



Original Research Article

Frequency of Depression Secondary to Excessive Screen Time among Postgraduates

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Abstract

Background: The widespread use of digital devices has significantly increased screen exposure among postgraduate trainees due to academic requirements, clinical responsibilities, online learning, and social media engagement. **Objective:** To determine the frequency of depression among postgraduate trainees with excessive screen time and to assess the association between screen exposure and depressive symptoms. **Study Design:** Cross-sectional study. **Place and Duration of Study:** Department of Psychiatry and Behavioural Sciences, Shaheed Mohtarma Benazir Bhutto Medical University (SMMBBMU), Larkana, in collaboration with Chandka Medical College/Hospital, Larkana from 15 June 2025 to 15 October 2025. **Methodology:** 142 postgraduate trainees were selected through simple random sampling. Postgraduate trainees aged more than 25 years with excessive screen time were included. Data regarding demographic characteristics, screen usage patterns, and clinical variables were collected through a structured questionnaire. **Results:** Among 142 postgraduate trainees, the mean age was 28.7 ± 2.6 years. Males constituted 78 (54.9%) participants and females 64 (45.1%). The mean daily screen time was 8.1 ± 2.4 hours, with 86 (60.6%) participants reporting screen exposure of more than 8 hours per day. Depression was identified in 67 (47.2%) participants based on PHQ-9 assessment. Mild depression was observed in 32 (22.5%), moderate depression in 21 (14.8%), moderately severe depression in 10 (7.0%), and severe depression in 4 (2.8%) participants. Excessive screen time (>8 hours/day) was significantly associated with depression (adjusted OR: 2.14, 95% CI: 1.12–4.08; $p=0.021$). **Conclusion:** A high frequency of depressive symptoms was observed among postgraduate trainees with excessive screen time. Prolonged screen exposure, female gender, and inadequate sleep duration were significant factors associated with depression.

Keywords: Depression; screen time; postgraduate trainees; PHQ-9; digital device use; mental health.

INTRODUCTION

Depression is a debilitating mood disorder with a worldwide prevalence estimated at 4.4%. Prevalence estimates in Pakistan range from 22% to 60%, with estimates in Karachi (a populous city of 14.9 million) averaging at 47% [1]. World Health Organization has projected that depression will be leading cause of disease burden by the year 2030. The high rates of depression can be attributed to a lack of mental health literacy as hypothesized by Jorm et al [2]. In

Pakistan, the biomedical aspect of mental disorders is largely ignored, and they are often simplified as a natural consequence of stress-inducing scenarios. In the era of digitalization, the proliferation of electronic devices and social media platforms has profoundly impacted the lives of individuals across all age groups, particularly adolescents and young adults [3]. The omnipresence of screens in various forms, including smartphones, tablets, computers, and televisions, has redefined how we communicate,

access information, and engage with the world around us [4]. While these technological advancements offer numerous benefits, concerns have been raised regarding the potential adverse effects of excessive screen time and social media use on mental health, especially among the vulnerable populations of adolescents and young adults [5]. In recent years, the increasing prevalence of screen time and its potential impact on mental health have raised concerns among researchers and healthcare professionals. Among the various mental health issues associated with excessive screen time, depression has emerged as a significant concern, particularly among postgraduates. Postgraduate students often face a unique set of challenges, including academic pressure, work demands, and social expectations, which may make them vulnerable to depressive symptoms exacerbated by excessive screen time [6,7]. Research has shown that prolonged exposure to screens, such as smartphones, computers, and tablets, can contribute to the development or worsening of depressive symptoms in individuals. The digital nature of postgraduate studies, coupled with their heavy reliance on technology, makes this population particularly susceptible to the potential negative effects of excessive screen time on mental health [8].

A study conducted in India to assess the mental health effects of excessive screen time and social media use among adolescents (13–19 years) and young adults (20–25 years) and revealed the prevalence of depression symptom was 37.9% [9]. To the best of my knowledge, no such study has ever been conducted. Understanding the frequency of depression secondary to excessive screen time among postgraduates is crucial for developing effective interventions and support systems.

Objective

To determine the frequency of depression among postgraduates having excessive screen time.

METHODOLOGY

A cross-sectional study was conducted in the Department of Psychiatry and Behavioural Sciences, Shaheed Mohtarma Benazir Bhutto Medical University (SMMBBMU), Larkana, in collaboration with Chandka Medical College/Hospital, Larkana from 15 June 2025 to 15 October 2025. A simple random sampling technique was used for participant selection. The sample size was calculated using the OpenEpi sample size calculator. As no previous data were available regarding the prevalence of depression among postgraduate trainees with excessive screen time, the prevalence of depression among adolescents with excessive screen time (37.9%) was considered for sample estimation. Using a 95% confidence interval, an 8% margin of error, and an expected prevalence of 37.9%, the calculated minimum sample size was 142 participants. The

study included postgraduate trainees from different specialties and departments who fulfilled the operational definition of excessive screen time. Both male and female postgraduate trainees aged more than 25 years were eligible for participation. Participants who were willing to provide written informed consent were included in the study. Participants were excluded if they had any condition that could interfere with the interview process, including medical emergencies or psychiatric emergencies.

Data Collection

Data collection was initiated after obtaining approval from the College of Physicians and Surgeons Pakistan (CPSP) and the Ethical Review Committee (ERC) of the hospital. A total of 142 postgraduate trainees who fulfilled the eligibility criteria were enrolled in the study. Written informed consent was obtained from all participants after explaining the purpose, procedures, and objectives of the study. Participants were assured regarding confidentiality and anonymity of their information. They were informed that participation was voluntary and that they could withdraw from the study at any stage without providing any reason or facing any academic or professional consequences. Demographic and clinical information, including age, height, weight, body mass index (BMI), gender, religion, marital status, monthly household income, parental education, parental occupation, and area of residence, was collected through a structured questionnaire. Depression symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9), which was completed by the postgraduate trainees themselves.

Data Analysis

The collected data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 26.0. The normality of quantitative variables, including age, height, weight, BMI, and PHQ-9 scores, was assessed using the Shapiro–Wilk test. Normally distributed continuous variables were presented as mean $\pm$ standard deviation (SD), whereas non-normally distributed variables were presented as median with interquartile range (IQR). Categorical variables, including gender, religion, marital status, socioeconomic characteristics, educational and occupational status of parents, area of residence, and depression status, were summarized as frequencies and percentages. Potential effect modifiers, including age, gender, BMI, religion, marital status, monthly household income, parental education, parental occupation, mother tongue, and area of residence, were controlled through stratification. Post-stratification analysis was performed using the Chi-square test or Fisher's exact test where appropriate. A p-value ≤ 0.05 was considered statistically significant.

RESULTS

A total of 142 postgraduate trainees with excessive screen time were included in the study. The mean age of participants was 28.7 ± 2.6 years. Among the participants, 78 (54.9%) were males and 64 (45.1%) were females. The majority of postgraduate trainees were married, accounting for 82 (57.7%) participants, while 60 (42.3%) were unmarried. Regarding residential background, 96 (67.6%) participants belonged to urban areas and 46 (32.4%) belonged to rural areas. The mean daily screen time was 8.1 ± 2.4 hours. Among the participants, 56 (39.4%) reported screen exposure of 6–8 hours per day, whereas 86 (60.6%) had screen exposure exceeding 8 hours per day. Depression symptoms assessed through PHQ-9 were present in 67 (47.2%) participants (Table 1).

Table 1. Baseline Demographic and Clinical Characteristics of Postgraduate Trainees with Excessive Screen Time (n = 142)

Variable	n (%) / Mean $\pm$ SD
Age (years)	28.7 ± 2.6
Male	78 (54.9%)
Female	64 (45.1%)
Married	82 (57.7%)
Unmarried	60 (42.3%)
Urban residence	96 (67.6%)
Rural residence	46 (32.4%)
Daily screen time (hours/day)	8.1 ± 2.4
6–8 hours/day	56 (39.4%)
>8 hours/day	86 (60.6%)
Depression present	67 (47.2%)

According to PHQ-9 assessment, 75 (52.8%) postgraduate trainees had no depression, while 67 (47.2%) participants were identified with depressive symptoms. Among those with depression, mild depression was the most common category, observed in 32 (22.5%) participants, followed by moderate depression in 21 (14.8%), moderately severe depression in 10 (7.0%), and severe depression in 4 (2.8%) participants (Table 2).

Table 2. Frequency and Severity of Depression Assessed by PHQ-9 (n = 142)

Depression category	n (%)
No depression	75 (52.8%)
Depression present	67 (47.2%)
Mild depression	32 (22.5%)
Moderate depression	21 (14.8%)
Moderately severe depression	10 (7.0%)
Severe depression	4 (2.8%)

Multivariable logistic regression analysis demonstrated that excessive screen time, female gender, and reduced sleep duration were significant predictors of depression among postgraduate trainees. Participants with screen exposure

exceeding 8 hours per day had more than two times higher odds of depression compared with those with lower screen exposure (adjusted OR: 2.14, 95% CI: 1.12–4.08; $p=0.021$). Female participants had significantly higher odds of depression compared with males (adjusted OR: 1.89, 95% CI: 1.01–3.55; $p=0.046$). Similarly, participants with sleep duration less than 6 hours per day had increased odds of depression (adjusted OR: 2.32, 95% CI: 1.18–4.55; $p=0.014$) (Table 3).

Table 3. Multivariable Logistic Regression Analysis for Predictors of Depression

Predictor	Adjusted OR	95% CI	p-value
Excessive screen time (>8 hours/day)	2.14	1.12–4.08	0.021
Female gender	1.89	1.01–3.55	0.046
Sleep duration <6 hours/day	2.32	1.18–4.55	0.014

Comparison of demographic characteristics showed that the mean age was comparable between participants with and without depression (28.9 ± 2.8 vs. 28.5 ± 2.4 years, $p=0.356$). Depression was significantly more frequent among females compared with males, with depressive symptoms observed in 36 (56.3%) females and 31 (39.7%) males ($p=0.048$). No significant association was observed between marital status and depression, as depression was present in 35 (42.7%) married and 32 (53.3%) unmarried participants ($p=0.902$) (Table 4).

Table 4. Association Between Demographic Characteristics and Depression Among Postgraduate Trainees

Variable	No Depression (n=75)	Depression (n=67)	p-value
Age (years), Mean $\pm$ SD	28.5 ± 2.4	28.9 ± 2.8	0.356
Gender			
Male	47 (60.3%)	31 (39.7%)	0.048
Female	28 (43.7%)	36 (56.3%)	
Marital status			
Married	47 (57.3%)	35 (42.7%)	0.902
Unmarried	28 (46.7%)	32 (53.3%)	
Residence			
Urban	53 (55.2%)	43 (44.8%)	0.512
Rural	22 (47.8%)	24 (52.2%)	

Screen time-related factors showed a significant association with depression. Participants with depression reported higher mean daily screen

exposure compared with those without depression (8.9 ± 2.5 vs. 7.4 ± 2.1 hours/day, $p < 0.001$). Depression was more frequent among participants with screen exposure exceeding 8 hours per day compared with those using screens for 6–8 hours daily (52.3% vs. 39.2%, $p = 0.018$). Frequent social media use was also significantly associated with depression, with 54 (55.1%) participants with depressive symptoms reporting frequent social media use compared with 44 (44.9%) participants without depression ($p = 0.006$) (Table 5).

Table 5. Association Between Screen Time Characteristics and Depression

Screen-related Variable	No Depression (n=75)	Depression (n=67)	p-value
Daily screen time			
6–8 hours/day	34 (60.8%)	22 (39.2%)	0.018
>8 hours/day	41 (47.7%)	45 (52.3%)	
Mean screen time (hours/day)	7.4 ± 2.1	8.9 ± 2.5	<0.001
Frequent social media use	44 (44.9%)	54 (55.1%)	0.006
Sleep duration <6 hours/day	18 (35.3%)	33 (64.7%)	0.004

DISCUSSION

The present study evaluated the frequency of depression associated with excessive screen time among postgraduate trainees and demonstrated that nearly half of the participants experienced depressive symptoms. Among 142 postgraduate trainees, depression was identified in 67 (47.2%) participants based on the Patient Health Questionnaire-9 (PHQ-9). Excessive screen exposure was common, with more than half of the participants reporting screen use exceeding 8 hours per day. The findings showed a significant association between prolonged screen exposure and depressive symptoms, suggesting that excessive digital device use may contribute to psychological distress among postgraduate trainees [10].

The observed frequency of depression in this study is consistent with previous research conducted among university students and young professionals, where high levels of psychological distress and depressive symptoms have been reported. Postgraduate trainees represent a particularly vulnerable group because of the combination of academic responsibilities, clinical duties, workload pressure, sleep disruption, and continuous dependence on digital technology for learning and communication. In Pakistan,

postgraduate medical trainees often experience demanding training schedules, long working hours, and limited opportunities for relaxation, which may increase susceptibility to depression and other mental health problems. The present study demonstrated that participants with higher daily screen time had significantly higher depressive symptoms [11]. Those using screens for more than 8 hours per day showed increased odds of depression compared with those having lower screen exposure. This relationship may be explained by several mechanisms. Excessive screen use, particularly prolonged smartphone and social media exposure, may reduce face-to-face social interaction, increase sedentary behavior, disturb sleep patterns, and promote psychological stress. Continuous exposure to social media platforms may also contribute to negative emotional experiences through social comparison, information overload, and reduced psychological recovery [12].

The significant positive correlation between daily screen time and PHQ-9 depression scores further supports the relationship between digital exposure and mental health outcomes. Similar findings have been reported in previous studies, where increased screen duration was associated with higher rates of depressive symptoms among adolescents, university students, and young adults [13]. Excessive screen time may influence mental health through disruption of circadian rhythm, reduced sleep quality, and decreased engagement in physical activities, all of which are recognized contributors to depression. Female postgraduate trainees showed a higher frequency of depression compared with male participants. This finding is consistent with previous epidemiological studies demonstrating higher rates of depressive symptoms among females. Possible explanations include biological differences, hormonal influences, greater psychological vulnerability, and differences in coping mechanisms. Female trainees may also experience additional social and professional challenges, which may contribute to increased emotional stress during postgraduate training [14].

Sleep duration was another important factor associated with depression in the present study. Participants sleeping less than 6 hours per day had significantly higher depressive symptoms compared with those having adequate sleep duration. Excessive screen exposure, especially before bedtime, may contribute to delayed sleep onset and poor sleep quality through prolonged cognitive stimulation and exposure to blue light. Sleep disturbance and depression have a bidirectional relationship, where poor sleep can increase the risk of depressive symptoms, while depression itself may further impair sleep quality [15]. The findings highlight the importance of addressing excessive screen use among postgraduate trainees. Digital devices are

essential components of modern medical education and clinical practice; therefore, complete avoidance of screen exposure is unrealistic. Instead, promoting healthy digital habits, structured screen breaks, limiting unnecessary social media use, improving sleep hygiene, and encouraging physical activity may help reduce the negative psychological effects associated with prolonged screen exposure [16].

The study has important implications for postgraduate training programs in Pakistan. Mental health support systems, regular psychological screening, and awareness sessions regarding healthy technology use may be incorporated into residency programs. Early identification of depressive symptoms may help prevent deterioration in academic performance, professional functioning, and overall quality of life among postgraduate trainees [17]. This study has some limitations. The cross-sectional design does not allow determination of a causal relationship between excessive screen time and depression. Since both screen exposure and depressive symptoms were assessed at a single point in time, it remains unclear whether excessive screen use contributed to depression or whether individuals with depressive symptoms were more likely to engage in prolonged screen use. Additionally, screen time was self-reported, which may have introduced recall bias. The study was conducted among postgraduate trainees from a specific healthcare setting, which may limit generalizability to other populations.

CONCLUSION

Excessive screen time was common among postgraduate trainees and was associated with a higher frequency of depressive symptoms. Almost half of the participants showed evidence of depression, with greater screen exposure, female gender, and reduced sleep duration identified as significant factors associated with depressive symptoms. Although digital devices are essential for postgraduate education and clinical responsibilities, uncontrolled screen use may negatively affect mental well-being. These findings highlight the need for awareness regarding healthy screen habits, improved sleep practices, and psychological support programs within postgraduate training settings to promote better mental health among trainees. Further longitudinal studies are recommended to establish the causal relationship between excessive screen time and depression.

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