

THE SILENT DISTRACTION: EVALUATING THE IMPACT OF SMARTPHONE DEPENDENCY ON CLINICAL OBSERVATION SKILLS AMONG UNDERGRADUATE NURSING STUDENTS

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Abstract

Background: Smartphone usage has become widespread among students, often leading to dependency that may affect essential academic and clinical competencies. In nursing education, clinical observation skills are vital for patient assessment and safety, but these may be compromised by excessive smartphone use.

Aim: This study aimed to evaluate the impact of smartphone dependency on clinical observation skills among undergraduate nursing students in Swat, Pakistan.

Methods: A cross-sectional survey was conducted among 260 undergraduate nursing students from various nursing colleges in Swat. The sample size was calculated using the Raosoft calculator based on a population of 800 students. A structured questionnaire was used to collect data, including demographic details, smartphone dependency (measured using a standardized dependency scale), and clinical observation skills (assessed using a validated checklist). Pearson correlation and ANOVA were used for statistical analysis.

Results: The majority of participants (50.8%) demonstrated moderate smartphone dependency, while 26.9% had high dependency. Only 18.1% exhibited high clinical observation skills, and 26.5% showed low observation skills. A statistically significant moderate negative correlation was found between smartphone dependency and clinical observation skills ($r = -0.437$, $p < 0.001$). ANOVA results revealed a significant difference in observation skills across dependency levels ($p < 0.001$), with high-dependency students scoring the lowest.

Conclusion: Smartphone dependency negatively impacts the clinical observation skills of nursing students. Strategies are needed to manage digital distractions and promote focused learning during clinical training.

INTRODUCTION

Smartphone dependency is a behavior that causes impairment due to an overuse of smartphones in a bid to discover emotions, entertain, obtain information,

or communicate to the extent that it interferes with and/or hinders normal functioning and thinking after one becomes highly dependent on the mobile

phones. In contrast, clinical observation skill is a very important nursing skill that entails mastering the art of observation and interpreting the changes noted and acting on them in a timely manner most often seen to be the earliest sign of clinical deterioration. Learners of undergraduate nursing classes, in the process of academic training and clinical practice, are becoming more susceptible to distraction caused by the popularization of smartphones (Patil, 2023). Such distractions can undermine their levels of attention, patient examination ability as well as their decision-making in the context of clinical setting. Its three variables are smartphone dependency and clinical observation whose combination defines this study into how technology could sneakily impair key professional competencies (Burdeu, Lowe, Rasmussen, & Considine, 2021).

Globally, smartphone usage has surged, especially among younger populations. The recent statistics confirm that more than 90 per cent of university students utilise smartphones every day, and about 4555 per cent of students experience smartphone addiction. In nursing education, clinical placement has been identified as the period when the nurses are likely to excessively use their smartphones not necessarily related to academics (such as social media or texting) (Osorio-Molina, et al., 2021). Reports by several countries including Pakistan note that besides affecting academic performance this emerging dependency can also influence situational awareness when treating patients. Nevertheless, solid evidence about the direct connection between smartphone dependence and decreased clinical observation in nursing education is scarce and requires special research (Almalki et al., 2024).

Nursing students are expected to become highly sensitive regarding situations, attention to details and real-time processing of patient information in the clinical learning environment. Such skills are also important in diagnosing patient deterioration early, assessing verbal and non-verbal communication, and deciding what to do or bring escalated care (Miller et al., 2021). The risk of the use of smartphones in particular in clinical time degrades the acquisition and practice of these competencies. Cognitive overload, divided attention, and slower responding time will impact patient safety and learning outcomes because

of the frequent use of smartphones by students (Fook, Narasuman, Abdul Aziz, & Tau Han, 2021).

Despite the potential value to learning of smartphones as delivering up-to-date information and guidance or evidence-based resources within a party, they can be a problem once used in an improper way in the clinical setting. Convenience of the digital access frequently becomes inferior to such compulsive behaviors as frequent checking of the notifications or social media (Zahid et al., 2023). This dualism in the use of smartphones poses confusion to the educators and the supervisors who have to strike a balance between the use of technology and professional discipline. In the absence of defined institutional policies and self-regulatory consciousness, there is a risk that students become susceptible to the formation of practices that erode their clinical competence (Bajwa et al., 2024).

The literature on the digital distraction in the educational context is rising significantly, yet the connection between the habits of the smartphone dependence and the practical aspect of acquiring clinical expertise is understudied. The current studies are devoted mostly to academic attainment, mental health, or social behavior instead of clinical competency (Wang & Ji, 2021). This is a worrying gap in nursing whereby quality care is dependent on patient interaction and critical observation. An increasingly large number of studies hint that even short interruptions can cause errors or neglectful observations in medical practice. There is hence great need to find out whether the use of personal technologies by student nurses is compromising their clinical competencies to perform adequately during actual clinical contexts (Subbiah, 2023).

Furthermore, the absence of formulated instructions or expert knowledge on how to handle a smartphone properly during clinical rotation also becomes a problem. Not all nursing students are trained on how to self-regulate devices and be able to differentiate between positive and negative ways to use smartphones in their work with patients (Zhang, 2023). Students in clinical postings may abuse their freedom and, without being aware of it, the use of smartphone dependency may impair communication with patients. This generates an implicit obstruction to learning, which attempts both confidence and

proficiency in undertaking critical clinical evaluations (Bora & zeytin, 2025).

Given these concerns, this study seeks to evaluate the association between smartphone dependency and clinical observation skills among undergraduate nursing students. By identifying patterns, associations, and influencing factors, this research aims to provide insight into how personal technology use may affect clinical learning and performance. The ultimate goal is to inform nursing educators, curriculum planners, and clinical supervisors about the need for structured digital professionalism training and policy development to safeguard learning and patient safety in the digital age.

Methodology

A cross-sectional descriptive research model was used to determine the effects of smartphone addiction on clinical observation ability of undergraduate nursing students. In Swat, Pakistan the research was conducted in the public and the private nursing colleges. The research was conducted in three months, in January-March 2025.

The sampling criterion varied the BSN students who were interested in being active participants in clinical placements during all academic years. The inclusion criteria were continuous participation of the BSN program, being a part of the clinical rotation, and readiness to sign an informed consent. The exclusion criteria were students on leave, academically suspended, repeating a year, in post-RN programs and students who had prior clinical employment.

The estimated population across selected colleges was 800 students. The sample of 260 was obtained using the Raosoft calculator and a confidence level of 95 %, a margin of error of 5% and a response rate of 50 %. A stratified random sample was used in the process to have proportional representation among the years of academic study and institutions.

Data Collection Procedure

The Institutional Review Board (IRB) of Zalan college of Nursing & AHS Swat received ethical approval. The researchers performed the data collection with assistance of faculty focal persons at every college. Students were asked to complete the questionnaire during their leisure time or, after giving written informed consent, were given the questionnaire

(during their spare time). It was not compulsory, and the students received information concerning confidentiality and anonymity. Completed questionnaires were collected on the same day.

A sample of data was gathered using a structured self-administered questionnaire in three parts:

1. Demographical Information: Age, gender, year of study, daily usage of smartphones, screen time and clinical experience.
2. Smartphone Dependency Scale: Validated adaption of the existing tools that would provide an opportunity to measure behavioral and psychological indicators of smartphone dependency. Responses were scored on a 5-point Likert scale.
3. Clinical Observation Skills Checklist: It is a checklist created by a researcher to measure some important clinical skills (monitoring of patients, analysis of non-verbal signs, situational awareness). This checklist was validated by senior clinical nursing instructors.

A pilot study on 10 percent of the estimated sample size ($n = 26$) was done to verify transparency, practicability, and approximate time of completion of the instrument. Internal consistency was very high as the cronbach alpha of the smartphone dependency scale was 0.87.

Data Analysis Procedure

Data were entered into SPSS version 27. Demographic and main variable data were summarized according to descriptive statistics that included frequencies, percentages, means, and standard deviations. PEARSON correlation coefficient was utilized to examine the relationship between smartphone dependency and clinical observation scores and ANOVA used to compare the differences between the groups where p value was less than 0.05 as significant.

Results and Analysis

Demographic Characteristics of Participants

The majority of participants were aged between 21–23 years (50%) and predominantly male (72.3%). Most students were in their 3rd and 4th academic years, with nearly equal representation. A significant portion (36.9%) reported using smartphones for 6–8 hours daily. Notably, 13.5% of students used smartphones for more than 8 hours per day [Table 1].

Table 1: Demographic Characteristics of Participants

Variable	Category	Frequency (n)	Percentage (%)
Age Group (years)	18–20	78	30.0
	21–23	130	50.0
	24–26	52	20.0
Gender	Male	188	72.3
	Female	72	27.7
Academic Year	1st Year	56	21.5
	2nd Year	66	25.4
	3rd Year	70	26.9
	4th Year	68	26.2
Average Daily Smartphone Use	<3 hours	45	17.3
	3–5 hours	84	32.3
	6–8 hours	96	36.9
	>8 hours	35	13.5

Smartphone Dependency Score Distribution

Over half of the nursing students (50.8%) demonstrated moderate smartphone dependency, while 26.9% exhibited high dependency. Only 22.3% of participants had low levels of smartphone

dependency. The mean dependency score was 48.9 ± 11.7 , indicating an overall moderate usage pattern. These findings suggest a growing reliance on smartphones among the student population.

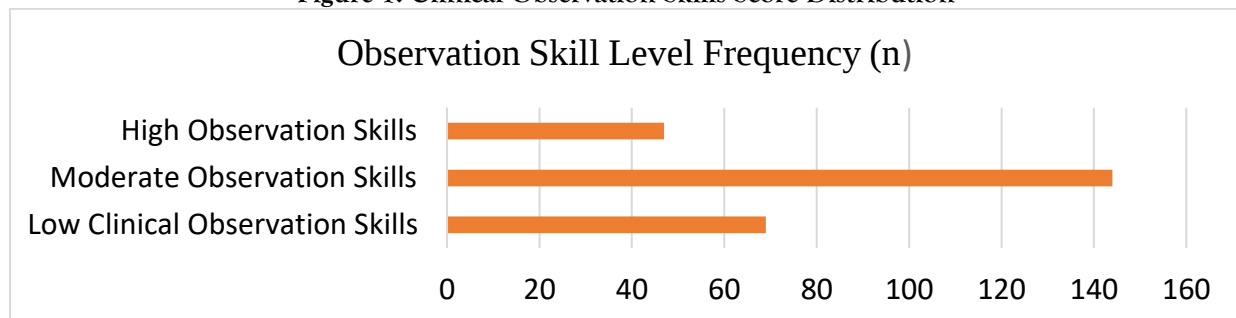
Table 2: Smartphone Dependency Score Distribution

Dependency Level	Score Range	Frequency (n)	Percentage (%)
Low Dependency	20–39	58	22.3
Moderate Dependency	40–59	132	50.8
High Dependency	60–80	70	26.9
Mean Smartphone Dependency Score: 48.9 ± 11.7			

The majority of students (55.4%) demonstrated moderate clinical observation skills, while 26.5% showed low observation skills. Only 18.1% of participants achieved high observation skill levels.

This indicates that a significant portion of students may need further support to enhance their clinical observation abilities [Figure 1].

Figure 1: Clinical Observation Skills Score Distribution



Correlation Between Smartphone Dependency and Clinical Observation Skills

A statistically significant moderate negative correlation ($r = -0.437$, $p < 0.001$) was found between smartphone dependency and clinical observation

skills. This indicates that as smartphone dependency increases, clinical observation skills tend to decrease among nursing students [Table 3].

Table 3: Correlation Between Smartphone Dependency and Clinical Observation Skills

Variable 1	Variable 2	Pearson Correlation (r)	p-value
Smartphone Dependency	Clinical Observation Skills	-0.437	< 0.001

Comparison of Clinical Observation Skills by Dependency Level

The results show a clear inverse relationship between smartphone dependency and clinical observation skills. Students with low dependency had the highest mean observation score (10.4 ± 2.2), while those with

high dependency scored the lowest (6.1 ± 2.9). The difference was statistically significant ($p < 0.001$), indicating that higher smartphone dependency is associated with poorer clinical observation performance.

5: Comparison of Clinical Observation Skills by Dependency Level (ANOVA)

Dependency Level	Mean Observation Score	SD	p-value
Low Dependency	10.4	2.2	
Moderate Dependency	8.3	2.7	
High Dependency	6.1	2.9	< 0.001

Discussion

The findings of the present study revealed a statistically significant moderate negative correlation between smartphone dependency and clinical observation skills among undergraduate nursing students in Swat. Students with high levels of smartphone dependency demonstrated lower clinical observation scores, indicating that increased reliance on smartphones may impair attentiveness and clinical awareness. This aligns with the growing body of literature suggesting that excessive smartphone use can negatively affect concentration, attention span, and observational acuity skills that are vital for nursing practice.

Compared to others, a survey done by Chen et al. (2021) on a sample of medical students found a similar negative association, in which a high score at smartphone addiction correlated with lower performance and negative impairments in clinical thinking. Similarly, the study by Ahmed et al. (2019) established that the capacity of the students who spent over five hours a day using their phones to memorize clinical information when communicating with patients was considerably low (Zhang, 2023). Findings of these studies confirm the findings that the ability of the students to process clinical cues effectively can

be limited by cognitive overload and distraction induced by smartphones (Bora & Kolemen, 2025).

By contrast, another study carried out in South Korea by Park and Jeong (2020) did not demonstrate a significant correlation between smartphone use and clinical performance. The authors contended that nursing students primarily used smartphones in treating their academics, like making use of online textbooks and clinical protocols (Samaranayake, 2025). This implies that the impact and intent of the smartphone use might mediate the effects it has on clinical abilities. In contrast, unlike that setting, the majority of the students in the current study claimed that they operate smartphones not just to solve school problems and complete their assignments (Jorge-Reyes, 2023).

The dependency level distribution in the present study indicated that the dependent level of smartphone ownership in the students was moderate in more than half of the population whereas around a quarter was high dependency. It is in line with the results of Alotaibi et al. (2020) who indicated that smartphone overuse is common in health sciences students, especially during clinical years when the stress level is high (Zhou et al., 2022). According to the authors, the usage of smartphones as a coping mechanism by students was likely to contribute to a

reduction in the situation awareness critically in real-time clinical environments (Mir, 2025).

In addition, the low proportion of students with high observation skills in the current study (18.1 %) is worrying in the sense that it is an indication of a deficit in critical clinical skills. This is associated with the findings of another study conducted by Alghamdi and Khamis (2018): the researchers also noticed that nursing students often have challenges in making clinical decisions and observing them, particularly when they are distracted by technological devices (Ali, Mousa, Atta, & Morsy, 2024). These results demonstrate a necessity to introduce compliance interventions to promote mindfulness and minimize distracting during a clinical practice (Jorge-Reyes, 2023).

The present evidence also makes one question the institutional policies regarding the use of smart phones in the clinical regions. In comparison to other researchers (e.g., Johal et al., 2022) who used the controlled setting of studying with the limited use of smartphones, the involved nursing colleges in the current study did not strictly comply with such directions (Zhou et al., 2022). This could have resulted in the students being more distractions during their practices in clinical settings. In such a way, it can be assumed that defining the boundaries of the usage and introducing digital professionalism in nursing colleges and curricula may lead to better clinical results (Zhang, 2023).

In conclusion, this study provides empirical evidence that smartphone dependency negatively affects clinical observation skills in undergraduate nursing students. While some previous studies have reported mixed findings, the consistency of results with other research from similar educational and clinical contexts strengthens the validity of the conclusions. The results highlight the need for nursing educators to develop strategies that balance the benefits of technology with the cultivation of critical clinical competencies. Future research could explore interventions such as digital detox programs or mindfulness training to enhance focus and patient safety.

Conclusion

This study concluded that there is a significant moderate negative correlation between smartphone

dependency and clinical observation skills among undergraduate nursing students. Students who exhibited higher levels of smartphone dependency demonstrated poorer clinical observation abilities, suggesting that excessive smartphone use may hinder critical competencies essential for safe and effective patient care. The majority of participants had moderate to high dependency on smartphones, and only a small proportion demonstrated high-level clinical observation skills. These findings underscore the importance of addressing technology-related distractions in nursing education, particularly during clinical training, where focused observation and attention are crucial.

Recommendations

Policy Development: Nursing institutions should implement clear guidelines or policies on smartphone usage during clinical hours to reduce unnecessary distractions and encourage professional behavior.

Educational Interventions: Incorporate modules or workshops in the nursing curriculum focusing on time management, digital well-being, and the impact of smartphone overuse on cognitive and clinical performance.

Mindfulness and Focus Training: Programs such as mindfulness-based stress reduction (MBSR) or digital detox sessions can be introduced to help students build attention and reduce digital dependency.

Monitoring and Support: Regular assessment of students' digital habits should be conducted, and students exhibiting signs of excessive smartphone use should be referred to academic or psychological support services.

Encouraging Academic Use: Promote the use of smartphones for educational and clinical reference purposes only, and discourage non-academic use during practical training.

Further Research: Future studies should explore longitudinal effects of smartphone dependency on other clinical competencies and examine intervention effectiveness across different academic levels and settings.

References

- Ali, H. F. M., Mousa, M. A. E. G., Atta, M. H. R., & Morsy, S. R. (2024). Exploring the association between internet addiction and time management among undergraduate nursing students. *BMC nursing*, 23(1), 632.
- Almalki, A. A., Al Ageel, K. S., Almutairi, F. M., Almubadel, A. M. A., Haddadi, M. A., Alqahtani, S. M., ... & Alqunayan, T. I. (2024). Exploring the Influence of Cognitive Load on Clinical Decision-Making in Dentistry: A Theoretical Approach. *Journal of International Crisis and Risk Communication Research*, 7(S6), 1973.
- Bajwa, M., Najeeb, F., Alnazzawi, H., Ayub, A., Bell, J. G., & Sadiq, F. (2024). A Scoping Review of Pakistani Healthcare Simulation: Insights for Lower-Middle-Income Countries. *Cureus*, 16(12).
- Bora, B. Y., & Kölemen, C. Ş. (2025). Integrating AI into instructional design: A case study on digital photography education in higher education. *Contemporary Educational Technology*, 17(3), ep583.
- Burdeu, G., Lowe, G., Rasmussen, B., & Considine, J. (2021). Clinical cues used by nurses to recognize changes in patients' clinical states: A systematic review. *Nursing & health sciences*, 23(1), 9-28.
- Fook, C. Y., Narasuman, S., Abdul Aziz, N., & Tau Han, C. (2021). Smartphone usage among university students. *Asian Journal of University Education (AJUE)*, 7(1), 282-291.
- Jorge-Reyes, J. (2023). Experiences of graduate nurse faculty regarding learning and educational technology when teaching online: A basic qualitative study (Doctoral dissertation, Capella University).
- Jorge-Reyes, J. (2023). Experiences of graduate nurse faculty regarding learning and educational technology when teaching online: A basic qualitative study (Doctoral dissertation, Capella University).
- Miller, D., Abed Rabho, L., Awondo, P., de Vries, M., Duque, M., Garvey, P., ... & Wang, X. (2021). *The global smartphone: Beyond a youth technology*. UCL Press.
- Mir, R. (2025). Nursing Educators' Perceptions of Using Virtual Simulated Games in Nursing Education (Doctoral dissertation, Walden University).
- Osorio-Molina, C., Martos-Cabrera, M. B., Membrive-Jiménez, M. J., Vargas-Roman, K., Suleiman-Martos, N., Ortega-Campos, E., & Gómez-Urquiza, J. L. (2021). Smartphone addiction, risk factors and its adverse effects in nursing students: A systematic review and meta-analysis. *Nurse education today*, 98, 104741.
- Patil, A. (2023). Psychology in the Age of Technology Dependence and the Mobile Dilemma.
- Samaranayake, R. (2025). Exploring the use of digital technology to support mathematics learning in pre-service teacher education (Doctoral dissertation, University of Prince Edward Island).
- Subbiah, V. (2023). The next generation of evidence-based medicine. *Nature medicine*, 29(1), 49-58.
- Wang, Y., & Ji, Y. (2021). How do they learn: types and characteristics of medical and healthcare student engagement in a simulation-based learning environment. *BMC medical education*, 21(1), 420.
- Zahid, M. A., Ali, P., Saddique, F., Khan, B., Rehman, M. A., & Kumar, A. (2023). Resilience unveiled: empowering Pakistani anesthetists in challenging low-resource environment. *Anaesthesia, Pain & Intensive Care*, 27(5), 592-598.
- Zhang, C. (2023). A literature study of medical simulations for non-technical skills training in emergency medicine: Twenty years of progress, an integrated research framework, and future research avenues. *International journal of environmental research and public health*, 20(5), 4487.
- Zhou, Z., Liu, H., Zhang, D., Wei, H., Zhang, M., & Huang, A. (2022). Mediating effects of academic self-efficacy and smartphone addiction on the relationship between professional attitude and academic burnout in nursing students: A cross-sectional study. *Nurse Education Today*, 116, 105471.

Zhou, Z., Liu, H., Zhang, D., Wei, H., Zhang, M., & Huang, A. (2022). Mediating effects of academic self-efficacy and smartphone addiction on the relationship between professional attitude and academic burnout in nursing students: A cross-sectional study. *Nurse Education Today*, 116, 105471

