patterns, problematic internet use, and psychiatric symptoms including depression, anxiety and stress. Of the 65 participants, 22 (33.85%) were classified as positive, while 43 (66.15%) were negative according to the predefined study criteria.

Table 1: Sociodemographic characteristics of study participants (N=65)

Parameter	Category	n (%)
Age	18–20 years	21 (32.31)
	21–23 years	27 (41.54)
	24–26 years	17 (26.15)
Sex	Male	34 (52.31)
	Female	31 (47.69)
Residence	Urban	39 (60.00)
	Rural	26 (40.00)
Education	Undergraduate	38 (58.46)
	Postgraduate	17 (26.15)
	Other	10 (15.38)
Marital status	Unmarried	61 (93.85)
	Married	4 (6.15)

Table 1 demonstrates the sociodemographic profile of the 65 participants. The largest proportion belonged to the 21–23-year age group (41.54%), followed by participants aged 18–20 years (32.31%) and 24–26 years (26.15%). Males constituted 52.31% of the sample, while females accounted for 47.69%, indicating a relatively balanced sex distribution. A majority of participants were from urban areas (60.00%). Most participants were undergraduate students (58.46%), followed by postgraduate participants (26.15%). The overwhelming majority were unmarried (93.85%), which was expected given the young age distribution of the study population.

Table 2: Pattern of smartphone use among participants

Smartphone-use parameter	Category	n (%)
Daily smartphone use	<2 hours	10 (15.38)
	2–4 hours	25 (38.46)
	4–6 hours	19 (29.23)
	>6 hours	11 (16.92)

Smartphone-use parameter	Category	n (%)
Checking phone immediately after waking	Yes	38 (58.46)
	No	27 (41.54)
Using smartphone longer than intended	Yes	34 (52.31)
	No	31 (47.69)
Phone use during meals	Frequently	24 (36.92)
	Occasionally	25 (38.46)
	Rarely/Never	16 (24.62)
Night-time smartphone use	Yes	39 (60.00)
	No	26 (40.00)
Difficulty reducing smartphone use	Yes	27 (41.54)
	No	38 (58.46)
Feeling uncomfortable without smartphone	Yes	25 (38.46)
	No	40 (61.54)

Table 2 shows that smartphone use was substantial among the study participants. The most common duration of daily smartphone use was 2–4 hours (38.46%), followed by 4–6 hours (29.23%). However, 16.92% reported using smartphones for more than 6 hours daily. More than half of the participants (58.46%) reported checking their smartphones immediately after waking, while 52.31% acknowledged using their smartphones for longer than initially intended. Night-time smartphone use was reported by 60.00% of participants. Difficulty in reducing smartphone use was reported by 41.54%, while 38.46% experienced discomfort when separated from their smartphones. These findings demonstrate frequent and potentially problematic smartphone-use behaviours.

Table 3: Common purposes of smartphone/internet use

Purpose	n (%)
Social media	49 (75.38)
Educational/academic activities	43 (66.15)
Entertainment/video streaming	41 (63.08)

Purpose	n	(%)
Messaging/communication	38	(58.46)
Online shopping	21	(32.31)
Gaming	19	(29.23)
News/information	27	(41.54)

As shown in Table 3, social media was the most frequently reported purpose of smartphone and internet use (75.38%). Academic or educational activities were reported by 66.15%, while entertainment and video streaming accounted for 63.08%. Messaging and communication were reported by 58.46% of participants. Gaming was reported by 29.23%, whereas 32.31% used smartphones for online shopping. The findings indicate that smartphones were used predominantly for social interaction, academic activities and entertainment.

Table 4: Problematic internet-use behaviours

Parameter	Yes n (%)	No n (%)
Spends more time online than intended	35 (53.85)	30 (46.15)
Unsuccessful attempts to reduce internet use	26 (40.00)	39 (60.00)
Neglects academic/work responsibilities	20 (30.77)	45 (69.23)
Uses internet to escape negative mood	29 (44.62)	36 (55.38)
Feels restless when unable to access internet	24 (36.92)	41 (63.08)
Internet use interferes with sleep	31 (47.69)	34 (52.31)
Experiences interpersonal problems due to internet use	18 (27.69)	47 (72.31)

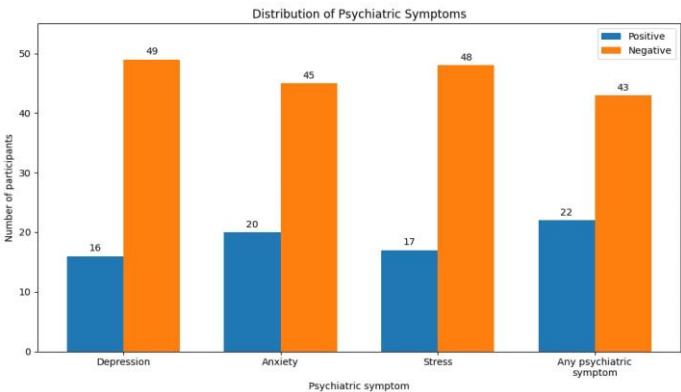
Table 4 indicates that problematic internet-use behaviours were relatively common. More than half of the participants (53.85%) reported spending more time online than intended. Approximately 40% had attempted unsuccessfully to reduce their internet use. Nearly half (47.69%) reported that internet use interfered with their sleep, while 44.62% used the internet as a means of escaping negative mood states. Academic or occupational responsibilities were neglected by 30.77% of participants. Restlessness in the absence of internet access was reported by 36.92%. These findings suggest

that excessive internet use may affect behavioural functioning, sleep and emotional regulation.

Table 5: Psychiatric symptoms among study participants

Psychiatric symptom	Negative n (%)	Positive n (%)
Depression	49 (75.38)	16 (24.62)
Anxiety	45 (69.23)	20 (30.77)
Stress	48 (73.85)	17 (26.15)
Any psychiatric symptom	43 (66.15)	22 (33.85)

Table 5 demonstrates the distribution of psychiatric symptoms among the study population. Anxiety was the most frequently observed psychiatric symptom, being present in 20 participants (30.77%), followed by stress in 17 (26.15%) and depressive symptoms in 16 (24.62%). Overall, 22 participants (33.85%) were positive for at least one clinically relevant psychiatric symptom, whereas 43 (66.15%) did not meet the predefined positive criteria. Thus, approximately one-third of the young adults demonstrated evidence of psychological distress.



Graph 1: Psychiatric symptoms among study participants

Table 6. Relationship between smartphone-use duration and overall positive status

Daily smartphone use	Positive n (%)	Negative n (%)	Total
<2 hours	1 (10.00)	9 (90.00)	10
2–4 hours	5 (20.00)	20 (80.00)	25
4–6 hours	8 (42.11)	11 (57.89)	19

Daily smartphone use	Positive n (%)	Negative n (%)	Total
>6 hours	8 (72.73)	3 (27.27)	11
Total	22 (33.85)	43 (66.15)	65

Table 6 demonstrates an increasing proportion of positive participants with increasing daily smartphone-use duration. Only 10.00% of participants using smartphones for less than 2 hours daily were positive. This increased to 20.00% among those using smartphones for 2–4 hours and 42.11% among those using smartphones for 4–6 hours. The highest proportion was observed among participants using smartphones for more than 6 hours per day, of whom 72.73% were positive. This pattern suggests a dose-response relationship between increasing smartphone exposure and psychological/behavioural problems.

Table 7: Association between problematic internet use and psychiatric symptoms

Problematic internet use	Psychiatric symptoms positive	Psychiatric symptoms negative	Total
Present	17 (51.52%)	16 (48.48%)	33
Absent	5 (15.63%)	27 (84.38%)	32
Total	22 (33.85%)	43 (66.15%)	65

Table 7 shows that psychiatric symptoms were considerably more frequent among participants demonstrating problematic internet use. Among the 33 participants classified as having problematic internet use, 17 (51.52%) had psychiatric symptoms, compared with only 5 (15.63%) among the 32 participants without problematic internet use. The observed difference suggests a substantial association between problematic internet behaviour and psychiatric symptoms. Participants with problematic internet use therefore appeared to have approximately a three-fold higher proportion of psychiatric symptoms compared with those without problematic internet use.

Table 8: Overall study outcome

Study outcome	n	(%)
Positive	22	(33.85)
Negative	43	(66.15)
Total	65	(100.00)

Table 8 summarizes the principal outcome of the study. Out of 65 young adults, 22 (33.85%) were classified as positive, while 43 (66.15%) were negative. The positive group demonstrated a greater frequency of excessive smartphone use, problematic internet-use behaviours and psychiatric symptoms. The proportion of positive participants also increased progressively with increasing daily smartphone-use duration. These findings suggest that problematic digital technology use may coexist with psychological symptoms in a substantial proportion of young adults. However, because the study is cross-sectional, the observed relationship should be interpreted as an association rather than proof of causality. Similar associations between problematic technology use and mental-health outcomes have been reported in larger cross-sectional studies.

Discussion

The present cross-sectional study evaluated the relationship between smartphone use, problematic internet use, and psychiatric symptoms among 65 young adults. In the study population, 22 participants (33.85%) were classified as positive, whereas 43 (66.15%) were negative. The findings indicate that problematic digital technology use and psychological symptoms were relatively common in this young adult population. The sociodemographic profile showed that the largest proportion of participants belonged to the 21–23-year age group (41.54%), followed by 18–20 years (32.31%) and 24–26 years (26.15%). Males constituted 52.31% and females 47.69% of the sample. The predominance of

young adults in this study is relevant because this age group represents a population with high exposure to smartphones, internet services, and social media. Previous research has similarly identified university and young adult populations as particularly vulnerable to problematic smartphone use^{1,2}.

Regarding smartphone-use duration, the present study found that 38.46% of participants used smartphones for 2–4 hours daily, while 29.23% used them for 4–6 hours and 16.92% for more than 6 hours. Importantly, the proportion of positive participants increased progressively with increasing smartphone-use duration. Only 10.00% of participants using smartphones for less than 2 hours were positive, compared with 72.73% among those using smartphones for more than 6 hours. This pattern is consistent with a systematic review among university students, which identified duration of smartphone use as a potential predictor of problematic smartphone use². Similarly, previous meta-analytic evidence has demonstrated significant associations between problematic smartphone use and anxiety and depression³.

The present study also demonstrated several behavioural indicators of problematic smartphone use. More than half of the participants (58.46%) reported checking their phones immediately after waking, 52.31% reported using smartphones longer than intended, and 60.00% reported night-time smartphone use. Difficulty reducing smartphone use was reported by 41.54%, while 38.46% felt uncomfortable without their smartphones. These findings suggest that smartphone engagement in a substantial proportion of participants extended beyond functional use and included behavioural features suggestive of loss of control. Previous literature has described similar relationships between problematic

smartphone use and psychological symptoms, particularly depression, anxiety, and stress⁴. Social media was the most frequently reported purpose of smartphone/internet use in the present study, being reported by 75.38% of participants. Educational or academic activities were reported by 66.15%, while entertainment/video streaming was reported by 63.08%. The predominance of social media use is important because problematic social media engagement has been associated with adverse psychological outcomes among adolescents and young adults. A systematic review and meta-analysis involving 9,269 participants reported significant associations between problematic social media use and depression, anxiety, and stress⁵. Another systematic review also reported a frequent relationship between problematic social media use and depression or anxiety, although the relationship was not necessarily explained simply by total time spent online.⁶

Problematic internet-use behaviours were also relatively frequent in the current study. More than half of the participants (53.85%) reported spending more time online than intended, while 40.00% had unsuccessfully attempted to reduce internet use. Nearly half (47.69%) reported that internet use interfered with sleep, and 44.62% reported using the internet to escape negative mood. These findings are consistent with broader evidence indicating that problematic internet use is associated with several adverse mental health outcomes. A large meta-analytic review including 223 studies and 498,167 participants found moderate positive associations between problematic internet use and depressive symptoms, anxiety, loneliness, and other mental health outcomes⁷. The finding that 44.62% of participants used the internet to escape negative mood may be particularly relevant from a psychiatric

perspective. Digital activities can potentially function as a coping mechanism when individuals experience loneliness, anxiety, stress, or negative affect. However, repeated reliance on online activities for emotional regulation may contribute to a cycle in which distress promotes greater digital engagement and excessive engagement subsequently interferes with sleep, responsibilities, or interpersonal functioning. Previous research has similarly discussed problematic smartphone use as potentially related to maladaptive coping and psychopathology⁴. Sleep interference was reported by 47.69% of participants. This finding is important because night-time smartphone use may contribute to delayed sleep and reduced sleep quality, while poor sleep may simultaneously increase vulnerability to emotional symptoms. A systematic review and meta-analysis found that problematic smartphone use was associated with poor sleep quality, depression, and anxiety⁸. Thus, sleep disturbance may represent one pathway through which problematic smartphone use and psychiatric symptoms coexist. With respect to psychiatric symptoms, anxiety was the most frequently observed symptom (30.77%), followed by stress (26.15%) and depression (24.62%). Overall, 33.85% of participants had at least one psychiatric symptom according to the predefined study criteria. The predominance of anxiety in the present study is consistent with previous evidence. A meta-analysis of 27 studies involving 120,895 participants found a moderate association between problematic smartphone use and anxiety and depression³. Similarly, a meta-analysis specifically examining problematic internet use and social anxiety among adolescents and young adults found a significant positive association⁹.

The association between problematic social media use and anxiety is also supported by the literature. Shannon et al. reported correlations between problematic social media use and anxiety, depression, and stress, with anxiety showing the strongest of the three reported correlations⁵. These findings provide a possible explanation for why anxiety was the most frequent psychiatric symptom in the present study, although the cross-sectional design does not allow determination of whether problematic digital use preceded anxiety or whether anxious individuals were more likely to engage excessively with digital platforms.

The relationship with depressive symptoms is also noteworthy. Depression was identified in 24.62% of participants in the present study. Previous systematic reviews have consistently identified an association between problematic smartphone use and depression^{4,8}. A broader meta-analytic review of problematic internet use among students similarly demonstrated a positive association with depressive symptoms⁷. However, the presence of an association should not be interpreted as evidence that smartphone or internet use directly causes depression, particularly because depression itself may lead individuals to increase online activity as a form of distraction or social contact. Stress was present in 26.15% of the participants. This finding is comparable with evidence linking problematic social media use to stress⁵. The relationship may involve several factors, including continuous notifications, social comparison, academic distraction, interpersonal conflicts, and difficulty disengaging from online environments. Nevertheless, because stress can also increase digital engagement, the direction of the relationship cannot be established in the current study.

A particularly important finding was the relationship between problematic internet use and psychiatric symptoms. Among participants with problematic internet use, 17 of 33 (51.52%) had psychiatric symptoms, compared with only 5 of 32 (15.63%) among those without problematic internet use. Thus, psychiatric symptoms were substantially more frequent in the problematic-internet-use group. This observation is consistent with the large meta-analysis by Zhang et al., which demonstrated associations between problematic internet use and depression, anxiety, loneliness, and other mental health outcomes⁷. Similar findings have been reported in systematic reviews focusing on young adults and students^{10,11}.

The present findings are also consistent with research specifically examining problematic smartphone use. Yang et al. reported significantly increased risks of poor sleep quality, depression, and anxiety among individuals with problematic smartphone use⁸. Similarly, Augner et al. found that problematic smartphone use was moderately associated with anxiety and depression³. These studies support the observation in the present study that greater problematic digital engagement tends to coexist with greater psychological symptom burden.

The increasing proportion of positive participants with increasing smartphone-use duration is another important observation. Although the current study cannot establish causality, the pattern from 10.00% positive among participants using smartphones for <2 hours to 72.73% among those using them for >6 hours suggests a possible exposure-response relationship. A systematic review of university students also identified longer smartphone-use duration as a potential predictive factor for problematic smartphone use². However, evidence suggests that duration alone should not be regarded as synonymous

with problematic use because the purpose, timing, emotional context, and functional consequences of use are also important⁶.

The findings should therefore be interpreted in the context of the limitations of the study. First, the sample size was relatively small, with only 65 participants, which limits the generalizability of the findings. Second, the cross-sectional design prevents determination of temporal or causal relationships. Third, much of the information regarding smartphone and internet use was based on participant responses and may therefore be affected by recall or reporting bias. Previous systematic reviews have similarly emphasized the limitations of predominantly cross-sectional research in this field^{2,12}.

Despite these limitations, the present study provides clinically relevant information by examining smartphone use, problematic internet behaviour, and several psychiatric symptoms together. The findings suggest that young adults with prolonged smartphone exposure and problematic internet-use behaviours may warrant greater attention during psychological or psychiatric assessment. Screening for problematic digital behaviour alongside anxiety, depression, stress, and sleep disturbance may help identify individuals experiencing psychological difficulties. Overall, the findings of the present study are broadly consistent with existing literature demonstrating associations between problematic smartphone/internet use and adverse psychological outcomes^{3,5,7,8}. However, the results should be interpreted as associations rather than evidence of causation. Larger, multicentre and longitudinal studies using validated psychiatric and problematic-use assessment scales are required to clarify the temporal relationships and underlying mechanisms. Recent longitudinal evidence strengthens the interpretation of the present findings. Wang et al. studied

741 Chinese college students longitudinally and found reciprocal relationships between problematic smartphone use and anxiety symptoms, suggesting that the relationship may operate in both directions rather than being purely one-way¹⁷.

Tang et al. conducted a meta-analysis involving 24,019 university students and found that problematic smartphone use was associated with significantly higher odds of depressive symptoms (OR 2.40, 95% CI 2.19–2.63). The association was stronger in studies conducted after the COVID-19 outbreak¹⁸.

Evidence from India is particularly relevant to the present study. Tadpatrikar et al. conducted a systematic review and meta-analysis involving 12,286 Indian adults and estimated a pooled prevalence of any level of internet addiction of 58.34%. Depression, stress, anxiety, interpersonal difficulties, and loneliness were among the reported correlates¹⁹.

A 2025 meta-analysis by Ma et al. examined 31 studies involving 22,375 participants and found a significant moderate association between online social support and problematic internet use. The relationship was stronger in studies assessing problematic social-media use²⁰.

Recent evidence also emphasizes the continuing importance of problematic internet use among young adults. Kaye et al., in a 2025 narrative review, described problematic internet use as an increasingly important behavioral and public-health concern among young adults and discussed its relationships with mental health, interpersonal functioning, and well-being²¹.

Furthermore, a 2025 systematic review and meta-analysis of social-media use among adolescents and young adults found a significant positive association between social-media-related risk factors and mental

disorders, although substantial heterogeneity between studies was observed²².

Conclusion

The present cross-sectional study demonstrates that problematic smartphone and internet use is relatively common among young adults and frequently coexists with psychiatric symptoms. Among the 65 participants, 22 (33.85%) were classified as positive, with anxiety (30.77%) being the most frequently observed symptom, followed by stress (26.15%) and depression (24.62%). A clear increase in the proportion of positive participants was observed with increasing daily smartphone-use duration, with the highest proportion among those using smartphones for more than 6 hours per day. Psychiatric symptoms were also substantially more frequent among participants with problematic internet use than among those without problematic internet use.

These findings highlight the importance of recognizing excessive and potentially problematic digital-media use as a relevant behavioural factor during assessment of young adults presenting with anxiety, depression, stress, or sleep-related difficulties. However, because of the cross-sectional design and relatively small sample size, the observed relationships should be interpreted as associations and not as evidence of causality. Larger, multicentre and longitudinal studies using validated assessment instruments are recommended to clarify the temporal relationship between problematic smartphone/internet use and psychiatric symptoms and to guide appropriate preventive and psychological interventions.

Limitations

The study was limited by its small sample size (n=65) and cross-sectional design, which limits generalizability and prevents establishing causal relationships.

The findings were also based largely on self-reported smartphone/internet use and psychiatric symptoms, which may be subject to recall and reporting bias.

Declarations

Consent to participate: There is consent to participate.

Consent for publication: There is consent for the publication of this paper.

Authors' contributions: Author equally contributed the work.

References

1. Sohn SY, Rees P, Wildridge B, Kalk NJ, Carter B. Prevalence of problematic smartphone usage and associated mental health outcomes amongst children and young people: a systematic review, meta-analysis and GRADE of the evidence. *BMC Psychiatry*. 2019;19:356.
2. Nasser AM, et al. Problematic smartphone usage, prevalence and patterns among university students: a systematic review. *J Affect Disord Rep*. 2023;14:100643.
3. Augner C, Vlasak T, Aichhorn W, Barth A. The association between problematic smartphone use and symptoms of anxiety and depression—a meta-analysis. *J Public Health*. 2023;45(1):193-201.
4. Elhai JD, Dvorak RD, Levine JC, Hall BJ. Problematic smartphone use: a conceptual overview and systematic review of relations with anxiety and depression psychopathology. *J Affect Disord*. 2017;207:251-259.
5. Shannon H, Bush K, Villeneuve PJ, Hellemans KGC, Guimond S. Problematic social media use in adolescents and young adults: systematic review and meta-analysis. *JMIR Ment Health*. 2022;9(4):e33450.
6. Lopes LS, Valentini JP, Monteiro TH, et al. Problematic social media use and its relationship with depression or anxiety: a systematic review. *CyberpsycholBehavSocNetw*. 2022;25(11):691-702.
7. Zhang Y, et al. Associations between problematic internet use and mental health outcomes of students: a meta-analytic review. *Int J Adolesc Youth*. 2023.
8. Yang J, Fu X, Liao X, Li Y. Association of problematic smartphone use with poor sleep quality, depression, and anxiety: a systematic review and meta-analysis. *Psychiatry Res*. 2020;284:112686.
9. Ding H, Cao B, Sun Q. The association between problematic internet use and social anxiety within adolescents and young adults: a systematic review and meta-analysis. *Front Public Health*. 2023;11:1275723.
10. 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.
11. Fumero A, Marrero RJ, Voltes D, Peñate W. Personal and social factors involved in internet addiction among adolescents: a meta-analysis. *Comput Human Behav*. 2018;86:387-400.
12. Elhai JD, Yang H, Levine JC. Applying fairness in research on problematic smartphone use and mental health: methodological considerations. *Comput Human Behav*. 2021;120:106758.
13. Marciano L, Ostroumova M, Schulz PJ, Camerini AL. Digital media use and anxiety and depression in young people: a systematic review. *J Affect Disord*. 2022;298:301-313.
14. Montag C, Becker B, Gan C. The multipurpose application of smartphones in the context of

- problematic use and mental health. *Psychiatry Res.* 2021;295:113555.
15. Demirci K, Akgönül M, Akpinar A. Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *J Behav Addict.* 2015;4(2):85-92.
16. Hawi NS, Samaha M. To excel or not to excel: strong evidence on the adverse effect of smartphone addiction on academic performance. *Comput Educ.* 2016;98:81-89.
17. Wang Y, Luo Y, Yan N, Mackay LE, Wang Y, Wang Y, et al. The longitudinal relationships between problematic smartphone use and anxiety symptoms among Chinese college students: a cross-lagged panel network analysis. *Addict Behav.* 2025;160:108170.
18. Tang S, Chen R, Ma Z, Li X, Chen J, Zhao J. Associations of problematic smartphone use with depressive symptoms and suicidal ideation in university students before and after the COVID-19 outbreak: a meta-analysis. *Addict Behav.* 2024;152:107969.
19. Tadpatrikar A, Sharma MK, Amudhan S, Desai G. The prevalence and correlates of internet addiction in India as assessed by Young's Internet Addiction Test: a systematic review and meta-analysis. *Indian J Psychol Med.* 2024;46(6):511-520.
20. Ma Y, Zhou Z, Ye C, Liu M. Online social support and problematic Internet use—a meta-analysis. *Addict Behav.* 2025;160:108160.
21. Kaye AD, Islam RK, Tong VT, Sorrel ML, Allen KE, Nguyen ID, et al. A narrative inquiry into problematic internet use among young adults: a narrative review. *Cureus.* 2025;17(6):e85705.
22. Cabezas-Klinger H, Fernandez-Daza FF, Mina-Paz Y. Associations between social media use and mental disorders in adolescents and young adults: a systematic review and meta-analysis of recent evidence. *BehavSci (Basel).* 2025;15(11):1450.