International Journal of Community Medicine and Public Health
Sangwan RK et al. Int J Community Med Public Health. 2026 Oct;13(10):6172-6192
https://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20263662

Review Article

Nomophobia in the digital age: prevalence, psychological and behavioral determinants and public health implications: a narrative review

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Received: 12 June 2026
Revised: 14 September 2026
Accepted: 16 September 2026

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ABSTRACT

Nomophobia, defined as the fear of being without access to a mobile phone. Despite not being formally classified in the in the DSM-5 or ICD-11, nomophobia has emerged as increasing research attention in recent era. This narrative review aimed to synthesis evidence on the prevalence, associated factors and underlying mechanisms of nomophobia. A comprehensive search of electronic databases, including PubMed, Google Scholar and PubMed Central, was conducted for studies published between 2008 and 2025. The final search was conducted in February 2026.Eligible observational study designs, including cohort, longitudinal, ecological, case-control and cross-sectional studies published in English. The search identified 324 records across databases, including 72 from PubMed, 54 from Google Scholar and 198 from PubMed Central. Following the screening and eligibility assessment, 36 studies were included in the final synthesis. Most studies reported moderate to severe levels of nomophobia, with particularly high prevalence among medical and university students. Consistent associations were observed between nomophobia and anxiety, depression, stress, fear of missing out (FoMO), poor sleep quality, excessive screen time and problematic social media use. Younger age, frequent smartphone checking, prolonged daily smartphone uses and digital dependency behaviors emerged as predictors of nomophobia. Nomophobia represents a significant and emerging public health issue with implications for mental health and daily functioning. Addressing this condition requires targeted interventions focusing on digital well-being, emotional regulation and responsible smartphone use, alongside the development of standardized measurement approaches for improved comparability across studies.

Keywords: Digital dependence, Behavioural addiction, Psychological distress

INTRODUCTION

The exponential growth of smartphone adoption has altered everyday life, making these devices essential for communication, education, entertainment and social interaction. The uninterrupted availability of internet access has progressively embedded smartphones as an integral component of daily life. However, this ubiquity has contributed to emerging patterns of problematic smartphone use and behavioural dependency, raising concerns regarding their detrimental psychological implications.[1–3]

Nomophobia (no mobile phone phobia), defined as stress or anxiety experienced when individuals are unable to access their mobile phones due to the unavailability of a network signal, low battery power, or disruption of internet connectivity.[4] It is characteristics such as fear of

losing communication, inability to access information, prolonged smartphone use, inability to refrain from smartphone use, persistent carrying a smartphone charger, diminished social interaction, compulsive calls or messages checking and escalating financial expenditure trends with the use of a smartphone. In contrast to traditional phobias, which are triggered by external stimuli or situations, nomophobia arises from the disruption of digital access that has become integral to everyday functioning.[5–7]

Problematic smartphone use is associated with adverse psychological outcomes, including anxiety, depression, social phobia, fear of missing out (FoMO), sleep disturbances, low self-esteem and reduced well-being.[8–11] These patterns often involve excessive screen time, poor self-regulation, constantly checking behaviours, emotional reliance on devices and difficulty limiting use despite negative consequences, resembles features of behavioral addiction.[2,12–14] Nomophobia disproportionately affects certain population groups, particularly adolescents and young adults, who are vulnerable due to early and prolonged exposure to digital environments, as well as heightened social connectivity needs.[6,7,15-17]

Despite its growing recognition, Nomophobia is not clinically classified in any psychiatric or medical diagnostic frameworks such as DSM (Diagnostical and Statistical Manual of Mental Disorders) or ICD (International Classification of Diseases).[7] Although previous reviews have examined prevalence and associated factors, most focus on isolated dimensions without integrating psychological, behavioral and demographic determinants within a unified conceptual framework.[18,19] Therefore, this narrative review aims to synthesize existing evidence on the prevalence, conceptual understanding and correlates of nomophobia while exploring its broader public health relevance.

METHODS

This narrative review synthesised literature on the prevalence, conceptual understanding and psychological, behavioural and demographic correlates of nomophobia. A systematic search of the literature was conducted in electronic databases, including PubMed, PubMed Central and Google Scholar. Studies published between January 2008 and February 2026 were considered. The final search was conducted in February 2026.

The key terms included: "nomophobia," "no mobile phone phobia," "smartphone addiction," "mobile phone dependence," and "behavioural addiction." Studies were identified in PubMed and the following search strategy was applied: ('nomophobia' OR 'no mobile phone phobia' OR ('smartphone addiction' OR 'mobile phone dependence') AND ('anxiety' OR 'depression' OR 'behavioural addiction'). Similar search strategies, with appropriate modifications to match the syntax and indexing conventions of each platform, were adapted for the other databases searched. Studies were included if they were peer-reviewed, published in English-language observational study designs including cohort, longitudinal, ecological, case-control and cross-sectional studies conducted among human participants. Research articles examining the prevalence, psychological correlates and behavioural determinants of nomophobia were included. The studies focusing on technical or non-psychological aspects of mobile phone use and COVID-19 specific studies were excluded.

Three independent reviewers (S, NC and SD) screened titles and abstracts using the Rayyan software for study selection. Full texts of eligible studies were assessed according to predefined inclusion and exclusion criteria and disagreements were resolved through consensus. Data was extracted from the included studies by three independent reviewers (S, NC and SD) and further refined following the recommended modifications from RKS. For each study, the following information was extracted, including the first author, year, study design, sample size, country, study population, instrument, prevalence of nomophobia, associated factors and key findings.

RESULTS

The initial search yielded a total of 324 records across databases, including 72 from PubMed, 54 from Google Scholar and 198 from PubMed Central. After removing 37 duplicates, 287 records were screened based on titles and abstracts. Subsequently, 36 studies met the inclusion criteria and were included in the final synthesis. The prevalence of nomophobia and its determinants are presented in Table 1.

Table 1: Prevalence of nomophobia and its determinants.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
Hamzaa et al	Egypt	Undergraduate nursing students from six Egyptian universities	Cross-sectional	1273	NMP-Q FoMO, PAS	Moderate nomophobia: 40.8%; Severe nomophobia: 23.3%; High psychological alienation: 46.5%	Fear of missing out (FoMO), psychological alienation, prolonged smartphone use (>10	Significant positive correlation between nomophobia and FoMO (r=.908, p<.001) and

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
							hr/day), checking phone before sleep and immediately after waking, self-perceived internet addiction, female gender, younger age	between nomophobia and psychological alienation. Psychological alienation mediated the relationship between FoMO and nomophobia. Students with higher smartphone dependency behaviours had significantly higher nomophobia scores.
Alwafi et al	Saudi Arabia and Jordan	General population	Cross-sectional	5191	ICD-10 criteria for dependence syndrome questionnaire for mobile phone dependence	Nomophobia prevalence: 51.2%	Younger age (<30 years), male gender, being divorced, student status, anxiety problems/treatment, longer duration of mobile phone use	About half of participants met ICD-10 criteria for mobile phone dependence. Withdrawal (60.1%) and impaired control (55.5%) were the most common dependence criteria. Participants with anxiety problems had 75% higher risk of mobile phone dependence. Younger adults and students were particularly vulnerable.
Mengi et al	India	MBBS students and interns at a medical college in Southern Haryana	Cross-sectional	600	NMP-Q; PSQI	Nomophobia prevalence: 40.1%; At risk: 32.7%	Female gender, early years of medical education (especially first-year students), prolonged	Nomophobia was significantly associated with poor academic performance, reduced concentration,

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
							mobile use (>2 hours/day), poor sleep quality, reduced academic concentration	decline in study habits/grades, late attendance in classes, and poor sleep quality. First-year students had the highest prevalence of nomophobia (59.9%).
Guveli et al	Turkiye	Adults aged 20 years and above living in Çiftlik district, Niğde province	Cross-sectional	376	NMP-Q, Scale DASS-42, UCLA-LS	Over 70% had mild, moderate, or severe nomophobia	Longer daily smartphone use, longer duration of smartphone ownership, higher number of smartphone users in family, social media account ownership, self-reported smartphone addiction, higher depression and stress scores	Nomophobia was significantly associated with higher depression, anxiety, and stress scores. Social media use and self-perceived smartphone addiction strongly correlated with nomophobia. Loneliness was not significantly associated with nomophobia in this population.
Kumar et al	Saudi Arabia	University students	Cross-sectional	723	NMP-Q, DASS-21	Participants exhibited moderately high nomophobia (mean NMP-Q score: 85.76 ± 26.67) and moderate psychological distress	High mobile phone use, nomophobia, female gender (for anxiety), lower academic level	Nomophobia was significantly associated with depression, anxiety, and stress. Mobile phone use strongly contributed to psychological distress. Female students reported higher anxiety levels, while lower academic

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
								levels were associated with greater distress. The strongest nomophobia dimensions linked with distress were "giving up convenience" and "not being able to access information."
Copaja-Corzo et al	Peru	medical students	Cross-sectional	3139	NMP-Q; HSCL-25	Moderate nomophobia: 25.7%; Severe nomophobia: 7.4%	Younger age, having mobile internet data plan, longer smartphone use (>4 hours/day), smartphone use for social networking, entertainment and education, anxiety symptoms, depressive symptoms	Approximately one-third of students had moderate-to-severe nomophobia. Nomophobia scores were significantly higher among younger students and those with anxiety/depressive symptoms. Greater daily smartphone use and social networking were strongly associated with higher nomophobia. Authors highlighted nomophobia as an emerging mental health concern among university students.
Aslani et al	Iran	Nursing students	Cross-sectional	407	NMP-Q	Moderate nomophobia: 58.0%; Severe nomophobia: 13.5%; Overall moderate-to-severe nomophobia: 72%	Educational level, lower GPA, higher smartphone checking frequency, longer daily internet use, non-academic smartphone	A high prevalence of nomophobia was observed among nursing students. Undergraduate students and students with lower GPA

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
							use	had significantly higher nomophobia scores. Frequent smartphone checking emerged as a significant predictor of nomophobia. The study highlighted the negative implications of nomophobia on mental health, academic performance, and quality of life, recommending educational workshops and counseling interventions
Jamshidifar et al	Iran	Adolescent female high school students in northern Iran	Cross-sectional	588	NMP-Q; CPAS	Overall nomophobia prevalence: 98.6%; Mild: 30.6%; Moderate: 42.5%; Severe: 25.5%	Older adolescent age (16–17 years), higher educational grade, public school attendance, lower father's education, higher household income, mobile phone ownership/access, internet and social network access, longer daily mobile use, years of phone use, mobile phone dependence	Nomophobia prevalence was extremely high among adolescent female students. A significant positive relationship existed between nomophobia and mobile phone dependence. Students with severe nomophobia had substantially higher mobile phone dependence scores. The study emphasized the

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
								psychological and academic consequences of excessive smartphone use and recommended preventive education and mental health interventions for adolescents.
Mohapatra et al	India	Undergraduate dental students from Bhubaneswar, Odisha	Cross-sectional	302	Self-developed Nomophobia Questionnaire (19-item, 5-point Likert scale)	Prevalence of nomophobia: 32.1%; Students at risk of nomophobia: 61.9%	Male gender, internship status, prolonged mobile phone usage, fear of missing calls/messages, anxiety regarding personal data access, excessive daily smartphone use	The questionnaire showed good validity and reliability (Kappa=0.86; Cronbach's α=0.82). Nomophobia prevalence was highest among males and interns. Fear of missing communication and concerns about personal data were major contributors to nomophobia.
Balamurugan et al	India	Adolescents and adults (15–50 years) residing in semi-urban Chennai	Cross-sectional	220	TMD Brief	Prevalence of nomophobia/ mobile phone dependence: 68.6%	Middle socioeconomic class, male gender, excessive smartphone usage, gaming, social media use, prolonged daily mobile use	High prevalence of mobile phone dependence was observed. Participants commonly reported distress without phones, sleep disturbance, impaired relationships, and behavioural dependence linked to gaming and social media use.
Mohani et al	India	Undergraduate medical	Cross-section-	172	NMP-Q	Mild nomophobia:	Excessive smartphone	Moderate nomophobia

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
		students from Central India	al			17.4%; Moderate nomophobia: 61.6%; Severe nomophobia: 21%	use, frequent checking behaviour, dependence on digital communicatio n, prolonged screen exposure	was the most common category. Students frequently experienced anxiety and discomfort when separated from smartphones, affecting psychological well-being and academic functioning.
Hussein et al	Saudi Arabia	Medical students in Jeddah, Saudi Arabia	Cross-section al	157	NMP-Q, ISI	Moderate nomophobia was most prevalent; high prevalence of insomnia also reported	Excessive smartphone use, bedtime smartphone usage, sleep disturbances, prolonged screen time	A significant positive relationship was observed between nomophobia and insomnia. Students with higher nomophobia scores demonstrated poorer sleep quality and greater insomnia severity.
Sharma et al	India	Medical students	Cross-section al	200	NMP-Q, DASS	Moderate to severe nomophobia was highly prevalent among participants	Depression, anxiety, stress, excessive smartphone use, prolonged screen time	Nomophobia showed significant positive correlation with depression, anxiety, and stress. Students with higher nomophobia scores demonstrated poorer psychological well-being and emotional health. (PubMed)
Alkalash SH et al	Saudi Arabia	Medical undergraduat e students at Umm Al-Qura	Cross-section al	427	NMP-Q	Mild nomophobia: 17.8%; Moderate: 53.6%;	Excessive smartphone usage, prolonged internet use,	Nomophobia negatively affected academic performance

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
		University, Makkah				Severe: 24.8%	frequent checking behaviour, social media dependency	and concentration. Students with higher nomophobia reported poorer study habits, sleep disturbance, and reduced academic productivity.
Thomas et al	India	Undergraduate arts and science college students in Chengalpattu district, Tamil Nadu	Cross-sectional	207	NMP-Q	No nomophobia: 3.4%; Mild: 27.5%; Moderate: 59.4%; Severe: 9.7%	Female gender, daytime sleepiness, parental marital status	Female students demonstrated significantly higher nomophobic characteristics Nomophobia was associated with daytime sleepiness and negatively impacted students' emotional and social well-being. (PubMed)
Lin CY et al	Peru	Peruvian medical students	Longitudinal and prospective	3139	NMP-Q	High prevalence of nomophobia among medical students	Female gender, younger age, prolonged smartphone use, social networking addiction	Nomophobia was strongly associated with poor sleep quality, anxiety symptoms, and problematic smartphone use. Researchers highlighted nomophobia as a growing behavioural addiction among university students.
Baby N et al	India	Undergraduate medical students from Central India	Cross-sectional	250	NMP-Q, UCLA -LS, Rosenberg Self-Esteem Scale	Moderate and severe nomophobia were highly prevalent	Loneliness, low self-esteem, excessive smartphone dependence	Significant positive association was found between nomophobia and loneliness, while self-

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
								esteem showed an inverse relationship. Students with severe nomophobia demonstrated greater psychosocial vulnerability.
Ferreira IS et al	Spain	University students	Cross-sectional	1743	NMP-Q	Moderate nomophobia was most prevalent	Female gender, anxiety, stress, problematic smartphone use, social media overuse	Nomophobia was significantly associated with psychological distress and problematic mobile phone behaviours. Female students showed higher vulnerability to severe nomophobia.
Alhaj H et al	Turkey	University students	Cross-sectional	537	FoMO, NMP-Q, DASS-21	High prevalence of moderate-to-severe nomophobia	Fear of missing out (FoMO), depression, anxiety, stress, problematic smartphone use	FoMO significantly predicted nomophobia and psychological distress. Nomophobia mediated the relationship between FoMO and symptoms of depression, anxiety, and stress among university students.
AlMarzooqi et al	Saudi Arabia	ESports players in Saudi Arabia	Cross-sectional	893	NMP-Q, ISI, International Physical Activity Questionnaire	Moderate-to-severe nomophobia was highly prevalent among E Sports players	Excessive smartphone use, insomnia, prolonged gaming duration, sedentary lifestyle, psychological distress	Nomophobia was significantly associated with insomnia severity and lower physical activity levels. Participants with higher nomophobia scores demonstrated

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
								poorer sleep quality and greater psychological burden, suggesting a strong behavioural dependence or digital connectivity.
Hamzaa HG et al	Egypt	Undergraduate nursing students	Multisite descriptive correlational study	1,273	NMP-Q, FoMO	Moderate to severe nomophobia was highly prevalent among nursing students.	Fear of missing out (FoMO) and psychological alienation were significant predictors of nomophobia.	Nomophobia was positively associated with FoMO and psychological alienation. Psychological alienation significantly mediated the relationship between FoMO and nomophobia among nursing students.
George et al	India	Undergraduate medical students	Cross-sectional study	294	NMP-Q	99.6% (Mild: 25.5%, Moderate: 57.5%, Severe: 16.7%)	Gender, age, insomnia, year of study, and screen time not significant	High prevalence; no significant demographic association found
Chowdhury et al	Bangladesh	Medical & non-medical university students	Cross-sectional study	476	NMP-Q	Moderate: 46.8%, Severe: 25.7%	Female gender, long usage (>7 hrs), social media use, frequent checking, income associated Type of student, residence, marital status, academic year not associated	Moderate-to-severe nomophobia, behavioural patterns predictors of nomophobia
Arumuganathan et al	India	General adult population	Cross-sectional study	661	NMP-Q	49.3% above median cutoff,	Duration of smartphone use, younger	Younger age and longer daily use

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
						16.8% severe	age, occupation, single marital status associated Gender, income, education, domicile not associated	strong predictors of nomophobia.
Saleem et al	Pakistan	Undergraduate medical students	Cross-sectional study	618	NMP-Q	99.6% (Mild: 9.9%, Moderate: 51.5%, Severe: 38.2%)	Female gender, phone usage per day, daily routine disturbance, phantom vibrations, checking phone while in bed associated	High prevalence, females more affected; daily usage impacts routine
Banjade et al	Nepal	Healthcare workers	Cross-sectional study	519	NMP-Q	74.56% moderate, 16.18% severe	Younger age, female gender associated	Moderate-to-severe, younger age & females more vulnerable
Marthandappa et al	India	Undergraduate medical students	Cross-sectional study	419	NMP-Q	62.8%	Internet access, longer daily use, and higher app (>30) usage were significant determinants. No significant association with gender, age, or year of study.	Daily usage pattern key determinants of nomophobia
Mahajan et al	Nepal	College students	Cross-sectional study	231	NMP-Q	Mild: 32%, Moderate: 34.2%, Severe: 33.8%	Daily smartphone usage hours, frequency of checking notifications, TikTok use No socio-demographic associations	Daily usage duration and notification-checking frequency predicts nomophobia

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
Ferchichi et al	Tunisia	Nursing students	Cross-sectional study	265	NMP-Q	Mild: 15.8%, Moderate: 55.5%, Severe: 28.7%	Years of phone use, daily usage Not associated with gender or age	High comorbidity with anxiety No statistically significant association between nomophobia and GAD. Eye fatigue and neck pain, physical consequences of excessive smartphone use.
Sheikh et al	Saudi Arabia	General population	Cross-sectional study	1022	NMP-Q	96.7% (mild 23.6%, moderate 47.8%, severe 25.3%)	Longer daily phone use, depression, and IBS significantly associated with nomophobia. Age, sex, marital status, education, employment, and income not significantly associated	Moderate nomophobia. Daily phone use, depression, and IBS independent risk factors. Nomophobia strongly associated with insomnia.
Jamshidifar et al	Iran	Adolescent female students	Cross-sectional study	588	NMP-Q + Cell Phone Addiction Scale	98.6% (mild 30.6%, moderate 42.5%, severe 25.5%)	Age, school type, grade level, father's education, household income, social network and internet access, daily phone use, years of phone use significantly associated Not significant	Mobile phone dependence and higher grades strongly predicted the severity of nomophobia.

Continued.

Authors	Country	Population	Study design	Sample size	Instrument	Prevalence	Predictors	Key findings
							marital status, place of residence, mother's education, mental health history	
Gallè et al	Italy	Undergraduate and postgraduate university students	Cross-sectional study	1303	NMP-Q	34.8% medium/severe; over 80% had at least mild nomophobia	Diet and physical activity reduced nomophobia. Habitual alcohol consumption increased risk. Gender, BMI, smoking, and relationship status showed no significant association.	Majority of students mild nomophobia. Nomophobia positively associated with anxiety and depression. Healthy lifestyle behaviors protective while habitual alcohol use was a risk factor. No gender differences observed.

NMP-Q = Nomophobia Questionnaire; FoMO / FoMOS = Fear of Missing Out Scale; DASS / DASS-21 / DASS-42 = Depression Anxiety Stress Scale; UCLA-LS = UCLA Loneliness Scale; PSQI = Pittsburgh Sleep Quality Index; HSCL-25 = Hopkins Symptom Checklist-25; CPAS = Cell Phone Addiction Scale; TMD Brief = Test of Mobile Phone Dependence Brief; ISI = Insomnia Severity Index; ICD-10 – International Classification of Diseases, 10th Revision; GAD7 = Generalized Anxiety Disorder; GPA = Grade point average

Study characteristics

Table 1 summarises the characteristics of the selected studies. The included studies were conducted across India, Saudi Arabia, Iran, Egypt, Peru, Türkiye, Spain, Pakistan, Nepal, Bangladesh, Tunisia and Italy. Most studies used cross-sectional designs among undergraduate students, medical and nursing students, healthcare workers, adolescent and community populations. Sample sizes ranged from 157 to 5191 participants.

The nomophobia questionnaire (NMP-Q) was the most commonly used assessment tool, alongside instruments assessing anxiety, depression, sleep quality, FoMO, loneliness, psychological distress and smartphone dependence. Moderate to severe nomophobia was highly prevalent across studies. Common predictors included younger age, female gender, prolonged smartphone use, excessive social media engagement, poor sleep quality, anxiety, depression, stress, FoMO, loneliness and problematic smartphone behaviors. Nomophobia was consistently associated with adverse psychological, behavioural, academic and sleep-related outcomes.

Conceptual framework of nomophobia

Nomophobia develops through the interaction of technological exposure, psychological reinforcement and behavioural conditioning. Increased smartphone accessibility promotes frequent use and immediate gratification through communication and information access. Repeated reinforcement strengthens emotional dependence and anxiety during digital disconnection.[2,12] Psychological factors such as FoMO, loneliness and stress further reinforce excessive smartphone use.[2,3]

As this cycle progresses, behavioral consequences including excessive screen time, sleep disturbances and impaired concentration emerge.[8,15] Overall, nomophobia represents a multidimensional phenomenon shaped by

psychological vulnerabilities and digitally connected social environments as illustrated in Figure 1 (Pathways and Determinants in the Development of Nomophobia).[2,3]

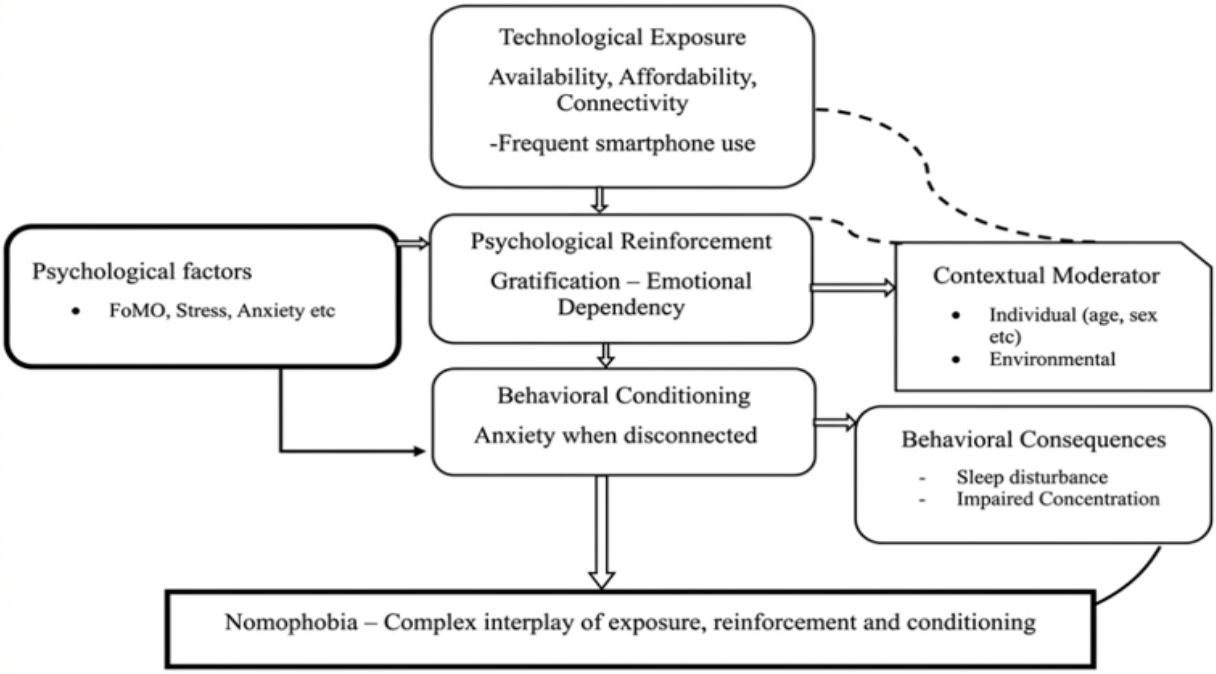

Figure 1: Pathways and determinants in the development of nomophobia.

Prevalence of nomophobia

The reviewed studies consistently demonstrated high prevalence of nomophobia across adolescents, university students, healthcare trainees and community populations. Moderate nomophobia was the most common category, although severe nomophobia was also frequently reported.

Among adolescent populations, Jamshidifar et al documented an overall prevalence of 98.6% among Iranian adolescent female students.[20] Similarly, Devi et al and George et al reported prevalence exceeding 99% among Indian undergraduate and medical students.[21,22] Comparable findings were observed among Pakistani medical students by Saleem et al.[23]

High levels of moderate-to-severe nomophobia were reported among healthcare students by Alkalash et al, Mohani et al, Aslani et al and Ferchichi et al across Saudi Arabia, India, Iran and Tunisia.[24–27] Thomas et al similarly identified moderate nomophobia as the predominant category among Indian undergraduate students.[28] Community-based studies also demonstrated substantial smartphone dependence. Alwafi et al identified mobile phone dependence among over half of participants from Saudi Arabia and Jordan.[29] Balamurugan et al, Arumuganathan et al and Sheikh et al reported a high prevalence.[30–32] Similar findings were observed among Nepalese healthcare workers by Banjade et al.[33]

Nomophobia and its determinants

Studies reported that nomophobia is associated with anxiety, emotional regulation, FoMO, loneliness, self-esteem, excessive screen time, digital engagement, sleep disturbance, academic dysfunction, psychological traits, personality factors, individual vulnerability, behavioural dependence, demographic and social determinants. Summary of key determinants and their roles presented in Table 2.

Table 2: Summary of key determinants and their roles.

Domains	Key Variables	Role in Nomophobia
Psychological	Anxiety, FoMO, loneliness, self-esteem	Increase emotional reliance on smartphones
Behavioural	Screen time, checking behaviour, social media use	Reinforce habitual engagement
Personality	Impulsivity, neuroticism, low self-control	Increase susceptibility to dependence
Demographic	Age, gender	Younger age = higher risk; gender mixed
Environmental	Social norms, internet access	Normalize constant connectivity

Demographic and social determinants

Younger age emerged as one of the strongest predictors of nomophobia. Alwafi et al, Copaja-Corzo et al, Arumuganathan et al and Banjade et al reported significantly higher nomophobia among adolescents and young adults.[29,30,33,34] Gender-related findings were inconsistent. Hamzaa et al, Thomas et al, Leon-Mejia et al and Saleem et al reported higher nomophobia among females, whereas other studies observed no significant gender differences.[18,23,28,35]

Mengi et al, Aslani et al and Jamshidifar et al reported higher prevalence among students.[20,25,36] Jamshidifar et al identified household income, father's education and internet access as significant contributors.[20] Balamurugan et al reported higher nomophobia among individuals from middle socioeconomic backgrounds.[31] Güveli et al found that having more smartphone users within the family significantly increased nomophobia risk. Similarly, social network access and internet availability were repeatedly linked with higher nomophobia severity among adolescents and university students.[37]

Anxiety and emotional regulation

Anxiety, depression, stress and emotional dysregulation emerged as major psychological correlates of nomophobia. Sharma et al reported that higher nomophobia scores among Indian medical students were significantly associated with increased levels of depression, anxiety and stress.[38] Similarly, Güveli et al, Leon-Mejia et al and Kumar et al observed identified significant associations between nomophobia, anxiety, stress and problematic smartphone use among Spanish university students.[18,37,39] Elhai et al further demonstrated that nomophobia mediated the relationship between FoMO and psychological distress.[40] Withdrawal symptoms, anxiety and emotional discomfort during smartphone separation were also reported by Mohani et al and Alwafi et al.[24,29]

Fear of missing out (FoMO)

FoMO emerged as one of the strongest predictors of nomophobia. Elhai et al and Hamzaa et al reported a strong positive correlation between FoMO and nomophobia among Egyptian nursing students, with psychological alienation acting as a mediating factor.[35,40] Mohapatra et al and Chowdhury et al additionally reported that fear of missing communication, excessive social media use and repetitive phone-checking behaviours significantly contributed to nomophobia severity.[41,42]

Loneliness and self-esteem

Loneliness, psychological alienation and low self-esteem were important psychosocial correlates of nomophobia. Setia et al and Hamzaa et al reported a positive association between loneliness and nomophobia and an inverse relationship with self-esteem among students.[35,43] However, Guveli et al found no significant association between loneliness and nomophobia among Turkish adults.[37]

Excessive screen time and digital engagement

Excessive smartphone use and prolonged screen exposure were among the most consistent behavioural predictors of nomophobia. Mengi et al, Copaja-Corzo et al and Chowdhury et al reported significantly higher nomophobia among individuals with prolonged daily smartphone use.[34,36,42]

Frequent smartphone checking behavior was also repeatedly associated with greater nomophobia severity. Aslani et al and Mahajan et al identified notification checking frequency and repetitive smartphone engagement as major determinants.[25] Hamzaa et al and Hussein et al further linked prolonged smartphone uses, bedtime phone checking with insomnia and severe nomophobia.[35,45]

Problematic digital engagement, including excessive social media use, gaming and prolonged internet use, was strongly associated with nomophobia. Mohani et al, Marthandappa et al, Hamzaa et al, Copaja-Corzo et al, Aslani et al, Mahajan et al and Chowdhury et al all identified social networking and compulsive digital engagement as significant predictors.[24,25,34,35,42,45]

Gaming and sedentary digital lifestyles also contributed substantially. Balamurugan et al and AlMarzooqi et al identified gaming and internet dependency behaviours as important correlates of nomophobia.[31,46]

Sleep disturbance and academic dysfunction

Sleep disturbances including insomnia, poor sleep quality, daytime sleepiness and bedtime smartphone uses were consistently associated with higher nomophobia levels. Mengi et al, Hussein et al, AlMarzooqi et al and Sheikh et al demonstrated significant associations between nomophobia and poor sleep quality among medical students.[32,36,44,46] Academic dysfunction including poor concentration, lower productivity, declining academic performance and daytime sleepiness was also commonly reported by Saleem et al, Thomas et al, Alkalash et al and Aslani et al.[23,25,26,28]

Psychological traits and personality-related factors

Psychological vulnerability factors including FoMO, anxiety, depression, stress, loneliness, low self-esteem and emotional instability showed strong associations with nomophobia. Hamzaa et al and Elhai et al identified FoMO and psychological alienation as major contributors to nomophobia and psychological distress.[35,40] Sharma et al, Kumar et al, Guveli et al and Leon-Mejia et al

consistently demonstrated significant associations between nomophobia, depression, anxiety and stress.[18,37–39] Setia et al additionally reported an inverse relationship between self-esteem and nomophobia.[43]

Individual vulnerability and behavioural dependence

Several studies highlighted behavioural dependency patterns associated with nomophobia. Jamshidifar et al and Alwafi et al reported significant associations between mobile phone dependence, withdrawal symptoms and impaired behavioural control.[20,29]

Behavioural indicators including phantom vibrations, compulsive connectivity, bedtime phone checking and disturbances in daily routine were identified by Saleem et al and Mohapatra et al.[23,41] Physical discomfort including eye strain, neck pain and sedentary behavior were additionally reported by Ferchichi et al and Gallè et al.[27,47]

DISCUSSION

The reviewed studies consistently demonstrated high prevalence of nomophobia across adolescents, university students and adults, although prevalence estimates varied across populations and settings. Extremely high prevalence was particularly reported among medical and university students. George et al, Devi et al and Saleem et al reported prevalence rates exceeding 99%, while Jamshidifar et al observed very high prevalence among adolescent female students.[20–23] In contrast, Mohapatra et al reported comparatively lower prevalence, suggesting that differences in sociocultural context, assessment tools and smartphone usage patterns may influence prevalence estimates.[41] Despite variability, moderate nomophobia was the most commonly reported category, consistent with findings from systematic reviews by Notara et al and Jahramiet al.[19,48]

A strong association between nomophobia and psychological distress was consistently observed. Studies by Sharma et al, Kumar et al, Guveli et al and Ferreira IS et al demonstrated significant positive relationships between nomophobia, anxiety, depression and stress. These findings support earlier evidence suggesting that smartphones function as tools for emotional reassurance, coping and social validation. Although smartphone use may provide temporary emotional relief, repeated reliance appears to reinforce emotional dysregulation and dependency behaviours.[37–39,49] Similar observations were reported by Elhai et al, Rozgonjuk and Elhaiet al who highlighted the bidirectional relationship between problematic smartphone uses and emotional distress.[2,8,40]

FoMO emerged as important psychological mechanism underlying nomophobia. Hamzaa et al and Alhaj H et al demonstrated that individuals with higher FoMO were more likely to exhibit severe nomophobia and problematic smartphone behaviours.[35,50] These findings align with earlier conceptual frameworks proposed by Przybylski et al and Elhai et al where repetitive smartphone checking and constant online connectivity were viewed as manifestations of social reassurance seeking.[43,51] Hamzaa et al additionally identified psychological alienation as a mediating factor, suggesting that emotional disconnection may intensify dependence on digital communication.[35]

The relationship between loneliness, self-esteem and nomophobia showed inconsistent findings. Baby N et al reported that loneliness and low self-esteem increased vulnerability to nomophobia, while Wang et al similarly linked poor self-esteem with problematic smartphone uses.[13,52] However, Güveli et al found no significant association between loneliness and nomophobia among Turkish adults.[37] Such inconsistencies may reflect differences in cultural expectations, coping styles and age-related smartphone use patterns.

Behavioural determinants, particularly excessive screen time and repetitive smartphone checking, emerged as some of the strongest predictors of nomophobia. Studies by Copaja-Corzo et al, Marthandappa et al, Aslani et al and Chowdhury et al consistently demonstrated that prolonged smartphone use increased nomophobia severity.[25,34,42,45] These findings parallel behavioural addiction frameworks proposed by Billieux et al and Montag et al where repetitive digital engagement becomes reinforced through notifications, social interaction and instant gratification mechanisms.[12]

Social media engagement was also strongly associated with nomophobia. Lin CY et al and Ferreira IS et al reported significant associations between social networking addiction and problematic smartphone dependence, while AlMarzooqi et al identified gaming and esports participation as additional behavioural contributors.[46,49,53] These findings support earlier literature suggesting that algorithm-driven digital platforms reinforce dependency through continuous social and reward-based reinforcement processes Busch and McCarthyet al.[3]

Sleep disturbance emerged as another important consequence of nomophobia. Studies by Hussein et al, Mengi et al and AlMarzooqi et al reported significant associations between nomophobia, insomnia and poor sleep quality.[36,4,46] Similar findings were previously reported by Demirci et al and Exelmans and Van den Bulcket al where nighttime smartphone uses and emotional stimulation disrupted sleep patterns and circadian rhythms.[54,55] This relationship may be bidirectional, as poor sleep can further contribute to emotional dysregulation and increased smartphone dependence.

The reviewed studies also highlighted the role of personality-related vulnerabilities in nomophobia susceptibility. Emotional instability, impulsivity,

psychological alienation and low self-esteem were repeatedly associated with problematic smartphone dependence. Findings from Hamzaa et al and Baby N et al suggest that psychosocial vulnerability and emotional insecurity may predispose individuals to excessive smartphone uses.[35,52] Similar observations were reported by Billieux et al and Rozgonjuk and Elhaiet al linking poor emotional regulation and impulsivity with behavioural addiction tendencies.[8,40,56]

Demographic findings consistently identified younger age as one of the strongest predictors of nomophobia. Studies by Alwafi et al, Copaja-Corzo et al and Arumuganathan et al reported significantly higher nomophobia among adolescents and young adults.[29,30,34] These findings align with previous literature suggesting that smartphones are deeply integrated into the educational, social and developmental experiences of younger populations.[57]

Gender-related findings, however, remained inconsistent, with some studies reporting higher nomophobia among females and others finding no significant differences. Environmental and social influences including peer pressure, family smartphone culture, academic demands and constant internet connectivity were also repeatedly identified as contributing factors reinforcing smartphone dependency and psychological distress during disconnection.

Strengths and limitations

This review synthesizes evidence from recent international studies and provides a comprehensive overview of the psychological, behavioural and socio-environmental determinants of nomophobia. Inclusion of current literature enhances the relevance of the findings.

However, most included studies were cross-sectional and relied on self-reported measures, increasing the risk of response and recall bias. Variability in assessment tools and lack of standardized diagnostic criteria further limit comparability across studies. In addition, many intervention recommendations are extrapolated from broader smartphone addiction literature rather than nomophobia-specific evidence. The predominance of university student samples from middle- and high-income countries also limits generalizability to other populations.

A limitation in nomophobia research is the lack of standardized measurement. Although the NMP-Q is the most widely used tool, variations in scoring systems and cut-off thresholds reduce comparability across studies. Differences in classification of mild, moderate and severe nomophobia contribute to inconsistent prevalence estimates.

Cultural differences in smartphone use patterns and social norms may further influence reporting and interpretation. In addition, nomophobia is not formally recognized as a clinical disorder despite its frequent association with behavioural addiction frameworks, resulting in variability in definitions and assessment approaches.

Implications for research and practice

Longitudinal and intervention-based studies are needed to clarify causal relationships and evaluate targeted strategies for nomophobia. Future research should focus on interventions such as cognitive behavioural therapy (CBT), digital detox programs and digital literacy interventions specifically designed for nomophobia. Greater emphasis should also be placed on culturally adaptable and cost-effective interventions, particularly in low- and middle-income settings.[58,59]

Public health implications and interventions

Nomophobia is an emerging public health concern associated with anxiety, sleep disturbances, impaired academic performance and reduced well-being, especially among adolescents and young adults. Potential interventions include CBT, structured digital detox approaches, screen-time regulation, sleep hygiene education and digital literacy programs. Educational institutions may also promote phone-free classrooms and awareness campaigns targeting students, parents and teachers. However, evidence for nomophobia-specific interventions remains limited and requires further evaluation, particularly in resource-constrained settings.

CONCLUSION

Nomophobia is a growing behavioural concern driven by psychological dependence on constant digital connectivity. It is influenced by psychological, behavioural, demographic, and socio-environmental factors and is associated with anxiety, sleep disturbances, reduced academic performance, and impaired well-being. Given its increasing prevalence, nomophobia should be recognized as an emerging public health issue. Strengthening awareness, early screening, and context-sensitive interventions may help reduce the long-term impact of excessive smartphone dependence, particularly among young populations and in resource-limited settings.

ACKNOWLEDGEMENTS

The authors acknowledge the Indian Council of Medical Research, New Delhi, for funding this study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Sangwan RK, Shivanee, Choudhary N, Dahiya S, Khetan M, Dahiya N, et al. Nomophobia in the digital age: prevalence, psychological and behavioral determinants and public health implications: a narrative review. Int J Community Med Public Health 2026;13:6172-92.