



Effects of Excessive Mobile Phone Use on Physical and Mental Health: A Systematic Review

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ABSTRACT

Background: The smartphone has transitioned from a communication instrument into an inescapable mediator of daily life, and the consequent health burden of excessive use is now receiving serious scholarly and public health attention. Evidence on physical and psychological sequelae has accumulated rapidly but remains dispersed across heterogeneous study designs and populations.

Objective: To systematically review and synthesise peer-reviewed evidence on the physical and mental health effects of excessive mobile phone use across adolescent, student, and working-adult populations, with attention to vulnerable subgroups including nurses, and to appraise the available evidence on digital-wellness interventions. **Methods:** A PRISMA 2020-compliant systematic review was conducted across PubMed/MEDLINE, Scopus, CINAHL, and Google Scholar (January 2019–June 2026). Studies were eligible if they involved human participants with quantifiable outcomes relating to physical or mental health effects of excessive smartphone use or tested a smartphone-reduction intervention. Title/abstract and full-text screening were conducted independently. Quality was appraised using validated tools stratified by study design. **Results:** Thirty-four studies met inclusion criteria. Thematic synthesis identified four domains: (i) musculoskeletal and sensory consequences; (ii) sleep disruption; (iii) psychiatric and cognitive outcomes; and (iv) prevention and intervention evidence. Consistent associations were identified between excessive use and text neck syndrome, digital eye strain, sleep-onset delay, anxiety, depression, nomophobia, and attention decrements. Adolescents, university students, and shift-working nurses emerged as particularly vulnerable groups. Structured digital detox programmes and screen-time behavioural interventions demonstrated measurable benefit. **Conclusion:** Excessive smartphone use is associated with a broad and clinically meaningful spectrum of adverse health outcomes. Nurses and educators occupy a strategic position to lead screening, counselling, and the design of evidence-informed digital wellness programmes within healthcare and educational settings.

Keywords: excessive mobile phone use; smartphone addiction; nomophobia; text neck syndrome; digital eye strain; sleep disturbance; mental health; digital detox; nursing management; problematic smartphone use

INTRODUCTION

Smartphones have undergone a transformation of remarkable sociological velocity: within two decades, they have evolved from luxury communication devices into near-continuous cognitive and behavioural companions. Global daily smartphone use now averages several hours per person, and a substantial minority of users display patterns of compulsive checking, withdrawal-like distress on device separation, and functional impairment that mirror the phenomenology of behavioural addiction [1,2]. The constructs of “problematic smartphone use,” “smartphone addiction,” and “nomophobia” (no-mobile-phone phobia) have gained sufficient epidemiological footprint to be regarded as emerging public health phenomena rather than individual lifestyle quirks [3,4].

The health consequences of this transition span multiple organ systems and psychological domains. Sustained flexed-neck postures during device use generate cervical musculoskeletal strain; protracted near-screen fixation overburdens the ocular surface and its tear film; and evening device engagement delays sleep onset through both behavioural displacement and blue-light-mediated suppression of melatonin secretion [5,6,7]. Simultaneously, a rapidly expanding psychological literature links problematic smartphone use with depression, anxiety, loneliness, diminished life satisfaction, and measurable attentional deficits, particularly among adolescents, university students, and healthcare workers operating under shift-work

conditions [2,8,9]. Nurses occupy a doubly exposed position: as practitioners responsible for counselling patients on digital habits, and as individuals themselves navigating the occupational health risks of high-frequency device use in a technology-saturated working environment [10].

Despite this breadth of evidence, a systematically integrated synthesis one that traverses physical, psychological, and interventional domains while explicitly addressing nursing-relevant populations remains absent. This review addresses that gap. **Objectives:** This review aimed to: (i) characterise the physical health effects of excessive mobile phone use; (ii) synthesise evidence on psychiatric, cognitive, and behavioural consequences; (iii) evaluate the evidence base for digital detox and screen-reduction interventions; and (iv) identify implications for nursing education, clinical practice, and health promotion.

METHODOLOGY

This review was conducted according to PRISMA 2020 guidelines [11]. Electronic databases searched were: PubMed/MEDLINE, Scopus, CINAHL, and Google Scholar. The search period extended from January 2019 to June 2026, with key foundational literature from prior years incorporated where essential.

Search terms combined MeSH headings and free-text keywords using Boolean operators: (“smartphone” or “mobile phone” or “cell phone”) and (“excessive use” or “problematic use” or “addiction” or “nomophobia”) and (“physical health” or “mental health” or “musculoskeletal” or “neck pain” or “eye strain” or “sleep” or “anxiety” or “depression” or “cognitive” or “intervention” or “digital detox”). Searches were restricted to full-text, peer-reviewed English-language publications.

Eligibility Criteria

Inclusion Criteria: Studies involving human participants of any age; reporting quantifiable physical or mental health outcomes attributable to excessive or problematic smartphone use; or evaluating a digital-wellness intervention targeting screen time; published in peer-reviewed journals 2019–2026 and indexed in PubMed or Scopus. Systematic reviews, meta-analyses, RCTs, quasi-experimental studies, and high-quality cross-sectional studies were accepted.

Exclusion Criteria: Studies examining general internet addiction not isolable to smartphone use; editorials, commentaries, conference abstracts lacking full text; studies

focused exclusively on non-health outcomes (e.g., academic performance without a health variable); and studies with sample sizes below 50 for observational designs.

PRISMA Process

Three hundred and thirty-five records were identified across all databases. Following removal of 18 duplicates and 5 ineligible publication types, 312 records underwent title and abstract screening, from which 271 were excluded. Forty-one full-text articles were assessed for eligibility; 7 were excluded (insufficient comparative analysis, n = 3; limited intervention reporting, n = 2; secondary focus on smartphone use, n = 2). Thirty-four studies were included in the final qualitative synthesis (see Table 1).

Systematic reviews and meta-analyses were appraised with AMSTAR-2; RCTs with Cochrane RoB 2.0; observational and cross-sectional studies with the Newcastle-Ottawa Scale. Twenty-four studies were rated moderate-to-high quality; ten were rated moderate quality with limitations including cross-sectional designs, convenience sampling, and self-reported outcome measures.

Table 1. PRISMA 2020 Flow Summary

Stage	Records (n)	Notes
Records identified (all databases)	335	PubMed = 115, Scopus = 120, CINAHL = 60, Google Scholar = 40
Duplicates removed	18	
Ineligible publication types removed	5	Editorials, commentaries
Records screened (title/abstract)	312	
Records excluded at abstract screening	271	Not smartphone-specific, insufficient health outcome data
Full-text articles assessed	41	
Full-text articles excluded	7	Reasons: insufficient analysis (n=3), limited reporting (n=2), secondary focus (n=2)
Studies included in synthesis	34	Final qualitative synthesis

RESULTS

Thematic Synthesis

Thirty-four studies were synthesised across four thematic domains (see Tables 2 and 3).

Domain 1- Musculoskeletal and Sensory Consequences: Musculoskeletal injury represented the most consistently documented physical sequel. A 2025 systematic review and meta-analysis confirmed a significant association between smartphone overuse and neck pain (odds ratio reported across pooled cohorts), with cervical flexion postures generating biomechanical forces several-fold greater than neutral head posture a clinical syndrome increasingly designated “text neck” [12]. Thumb and wrist strain arising from repetitive fine-motor interaction was similarly documented across occupational and student cohorts [13]. In the sensory domain, the Tear Film and Ocular Surface Society’s 2023 lifestyle report identified digital

screen use as a principal environmental driver of digital eye strain and dry eye disease through reduced blink rate, incomplete blinks, and blue-light-related surface disruption [7]. Emerging data further indicate a dose-dependent association between prolonged personal listening device use often administered via smartphones—and high-frequency noise-induced hearing loss among medical students [14].

Domain 2 - Sleep Disruption: A mechanistically well-characterised pathway links evening smartphone use to delayed sleep onset and impaired memory consolidation. Blue-light emitted by device screens suppresses melatonin secretion through intrinsically photosensitive retinal ganglion cells, thereby disrupting circadian timing [15]. An experimental study in male adolescents and young adults confirmed that evening smartphone use not only delayed sleep onset but reduced declarative memory consolidation an effect with direct implications for academic and clinical learning [6]. Shift-

working nurses are disproportionately affected: disrupted chronobiology attributable to occupational scheduling is further compounded by nocturnal device use, potentiating the risk of sleep disorders, depressive symptomatology, and medical error [10].

Domain 3 -Psychiatric and Cognitive Outcomes: The psychiatric burden of excessive smartphone use is substantial and multi-dimensional. A 2025 systematic review and meta-analysis of nomophobia estimated a global prevalence of approximately 24–64% across university populations, with medical and nursing students among the most affected groups [4]. Meta-analytic evidence consistently associates problematic use with anxiety, depression, loneliness, and reduced life satisfaction [8,9]. For nurses, smartphone addiction has been empirically linked to occupational procrastination and diminished professional productivity, raising patient safety implications [10]. Cognitive costs are also well-documented: meta-analyses report modest but statistically significant decrements in sustained attention and, in some syntheses, academic performance, with social media displacement of study time emerging as a primary mediating mechanism [16,17]. The

mere presence of a smartphone on a desk regardless of whether it is in active use has been associated with attentional diversion among secondary school students [18].

Domain 4 - Digital Wellness Interventions: The intervention literature, while less voluminous than the observational evidence base, yields actionable findings. A systematic review of digital detox interventions concluded that structured screen-time reduction, when combined with behavioural goal-setting, produced measurable improvements in anxiety, sleep quality, and subjective well-being [19]. A 2025 RCT of smartphone usage planning demonstrated that pre-commitment reduction plans significantly lowered daily screen time compared with unstructured reduction attempts [20]. Among nursing students specifically, a structured digital detox programme implemented across a professional training cohort produced significant reductions in device dependency scores and concurrent improvements in sleep and academic engagement [21]. Paediatric and adolescent evidence from a 2024 Pediatrics review confirmed that digital detox even for short durations of one to two weeks produced improvements in attention, sleep, and emotional well-being [22].

Table 2. Thematic Synthesis: Domains, Outcomes, and Evidence Quality

Domain	Key Health Outcomes	Study Types	Evidence Quality
Musculoskeletal & Sensory Sleep Disruption	Text neck, thumb/wrist strain, digital eye strain, dry eye disease, noise-induced hearing loss	Systematic reviews, cross-sectional studies, meta-analyses	Moderate–High
	Delayed sleep onset, melatonin suppression, impaired memory consolidation	RCTs, experimental cohorts, systematic reviews	Moderate–High
Psychiatric & Cognitive	Anxiety, depression, nomophobia, loneliness, attention deficits, academic performance decrements	Meta-analyses, cross-sectional surveys, systematic reviews	Moderate–High
Digital Wellness Interventions	Improved sleep, reduced anxiety, reduced device dependency, improved academic engagement	RCTs, systematic reviews, quasi-experimental studies	Moderate

Table 3. Summary of Representative Included Studies

Authors & Year	Design	Population	Key Outcome	Country
Chen et al. (2025)	Systematic review and meta-analysis	Mixed adult and student samples	Significant association: smartphone overuse and neck pain	Multi-country
TFOS (2023)	Consensus lifestyle review	General adults and digital workers	Digital environment as principal driver of dry eye disease	International
Hohn et al. (2024)	Controlled experiment	Male adolescents and young adults	Evening smartphone use delays sleep onset; reduces memory consolidation	Germany/Austria
Al-Mamun et al. (2025)	Systematic review and meta-analysis	University and health profession students	Global nomophobia prevalence 24–64%; nursing/medical students highly affected	Multi-country
Yang et al. (2020)	Systematic review and meta-analysis	Adolescents and young adults	Problematic use associated with poor sleep, depression, anxiety	Multi-country
El-Sayed et al. (2024)	Cross-sectional study	Nurses	Smartphone addiction linked to occupational procrastination, reduced productivity	Egypt
Hsieh (2025)	Meta-analysis	University students	Smartphone use frequency negatively predicts academic performance	Multi-country
Le Roux et al. (2025)	Experimental study	Secondary school students	Smartphone presence on desk reduces cognitive performance	South Africa
Radtke et al. (2022) [	Systematic literature review	Mixed adults	Digital detox improves well-being and reduces anxiety	Multi-country

Brockmeier et al. (2025)	RCT	Adults	Pre-commitment planning significantly lowers daily smartphone use	Germany
Upendra & Kaur (2024)	Quasi-experimental	Nursing students	Structured digital detox improves sleep and academic engagement	India
Marciano et al. (2024)	Narrative review	Children and adolescents	Short-term detox improves attention, sleep, emotional well-being	Multi-country

DISCUSSION

The totality of evidence synthesised in this review establishes that excessive mobile phone use exerts a coherent, multi-system burden on both physical and mental health. Musculoskeletal consequences are mechanistically predictable given the biomechanical demands of sustained forward head posture; they are also among the most modifiable through postural education and device ergonomics. The ocular surface and sleep-circadian findings follow similarly clear pathophysiological pathways involving blink suppression and blue-light photoreception. That these physical sequelae co-occur with a psychiatric syndrome spanning anxiety, depression, and nomophobia reflects the extent to which contemporary smartphone use engages not merely peripheral organ systems but the central neurobiological substrates of reward, habit, and emotional regulation [1,2].

The particular vulnerability of nursing students and practising nurses to these harms deserves explicit clinical and institutional attention. Nurses who demonstrate smartphone-dependent behaviours show elevated procrastination, compromised professional productivity, and, by extension, heightened patient safety risk [10]. Nursing educators are uniquely positioned to address this through dual-purpose digital wellness curricula that simultaneously build clinical literacy about smartphone-related health risks and cultivate professional self-regulation skills among student cohorts [21].

The intervention evidence, though more limited in volume and methodological rigour, is meaningfully encouraging. Structured digital detox programmes particularly those combining behavioural reduction plans with psychoeducation demonstrate reproducible improvements in anxiety, sleep, and academic functioning across student and general adult populations [19,20,21]. The nursing-specific evidence from India further corroborates the global pattern, signalling that culturally adapted digital wellness programming is both feasible and effective within South Asian higher education contexts [21].

IMPLICATIONS

Nursing Education and Practice

These findings carry three tiers of implication. At the individual level, nurses and student nurses should be equipped to conduct self-assessment of problematic use patterns and to initiate structured screen-time reduction strategies. At the institutional

level, nursing schools and healthcare organisations should incorporate digital wellness education as a formal curriculum component both to protect student health and to build the professional competency required to screen and counsel patients. At the systems level, health policy frameworks should consider mandatory digital wellness standards within health professional education programmes, drawing on the emerging evidence base on structured detox and screen-time regulation interventions.

LIMITATIONS

Several limitations qualify the conclusions of this review. The predominance of cross-sectional studies in the evidence base precludes causal inference; bidirectional relationships between smartphone use and mental health states remain plausible. Self-reported screen time measures are subject to recall and social desirability biases. The heterogeneity of instruments used to operationalise “excessive use” and psychiatric outcomes limits cross-study comparability. Despite targeted efforts, high-quality peer-reviewed evidence from India and other lower-middle-income countries remains disproportionately sparse. Finally, the rapid pace of technological evolution and social media platform change means that findings drawn from studies conducted three to five years ago may not fully capture the contemporary digital ecology.

CONCLUSION

Excessive mobile phone use is associated with a clinically significant and mechanistically coherent spectrum of adverse physical and mental health outcomes spanning musculoskeletal strain, digital eye disease, sleep disruption, anxiety, depression, and nomophobia with adolescents, university students, and nurses in shift-based practice emerging as especially vulnerable populations. While smartphones deliver undeniable benefits in both personal and professional contexts, unregulated and compulsive use imposes a measurable health burden that demands structured institutional and individual responses. The evidence for digital detox programmes and structured screen-time behavioural interventions is growing and encouraging. Nurses and nurse educators stand at a critical interface: they are simultaneously advocates, practitioners, and potential patients within this evolving digital health landscape, and are well placed to lead the evidence-informed digital wellness initiatives that the current epidemiological trajectory demands.

REFERENCES

1. Zhu W, Zhang Y, Lan Y, Song X. Smartphone dependence and its influence on physical and mental health. *Front Psychiatry*. 2025;16:1281841.

2. Khan A, McLeod G, Hidajat T, Edwards EJ. Excessive smartphone use is associated with depression, anxiety, stress, and sleep quality of Australian adults. *Med Syst*. 2023;47:109.

3. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an

- updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71.
4. Al-Mamun F, Mamun MA, Kaggwa MM, Mubarak M, Hossain MS, ALmerab MM, et al. The prevalence of nomophobia: a systematic review and meta-analysis. *Psychiatry Res*. 2025;349:116521.
5. Piruta J, Kulak W. Physiotherapy in text neck syndrome: a scoping review of current evidence and future directions. *J Clin Med*. 2025;14(4):1386.
6. Hohn C, Hahn MA, Gruber G, Pletzer B, Cajochen C, Hoedlmoser K. Effects of evening smartphone use on sleep and declarative memory consolidation in male adolescents and young adults. *Brain Commun*. 2024;6(3):fcae173.
7. Wolffsohn JS, Arita R, Bhagat N, Craig JP, Dogru M, Downie LE, et al. TFOS Lifestyle: impact of the digital environment on the ocular surface. *Ocul Surf*. 2023;28:213–52.
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. Liu X, Huang L, Ward McIntosh CM, Liu J, McDonald CC. Association between smartphone attachment and mental health in adolescents. *Child Adolesc Psychiatr Nurs*. 2025;38(3):e70030.
10. El-Sayed AAI, Goda SFD, Elbialy GG. Threats of nursing productivity in the digital era: investigating the interplay between smartphones addiction and procrastination behavior among nurses. *BMC Nurs*. 2024;23:577.
11. Upendra S, Kaur J. Break from digital screen using digital detox program in nursing students. *Nurs Health Sci*. 2024;26(3):e13157.
12. Chen YJ, Hu CY, Wu WT, Lee RP, Peng CH, Yao TK, et al. Association of smartphone overuse and neck pain: systematic review and meta-analysis. *Postgrad Med J*. 2025;101(1197):620–6.
13. Das T, Chaliha A. Impacts of smartphone usage on the digital wellbeing of university students: a systematic review. *Int J Multidiscip Res*. 2025;7(4).
14. Gajendran A, Devi Rajendiran G, Prateep A, et al. Prevalence of high-frequency noise-induced hearing loss among medical students using personalized listening devices. *J Clin Med*. 2025;14(1):49.
15. Zhang Z, Zeng Y. Effect of college students' smartphone addiction on academic achievement: the mediating role of academic anxiety and moderating role of sense of academic control. *Psychol Res Behav Manag*. 2024;17:933–44.
16. Hsieh CY. The impact of smartphone usage frequency on university students' academic performance: meta-analysis of moderating factors. *Acta Psychol (Amst)*. 2025;259:105374.
17. Bottger T, Zierer K. To ban or not to ban? Rapid review on the impact of smartphone bans in schools on social well-being and academic performance. *Educ Sci*. 2024;14(8):906.
18. le Roux DB, Parry DA, Feldman J. Does the mere presence of smartphones impact cognition in the high school classroom? *Cyberpsychology (Brno)*. 2025;19(4):Article 1.
19. Radtke T, Apel T, Schenkel K, Keller J, von Lindern E. Digital detox: an effective solution in the smartphone era? A systematic literature review. *Mobile Media Commun*. 2022;10(2):190–215.
20. Brockmeier LC, Keller J, Dingler T, Paduszynska N, Luszczynska A, Radtke T. Planning a digital detox: findings from a randomized controlled trial to reduce smartphone usage time. *Comput Human Behav*. 2025;168:108624.
21. Upendra S, Kaur J. Break from digital screen using digital detox program in nursing students. *Nurs Health Sci*. 2024;26(3):e13157.



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