

Screen Time and Psychological Distress Among Young Adults: Assessment Using DASS-21

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Abstract

Background: Excessive screen time has emerged as a major public health concern among young adults, with increasing evidence suggesting its detrimental effects on mental health. However, data from the Indian population remain limited. This study aimed to evaluate the association between screen time and psychological distress among young adults using the Depression, Anxiety and Stress Scale-21 (DASS-21).

Methods: A cross-sectional observational study was conducted among 113 apparently healthy young adults aged 18–25 years. Data on sociodemographic characteristics, smartphone use, weekly screen time, and night-time screen exposure were collected using a structured questionnaire. Psychological distress was assessed using the validated DASS-21 instrument. Continuous variables were expressed as mean $\pm$ standard deviation (SD), whereas categorical variables were presented as frequencies and percentages. Statistical analyses were performed using SPSS version 26.0, and a two-tailed p value <0.05 was considered statistically significant.

Results: The mean duration of smartphone use was 8.84 ± 10.62 years, and the mean weekly screen time was 49.98 ± 15.17 hours. Night-time screen use (8:00 PM–8:00 AM) was reported by 81.42% of participants. According to DASS-21 scores, 41.59% of participants had normal depression scores, while mild, moderate, severe, and very severe depression were observed in 21.24%, 21.24%, 7.96%, and 7.96% of participants, respectively. Normal anxiety scores were observed in 40.71% of participants, whereas moderate, severe, and very severe anxiety were present in 27.43%, 10.62%, and 21.24%, respectively. Stress assessment demonstrated that 40.71% of participants had normal stress levels, while 23.89%, 19.47%, 12.39%, and 2.65% exhibited mild, moderate, severe, and very severe stress, respectively. Participants with greater screen exposure demonstrated significantly higher psychological distress, with a significant positive association between weekly screen time and DASS-21 scores ($p < 0.0001$). Furthermore, increasing stress severity was associated with progressively higher systolic and diastolic blood pressure.

Conclusions: Prolonged screen exposure was significantly associated with higher levels of depression, anxiety, and stress among young adults. The high prevalence of night-time screen use and psychological distress underscores the need for interventions promoting responsible digital device use and mental health awareness in this vulnerable population. Longitudinal studies are warranted to establish causal relationships between screen exposure and psychological outcomes.

Keywords: screen time; psychological distress; depression; anxiety; stress; DASS-21; young adults; smartphone use.

INTRODUCTION

Digital technology has become an indispensable component of modern life, particularly among young adults. The widespread availability of smartphones, tablets, laptops, and internet-based applications has transformed communication, education, entertainment, and social interactions. While these technological advancements have improved accessibility to information and connectivity, concerns have emerged regarding the potential adverse effects of excessive screen exposure on mental health. Young adults constitute one of the most active groups of digital media users and may therefore be particularly vulnerable to the psychological consequences of prolonged screen use [1].

Screen time refers to the amount of time spent using screen-based electronic devices, including smartphones, computers, tablets, televisions, and gaming consoles. Over the past decade, screen exposure has increased substantially due to social media engagement, online education, video streaming, and digital communication. Although moderate screen use may offer educational and social benefits, excessive screen time has been associated with several adverse health outcomes, including sleep disturbances, sedentary behaviour, obesity, reduced physical activity, and impaired psychological well-being [2,3].

Psychological distress is a broad construct encompassing symptoms of depression, anxiety, and stress. These conditions represent significant public health concerns worldwide and contribute substantially to disability, impaired quality of life, and reduced academic performance among young adults. Depression is characterized

by persistent sadness and loss of interest in activities, anxiety involves excessive worry and apprehension, whereas stress reflects an individual's response to environmental or emotional demands exceeding coping capacities [4].

Several biological and psychosocial mechanisms have been proposed to explain the association between screen time and psychological distress. Excessive screen exposure may disrupt circadian rhythms and sleep quality through prolonged exposure to blue light emitted from digital devices. Furthermore, extensive use of social networking platforms may increase social comparison, fear of missing out (FOMO), cyberbullying, and reduced face-to-face interactions, thereby contributing to depressive and anxiety symptoms. Prolonged sedentary behaviour associated with screen use may also negatively affect emotional regulation and psychological resilience [5,6].

Recent studies have demonstrated significant associations between excessive screen time and adverse mental health outcomes. University students with prolonged daily screen exposure have been reported to exhibit higher levels of depression, anxiety, psychological distress, and reduced overall well-being compared with those with lower screen exposure [1,7]. However, the relationship between screen time and mental health remains complex and potentially bidirectional. Individuals experiencing psychological distress may engage in greater screen use as a coping mechanism, while excessive screen use itself may exacerbate mental health problems [8].

Despite increasing global research on screen-related behaviours, evidence from developing countries remains limited. In India, rapid digitalization and widespread smartphone accessibility have dramatically increased screen exposure among young adults. However, data regarding the psychological impact of screen time within this population remain relatively scarce. Understanding this relationship is essential for developing targeted interventions and public health strategies aimed at promoting healthy digital habits and safeguarding mental well-being among young adults.

The Depression, Anxiety, and Stress Scale-21 (DASS-21) is a validated and widely used instrument for assessing psychological distress across three domains: depression, anxiety, and stress. Therefore, the present study was undertaken to evaluate the association between screen time and psychological distress among young adults using the DASS-21 scale. The findings may provide valuable insights into the mental health implications of excessive screen exposure and contribute to the development of evidence-based preventive strategies.

AIM

To assess the association between screen time and psychological distress among young adults using the Depression, Anxiety and Stress Scale-21 (DASS-21).

OBJECTIVES

1. To determine the pattern and duration of screen time among young adults.
2. To estimate the prevalence and severity of depression, anxiety, and stress among young adults.
3. To evaluate the association between screen time and psychological distress.
4. To examine the relationship between stress severity and blood pressure among young adults.

MATERIALS AND METHODS

● Study Design and Setting

This cross-sectional observational study was conducted in the Department of Physiology, King George Medical University Lucknow, Uttar Pradesh, India, between January 2024 and June 2024. The study was designed to evaluate the association between screen time and psychological distress among young adults.

● Study Population

The study included apparently healthy young adults aged 18–25 years. Participants were recruited through convenience sampling from undergraduate and postgraduate educational institutions.

● Sample Size

A total of 113 participants were enrolled in the study after obtaining informed consent. The sample size was determined based on the prevalence reported in previous studies and the feasibility of recruitment during the study period.

Inclusion Criteria

- Young adults aged 18–25 years.
- Individuals willing to participate and provide written informed consent.
- Regular users of smartphones, computers, tablets, or other digital devices.

Exclusion Criteria

- Individuals with diagnosed psychiatric disorders.
- Participants receiving treatment for depression, anxiety, or other mental health conditions.
- Individuals with chronic medical illnesses affecting psychological well-being.
- Incomplete questionnaire responses.

Ethical Considerations

The study protocol was approved by the Institutional Ethics Committee of King George Medical University, Lucknow (IEC Approval No. ECR/262Inst/UP/2013/RR-19). Written informed consent was obtained from all participants prior to enrolment. Confidentiality and anonymity of participants were maintained throughout the study.

- Data Collection

Data were collected using a structured questionnaire consisting of three sections:

Assessment of Screen Time

Daily screen time was assessed through self-reported average duration spent using smartphones, laptops, tablets, televisions, and other electronic devices. Total screen time was calculated in hours per day and categorized as:

- ≤ 2 hours/day
- 2–4 hours/day
- 4–6 hours/day
- 6 hours/day

Assessment of Psychological Distress

Psychological distress was evaluated using the Depression Anxiety Stress Scale-21 (DASS-21), a validated self-administered instrument comprising 21 items distributed across three domains:

- Depression (7 items)
- Anxiety (7 items)
- Stress (7 items)

Each item was scored on a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). Scores for each subscale were summed and multiplied by two according to DASS-21 scoring guidelines. Higher scores indicated greater psychological distress.

STATISTICAL ANALYSIS

Data were entered into Microsoft Excel and analysed using Statistical Package for Social Sciences (SPSS) version 26.0 (IBM Corp., Armonk, NY, USA).

Continuous variables were expressed as mean $\pm$ standard deviation (SD), while categorical variables were presented as frequencies and percentages. Normality of data distribution was assessed using the Shapiro–Wilk test.

Comparisons between groups were performed using the independent Student's t-test or one-way analysis of variance (ANOVA) as appropriate. Associations between screen time and DASS-21 scores were assessed using Pearson's correlation coefficient. Multivariable linear regression analysis was performed to identify independent predictors of depression, anxiety, and stress scores.

A p-value < 0.05 was considered statistically significant.

RESULTS

A total of 113 young adults were included in the study. The screen-time and smartphone usage characteristics of the participants are presented. The majority of participants belonged to the age group of 18–25 years, with a slightly higher proportion of females than males. Most participants were graduates and belonged to middle-income socioeconomic groups.

Screen-Time and Smartphone Usage Characteristics of Study Participants

The screen-time and smartphone usage characteristics of the participants are shown in Table 1. The mean duration of smartphone use was 8.84 ± 10.62 years, while the mean weekly screen time was 49.98 ± 15.17 hours. Social media was the predominant purpose of smartphone use, reported by 78.76% of participants. Additionally, 81.08% of participants reported screen use during night-time hours (8 PM–8 AM).

TABLE 1:- Smartphone use and weekly screen time among enrolled participants. Duration of Smartphone use (YRS)

8.84 $\pm$ 10.62

Total One Week Screen Time (hr)	49.98±15.17
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Graphical representation of smartphone uses and weekly screen time among enrolled participants

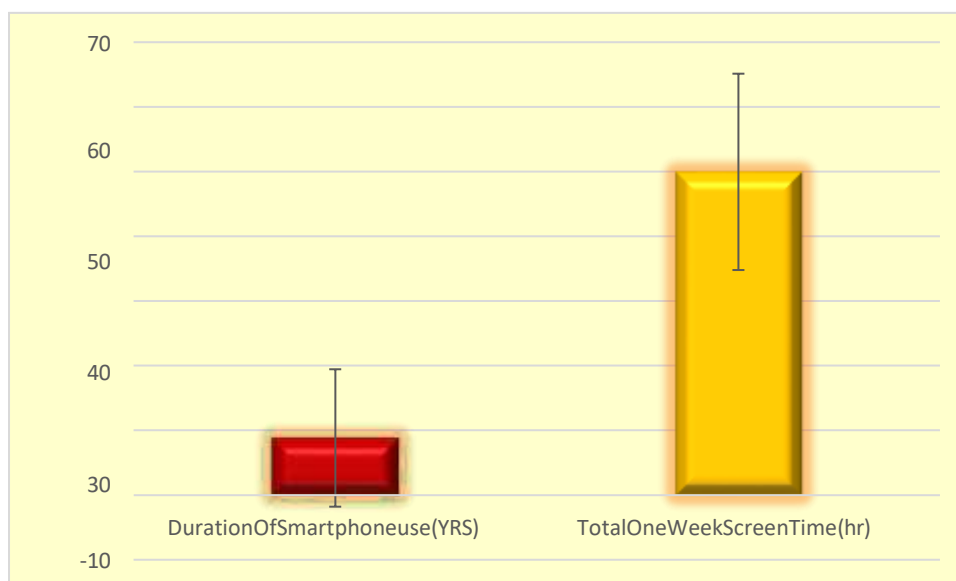
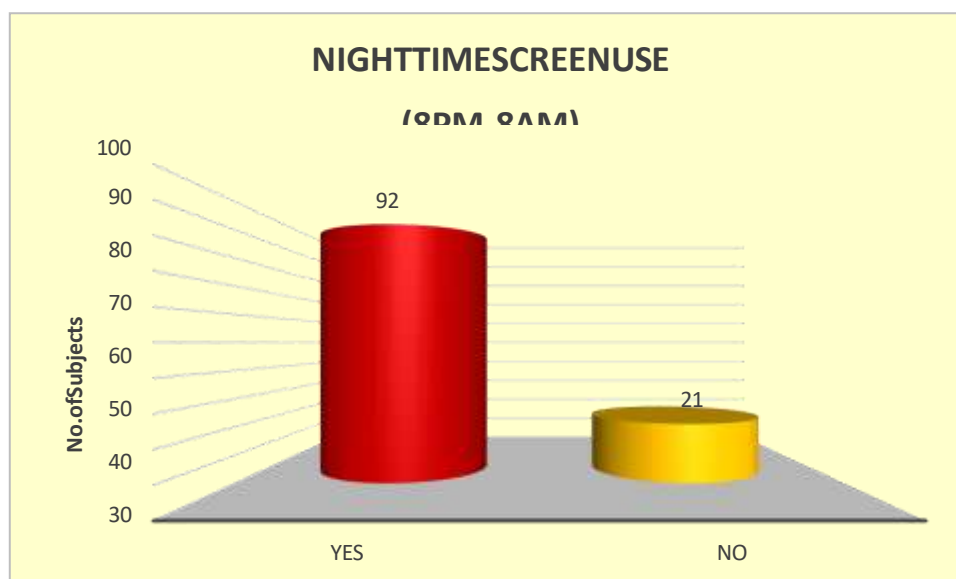


TABLE:2 Night-time screen usage by the enrolled participants.

NIGHT-TIME SCREEN USE (8 PM- 8 AM)	NUMBER	PERCENTAGE
YES	92	81.42%
NO	21	18.58%
Grand Total	113	100.00%

Most participants (81.08%) reported using screens from 8 PM to 8 AM, while 18.92% stated that they did not use screens during the night.

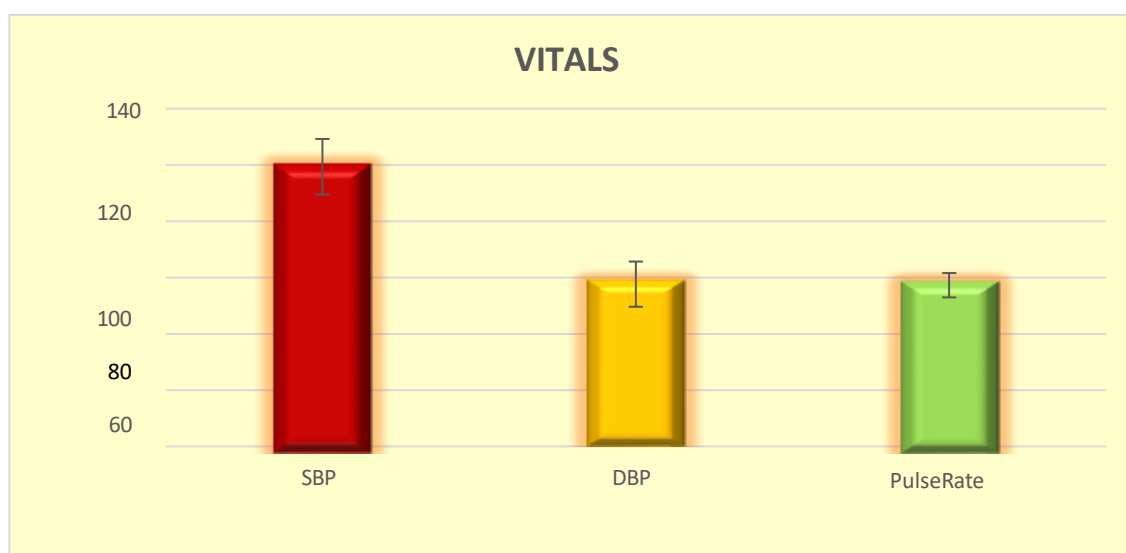


▪ **TABLE 3: Vitals of the enrolled participants.**

VITALS	
SBP	119.38±9.87
DBP	77.69±8.03
Pulse Rate	77.31±4.32

The enrolled patients exhibited mean systolic blood pressure (SBP), diastolic blood pressure (DBP), and pulse rate of 119.38 ± 9.87 mmHg, 77.69 ± 8.03 mmHg, and 77.31 ± 4.32 beats per minute, respectively.

Graphical representation of the vitals of the enrolled participants.



▪ **Distribution of Depression, Anxiety, and Stress Severity According to DASS-21 Scores**
Regarding anxiety severity, 40.71% of participants exhibited normal anxiety levels, whereas 27.43% showed moderate anxiety. Severe and very severe anxiety were observed in 10.62% and 21.24% of participants, respectively.

TABLE-4: Severity levels of anxiety among enrolled participants.

DASS21 [ANXIETY]	FREQUENCY	PERCENTAGE
Normal [0-7]	46	40.71%
Mild [8-9]	0	0.00%
Moderate [10-14]	31	27.43%
Severe [15-19]	12	10.62%
Very severe [≥20]	24	21.24%

TABLE-5: Severity levels of depression among enrolled participants.

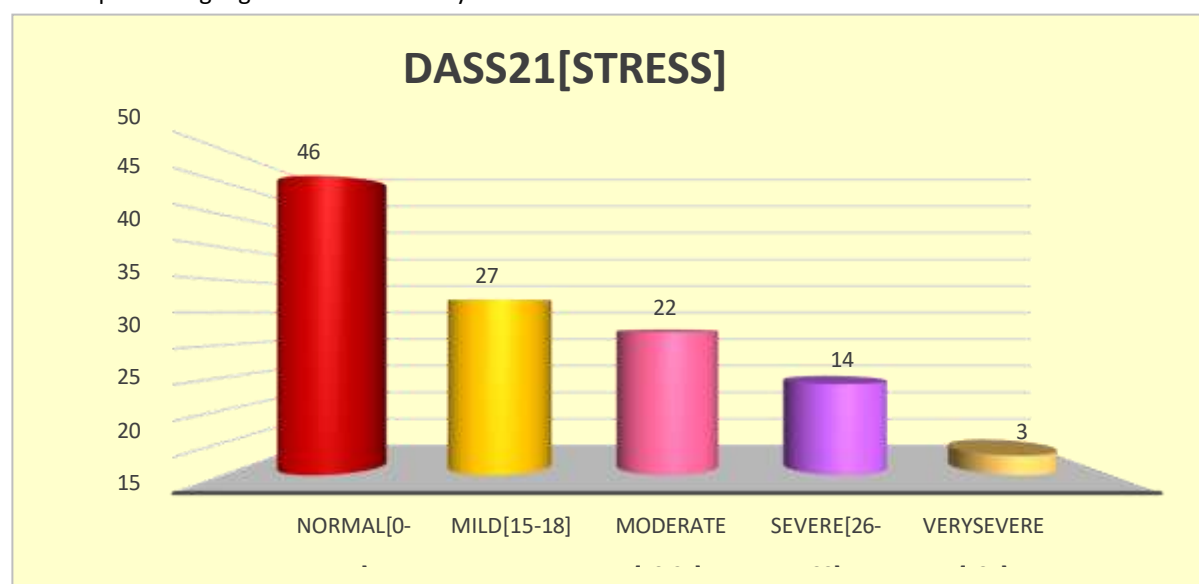
DASS21 [DEPRESSION]	FREQUENCY	PERCENTAGE
Normal [0-9]	47	41.59%
Mild [10-13]	24	24.21%
Moderate [14-20]	24	21.24%
Severe [21-27]	9	7.96%
Very severe [≥28]	9	7.96%

Most participants fell within the normal range (0-9), accounting for 41.59% of the participants. Mild depression (10-13) and moderate depression (14-20) 24.21% in each group. Fewer participants reported severe (21-27) and very severe (≥28) depression. These findings highlight the presence of varying degrees of depressive symptoms among the surveyed individuals, emphasizing the need for appropriate support and intervention for those experiencing higher levels of depression.

▪ **TABLE-6: Severity levels of anxiety among enrolled participants.**

DASS21 [STRESS]	FREQUENCY	PERCENTAGE
Normal [0-14]	46	40.71%
Mild [15-18]	27	23.89%
Moderate [19-25]	22	19.47%
Severe [26-33]	14	12.39%
Very severe [≥34]	3	2.65%

The majority of participants (40.71%) fell within the normal range for anxiety scores (0-7), while 27.43% reported moderate anxiety (10-14). Additionally, 10.62% experienced severe anxiety (15-19), and 21.24% reported very severe anxiety (≥20). These findings highlight the presence of varying degrees of anxiety symptoms among the surveyed individuals, emphasizing the need for appropriate support and intervention for those experiencing higher levels of anxiety



▪ **TABLE-7: Association between stress level and mean blood pressure.**

Stress Level	Mean SBP (mmHg)	Mean DBP (mmHg)
Normal (0-14)	120.58 ± 10.47	80.34 ± 8.21
Mild (15-18)	122.76 ± 12.65	82.89 ± 10.03
Moderate (19-25)	125.32 ± 14.78	85.56 ± 11.97
Severe (26-33)	130.45 ± 16.32	88.63 ± 13.84
Very Severe (≥34)	135.98 ± 18.07	92.24 ± 15.69

Individuals with normal stress levels (0-14) had a mean SBP of 120.58 ± 10.47 mmHg and a mean DBP of 80.34 ± 8.21 mmHg. As stress levels increased, so did the mean blood pressure readings, with those experiencing very severe stress (≥34) exhibiting the highest mean SBP (135.98 ± 18.07 mmHg) and mean DBP (92.24 ± 15.69 mmHg). Overall, the data indicates a positive association between stress levels and mean blood pressure, with higher stress categories associating with elevated mean systolic and diastolic blood pressure values.

DISCUSSION

The present study evaluated the association between screen time and psychological distress among young adults using the DASS-21 questionnaire. The findings demonstrated substantial digital device exposure, with a mean weekly screen time of 49.98 ± 15.17 hours and 81.42% of participants reporting regular night-time screen use. More importantly, prolonged screen exposure was significantly associated with higher levels of depression, anxiety, and stress ($p < 0.0001$). These findings support the growing evidence that excessive screen use adversely affects psychological well-being among young adults [9,10].

The average weekly screen time observed in the present study reflects the increasing dependence of young adults on smartphones for academic, professional, entertainment, and social purposes. Similar findings have been reported by Chen et al., who observed significantly poorer mental well-being and higher psychological distress among university students with prolonged screen viewing [9]. Likewise, the systematic review by Santos et al. concluded that excessive screen time is consistently associated with depression, anxiety, and psychological distress in adolescents and young adults [10].

A considerable proportion of participants in the present study exhibited symptoms of psychological distress. Although 41.59% of participants had normal depression scores, more than half demonstrated varying degrees of depressive symptoms. Similarly, only 40.71% had normal anxiety scores, whereas moderate, severe, and very severe anxiety were observed in 27.43%, 10.62%, and 21.24% of participants, respectively. Nearly 60% of participants also experienced varying degrees of stress. These findings indicate that psychological distress is highly prevalent among young adults with substantial screen exposure and are consistent with previous reports identifying university students as a vulnerable population for mental health disorders [9–11].

The present study demonstrated a significant positive association between screen time and DASS-21 scores. Comparable observations have been reported by Woodward et al., who found that prolonged social media use was independently associated with increased symptoms of depression and anxiety among young adults [11]. Similarly, Nimbalkar et al. reported significantly higher DASS-21 scores among frequent Instagram users, suggesting that excessive engagement with social networking platforms contributes to psychological distress [12]. Although the cross-sectional design precludes causal inference, these findings strengthen the accumulating evidence linking prolonged screen exposure with impaired mental health.

Several biological and behavioural mechanisms may explain the observed relationship. Exposure to blue light emitted from digital devices suppresses melatonin secretion, disrupts circadian rhythms, and impairs sleep quality. Sleep disturbance is considered one of the principal mediators linking excessive screen use with depression, anxiety, and stress [13,14]. Furthermore, prolonged use of social networking platforms may promote social comparison, fear of missing out (FOMO), cyberbullying, and reduced face-to-face social interactions, thereby negatively affecting emotional well-being [15,16]. Excessive screen use is also associated

with sedentary behaviour and reduced physical activity, both of which have been implicated in poorer mental health outcomes [10].

Night-time screen use was highly prevalent in the present study, with more than four-fifths of participants reporting digital device use between 8 PM and 8 AM. Evening screen exposure has consistently been associated with delayed sleep onset, shortened sleep duration, and poor sleep quality, all of which increase the risk of depression and anxiety [13,17]. These findings suggest that reducing screen exposure before bedtime may improve sleep hygiene and psychological well-being.

An additional observation of this study was the progressive increase in systolic and diastolic blood pressure across increasing stress categories. Participants with very severe stress exhibited the highest blood pressure values, suggesting activation of physiological stress pathways. Chronic psychological stress stimulates the sympathetic nervous system and hypothalamic–pituitary–adrenal axis, leading to increased catecholamine secretion and transient elevations in blood pressure. Although most participants remained within normal physiological ranges, these findings indicate that persistent psychological stress may have early cardiovascular implications in otherwise healthy young adults.

The present study has several strengths. It employed the validated DASS-21 questionnaire to comprehensively assess depression, anxiety, and stress while simultaneously evaluating screen-time characteristics among young adults. Additionally, it provides contemporary evidence from the Indian population, where studies investigating the psychological consequences of excessive screen use remain limited.

However, certain limitations should be acknowledged. The cross-sectional design does not permit causal inference. Screen time was self-reported and may therefore be susceptible to recall bias. Furthermore, participants were recruited from a single geographical region, limiting the generalisability of the findings. Potential confounding variables, including sleep quality, physical activity, academic workload, dietary habits, and detailed social media use, were not assessed. Future multicentre longitudinal studies involving larger populations are needed to clarify causal pathways and identify modifiable behavioural risk factors.

Overall, the present study adds to the growing body of evidence indicating that prolonged screen exposure is associated with poorer psychological health among young adults. Public health strategies promoting healthy digital habits, sleep hygiene, and routine mental health screening in educational institutions may help reduce the psychological burden associated with excessive screen use [9–12].

CONCLUSION

Prolonged screen time was significantly associated with higher levels of depression, anxiety, and stress among young adults. The high prevalence of night-time screen use further highlights the potential impact of excessive digital device use on psychological well-being. These findings emphasize the need to promote healthy screen-use practices, digital well-being, and mental health awareness among young adults. Further longitudinal studies are required to establish causal relationships and guide effective preventive interventions.

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