Screen Time and Stress: Examining the Relationship Between Phone Usage and Stress Levels Among Nursing Students'

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ABSTRACT

Excessive smartphone use is associated with increased stress, particularly among nursing students undergoing intensive clinical training. However, limited research explores the relationship between daily and weekly smartphone usage and clinical stress levels. Objective: This study examines the association between daily and weekly smartphone usage and clinical stress levels among nursing students. Methods: A cross-sectional survey was conducted among 291 diploma nursing students in Malaysia using universal sampling. Data were collected in February 2025 via an online questionnaire. Clinical stress levels were assessed using the Nursing Students' Perceived Clinical Stress Scale (NSPCSS), while self-reported daily and weekly screen time measured smartphone usage. One-way ANOVA was applied to examine associations between smartphone usage and clinical stress levels. Results: The participants' mean age was 22.66 years (SD = 1.86), with 79.4% female. The mean weekly smartphone usage was 47.10 hours (SD = 40.73), and the mean daily smartphone usage was 6.80 hours (SD = 4.70). Weekly smartphone usage was not significantly associated with clinical stress levels ($p = 0.381$), while daily smartphone usage showed a significant association with clinical stress levels ($p = 0.025$). Conclusion: Daily smartphone usage is significantly associated with clinical stress levels, whereas weekly usage is not. These findings highlight the need for screen time awareness and digital well-being initiatives to help nursing students manage stress during clinical training.

Keywords: Clinical stress, smartphone usage, nursing students, screen time.

INTRODUCTION

In the digital era, smartphones have become an integral part of daily life, offering various benefits such as communication, access to information, and entertainment. However, excessive smartphone use has been linked to negative psychological effects, including increased stress levels [1], [2]. Among nursing students undergoing intensive clinical training, high academic and professional demands place them at greater risk of experiencing the adverse effects of prolonged screen exposure [3]. The relationship between smartphone uses and stress in the context of clinical training has gained increasing attention, as excessive screen time can contribute to mental fatigue, sleep disturbances, and heightened anxiety.

Previous studies have indicated that excessive smartphone use negatively impacts mental well-being and sleep quality [4], which subsequently leads to increased stress levels. In the context of clinical training, nursing students who face heavy workloads and the need to make critical decisions may be more vulnerable to the detrimental effects of prolonged screen time due to inadequate rest and cognitive distractions [5]. For example, a study in Turkey reported that the prevalence of smartphone addiction among nursing students was 42.4%, with 57.3% experiencing poor sleep quality and 82.5% reporting normal daytime sleepiness [6]. Similarly, research in Iraq found that 68.7% of students reported high smartphone addiction, while 63.9% experienced moderate stress levels, with a statistically significant positive association between smartphone addiction and perceived stress levels ($p < 0.01$) [7]. A study conducted in Malaysia also revealed a statistically significant positive relationship between smartphone addiction and anxiety and depression ($p < 0.001$), with smartphone

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addiction identified as a predictor of anxiety ($B = 0.052$, $t = 4.469$, $p < 0.001$) and depression ($B = 0.091$, $t = 6.067$, $p < 0.001$) [8].

Given these findings, understanding the relationship between smartphone usage duration and stress levels among nursing students is crucial in identifying effective interventions for stress management. While numerous studies have examined stress among nursing students, research specifically exploring the relationship between daily and weekly smartphone usage and stress levels during clinical training remains limited. Therefore, this study aims to investigate this relationship and provide valuable insights for educators, healthcare professionals, and policymakers in promoting a balance between digital technology use and mental well-being among nursing students.

METHODOLOGY

Study Design

This study adopts a quantitative cross-sectional approach to explore the relationship between smartphone usage duration (daily and weekly) and clinical stress levels among nursing students. The primary objective is to determine whether the amount of time spent on smartphones each day and week is significantly associated with stress levels during clinical training. Given the increasing dependence on digital technology, it is crucial to assess how screen time influences the mental well-being of nursing students in demanding clinical environments.

Study Population

The study targeted diploma nursing students currently undergoing clinical training at a nursing institution in Malaysia. A universal sampling method was applied to include all eligible students, ensuring a representative sample across different semesters and clinical rotations. This approach minimizes selection bias and enhances the generalizability of findings.

Eligibility Criteria

Inclusion:

- Nursing students actively enrolled in a diploma program.
- Currently participating in clinical training.
- Provided informed consent to participate.

Exclusion:

- Semester 1 students, as they had not yet commenced clinical placements.
- Students who were on leave, had withdrawn, or declined participation.

Data Collection

Data collection was conducted over one month (February 2025) using an online survey via Google Forms. The study utilized the Nursing Students' Perceived Clinical Stress Scale (NSPCSS), originally developed by Rafati et al. [9], to assess clinical stress levels among nursing students. Prior permission was obtained from the original authors to use this instrument, ensuring ethical compliance.

- Smartphone usage duration was measured based on self-reported daily and weekly screen time (in hours).

- Clinical stress levels were evaluated using the 30-item NSPCSS instrument, rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), with total scores ranging from 30 to 150.

- The survey was distributed via institutional email and student communication platforms, with participants given one week to complete it. Follow-up reminders were sent periodically to enhance response rates.

Demographic characteristics	**n**	**%**
Age (years)		
Min-max: 20-32	*22.66	**1.86
Gender		
Male	60	20.6
Female	231	79.4
Weekly Clinical Phone Usage (hours)		
Min-max: 2-420	*47.10	**40.73
Daily Phone Usage (hours)		
Min-max: 2-60	*6.80	**4.70

Data Analysis

Data were analysed using SPSS Version 27, employing both descriptive and inferential statistics. Descriptive analysis summarized participants' demographic characteristics and smartphone usage patterns (daily and weekly screen time).

To assess the relationship between smartphone usage (numeric data) and clinical stress levels (categorical data), a one-way analysis of variance (ANOVA) was conducted. The analysis aimed to determine whether mean smartphone usage (daily and weekly) significantly differed across the four stress levels.

Clinical stress levels were categorized as follows:

- Low stress: 30–59
- Moderate stress: 60–89
- High stress: 90–119
- Very high stress: 120–150

A p-value of <0.05 was considered statistically significant in identifying differences in smartphone usage patterns among stress level groups. The study achieved a high response rate, ensuring a robust dataset for reliable analysis and interpretation.

Ethical Considerations

This study adhered to ethical guidelines set by the Ministry of Health Malaysia and obtained approval from the Medical Research and Ethics Committee (MREC) under NMRR ID-24-04102-UZS.

Before participation, all students were provided with comprehensive information regarding the study's objectives, methodology, potential risks, and benefits. Written informed consent was obtained to confirm voluntary participation. All responses were anonymous and de-identified, ensuring data confidentiality and exclusive research use. Participants had the right to withdraw at any stage without academic consequences.

This study complied with the Declaration of Helsinki and institutional ethical research protocols to safeguard the rights and well-being of all participants.

RESULTS

Socio-Demographic Characteristics of Respondents

Table 1 presents the demographic characteristics of the study participants (n=291). The participants' ages ranged from 20 to 32 years, with a mean age of 22.66 years (SD = 1.86). In terms of gender distribution, the majority were female (79.4%), while male participants accounted for 20.6% of the sample. Regarding phone usage during clinical training, the average weekly phone usage was 47.10 hours (SD = 40.73), with a range of 2 to 420 hours per week. Meanwhile, the average daily phone usage was 6.80 hours (SD = 4.70), ranging from 2 to 60 hours per day. These findings indicate substantial variation in phone usage among nursing students during their clinical training.

Table 1: Socio demographic Background (N=291)

Notes: *Mean (SD)

Level of stress clinical

Table 2 presents the distribution of clinical stress levels among the study participants (n=291). Most students (74.9%) reported experiencing low levels of clinical stress, while 20.3% had moderate stress levels. A smaller proportion of students (4.5%) experienced high clinical stress, and only 0.3% reported very high stress levels.

Table 2 Level of Stress Clinical (n=291)

Level of stress Clinical	Frequency	Percent
Low	218	74.9
Moderate	59	20.3
High	13	4.5
Very high	1	0.3

Level of stress clinical: 30–59: Low; 60–89: Moderate; 90–119: Tinggi and 120–150: Very High

Relationship Between Phone Usage Duration and Clinical Stress Levels Among Nursing Students

Table 3 presents the analysis of variance (ANOVA) results examining the relationship between phone usage and clinical stress levels among nursing students. The findings indicate that weekly phone usage (M = 47.10 hours, SD = 40.73) did not show a statistically significant association with stress levels (F = 1.06, p = 0.381), suggesting that variations in weekly screen time did not significantly impact perceived clinical stress. However, daily phone usage (M = 6.80 hours, SD = 4.70) demonstrated a marginally significant association with clinical stress levels (F = 1.78, p = 0.025), implying that higher daily screen time may be linked to increased stress during clinical training. These results highlight the potential impact of excessive daily smartphone usage on stress levels, warranting further investigation into its implications for nursing students' well-being.

Table 3: Relationships Stress Level with Socio-Demographic (N=291)

Demographic characteristics	Mean (SD)	df	Mean Square	F	p-value
Phone Usage (hours/weeks)					0.381
	47.10 (40.73)	56	0.34	1.06	

Daily Phone Usage (hours)					**0.025**
	6.80 (4.70)	19	0.55	1.78	

Notes: one-way ANOVA applied for all relationship; **significant value: <0.005**

DISCUSSION

This study aimed to examine the relationship between daily and weekly smartphone usage and clinical stress levels among nursing students. The findings indicate that weekly smartphone usage did not have a significant relationship with clinical stress levels ($p = 0.381$). However, daily smartphone usage showed a significant relationship with clinical stress levels ($p = 0.025$), suggesting that daily screen time has a more substantial impact on clinical stress than cumulative weekly usage. These results align with previous studies, such as research conducted in Iraq, which reported that 68.7% of students exhibited high smartphone addiction, while 63.9% experienced moderate stress levels, with a statistically significant positive relationship between smartphone addiction and perceived stress ($p < 0.01$) [7]. This supports the hypothesis that excessive smartphone use, particularly daily, can influence students' mental well-being, especially in high-stress environments such as clinical training.

The Impact of Smartphone Usage on Clinical Stress

Although the relationship between excessive smartphone uses and increased stress is well-documented, previous studies suggest that psychosocial factors may further influence this connection. For example, Parizad et al. [10] found that smartphone addiction was positively and significantly associated with loneliness and the fear of missing out (FOMO), whereas the relationship between smartphone addiction and academic performance was both negative and significant. This suggests that uncontrolled smartphone use not only contributes to higher stress levels but may also negatively impact academic achievements among nursing students. FOMO, a common factor linked to smartphone overuse, increases compulsive engagement with digital platforms, leading to heightened stress and dependency on digital validation.

The findings of this study are further supported by Kalal et al. [4], who reported that 38.1% of students exhibited moderate smartphone addiction. The study found that smartphone addiction was directly associated with the total number of hours spent on a phone daily ($p < 0.001$), checking the phone immediately after waking up ($p < 0.001$), and the frequency of smartphone pickups throughout the day ($p = 0.003$). Additionally, research in India highlighted sociodemographic factors influencing smartphone addiction, reporting that female students and students in romantic relationships had significantly higher phone usage [11]. These findings suggest that personal and social dynamics may amplify smartphone dependency, thereby increasing stress levels among nursing students.

Furthermore, studies indicate a strong correlation between moderate smartphone usage and severe academic stress, with 84.62% of students experiencing high levels of academic stress [12]. However, in clinical settings, stress is further intensified by the real-time consequences of smartphone misuse, such as risks to patient safety, disapproval from supervisors, and workflow disruptions [13]. Research explicitly focusing on clinical environments suggests that daily smartphone usage habits—not merely cumulative screen time—drive stress through behavioural addiction, cognitive overload, and fragmented attention [14].

The Impact of Smartphone Use on Sleep Quality and Mental Fatigue

Excessive smartphone use has also been linked to disrupted sleep patterns, which exacerbate clinical stress among nursing students. Shekhar Das (2023) found that individuals who frequently use smartphones before bedtime are more likely to experience poor sleep quality, leading to mental fatigue and difficulty coping with clinical stressors. Insufficient sleep impairs cognitive function, decision-making abilities, and emotional regulation, all of which are essential for effective clinical performance.

More critically, Fiorinelli et al. [3] found that smartphone-induced sleep disturbances not only compromise students' well-being but also have implications for patient safety and nurse-patient relationships. Sleep-deprived nursing students may exhibit reduced focus, increased irritability, and impaired critical thinking skills, all of which can jeopardize clinical performance and increase stress levels. In a high-pressure clinical setting, such cognitive impairments can lead to higher error rates, difficulty handling patient interactions, and increased anxiety over making mistakes, thereby intensifying overall stress levels.

Smartphone Use for Positive Clinical Purposes

Despite the negative implications of excessive smartphone use, not all phone usage leads to higher stress levels. Research suggests that structured and purposeful smartphone use can serve as a valuable resource during clinical training. Atan et al. [14] reported that 82.7% of nursing students used smartphones during clinical practice, primarily for searching drug information, accessing patient medical conditions, reviewing patient care guidelines, and communicating with colleagues. Similarly, Guti et al. [13] highlighted that smartphones can function as a support mechanism for making clinical decisions and serve as a personal resource in clinical settings. These findings indicate that academic and professional smartphone use may reduce stress by providing immediate access to necessary information, thereby improving students' confidence and competence in clinical practice.

However, the benefits of smartphone use depend on the balance between productivity and distraction. While academic use of smartphones may alleviate stress by supporting learning and clinical decision-making, excessive engagement with non-academic digital content (e.g., social media, gaming, entertainment apps) may exacerbate stress by increasing procrastination, cognitive overload, and sleep disturbances. Therefore, it is crucial to promote responsible smartphone usage that maximizes learning benefits while minimizing negative psychological effects.

Implications and Future Directions

This study emphasizes the importance of managing daily smartphone usage among nursing students to reduce clinical stress levels. While smartphones can facilitate academic learning and professional development, excessive and unstructured usage—especially before sleep or during clinical hours—may contribute to increased stress, cognitive fatigue, and reduced performance in clinical settings.

Future research should explore:

- The specific types of smartphone activities that contribute to stress versus those that alleviate stress. Differentiating between academic, social, and recreational phone use may provide targeted recommendations for healthier digital habits.
- The role of digital well-being interventions. Implementing screen time management strategies, mindfulness-based approaches, or institutional guidelines could help optimize smartphone use without negatively impacting students' stress levels.
- The long-term impact of smartphone addiction on nursing students' mental health and professional readiness. Further longitudinal studies could assess whether excessive smartphone use during clinical training predicts burnout or decreased job satisfaction upon entering the workforce.

Implications for Nursing Education and Practices

This study has significant implications for nursing education and practice, particularly in managing clinical stress and regulating smartphone use among nursing students. The findings indicate that daily smartphone use is significantly associated with clinical stress levels, whereas weekly usage does not show a notable impact. Therefore, nursing education institutions must enhance awareness of the effects of excessive phone use and introduce screen time management strategies during clinical training, including official guidelines on smartphone use in clinical settings. Additionally, hospitals and training centres should establish clear policies to ensure responsible smartphone use that does not compromise learning or patient safety. Supportive

interventions such as counselling programs, mentorship systems, and technology-integrated nursing training can help students manage stress more effectively. While uncontrolled phone usage can exacerbate stress, this study also highlights that using smartphones for academic and clinical purposes can support learning and enhance students' confidence in clinical decision-making. Thus, striking a balance in smartphone use should be emphasized through education on screen time management and awareness of the psychological effects of excessive phone use on clinical stress.

CONCLUSION

This study examined the relationship between daily and weekly smartphone usage and clinical stress levels among nursing students. The findings revealed that weekly smartphone usage had no significant association with clinical stress ($p = 0.381$), while daily usage showed a significant positive correlation ($p = 0.025$). This suggests that frequent daily phone use contributes more to stress than cumulative weekly usage. The results align with previous studies linking excessive smartphone use to cognitive distractions, sleep disturbances, and increased anxiety, which may heighten clinical stress. However, this study has limitations, including reliance on self-reported data, which may introduce response bias, and the inability to differentiate between types of smartphone use. The cross-sectional design also prevents establishing causality. Additionally, as the study was conducted in a single nursing institution, the findings may not be generalizable to all nursing students.

In conclusion, managing daily smartphone use is essential to reducing clinical stress among nursing students. Future research should explore the effects of different types of phone usage and develop interventions, such as screen time management and digital well-being programs, to support nursing students in achieving a healthier balance during clinical training.

Conflict Of Interest

The authors declare no conflict of interest related to this study.

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