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Original Article

Beyond Connectivity: the Relationship Between Nomophobia, Loneliness, and Psychological Distress in Adolescents

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Abstract

Introduction: Nomophobia is an experience when someone is separated from a mobile phone, which is becoming increasingly common among adolescents and may be associated with heightened psychological distress and feelings of loneliness. Despite its growing relevance, research on its effects in school-aged populations remains limited, especially within the Indian context. The present study sought to explore the relationship between nomophobia, loneliness, and psychological distress among adolescents.

Methods: This cross-sectional study was carried out among 358 students aged 14–18 years using purposive sampling. Data were collected through validated and standardized tools and were analyzed using descriptive statistics, Pearson's correlation, and multiple regression to determine predictors of psychological distress.

Findings: Mild nomophobia was most prevalent (50.3%), followed by moderate (25.1%) and severe (16.2%) levels. Nomophobia was found to be positively correlated with every component (depression: $r=0.16$, $P<0.05$; anxiety: $r=0.14$, $P<0.05$; stress: $r=0.19$, $P<0.05$) of DASS-21. However, no significant association was found between nomophobia and loneliness.

Conclusion: Nomophobia appeared to be widespread among adolescents and showed a significant association with elevated emotional distress. While no relationship with loneliness emerged, the results suggest that greater reliance on mobile phones may heighten psychological vulnerability. Interventions promoting digital literacy and healthy media habits are warranted to mitigate nomophobia-related distress in youth.

Keywords: Nomophobia, Adolescent, Smartphone, Psychological Distress, Depression

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Introduction

The rapid development and global adoption of digital technologies have profoundly reshaped modern life, offering unprecedented opportunities for connectivity, communication, collaboration, and online learning. Smartphones, in particular, have become essential tools, especially among younger generations, deeply embedded in their everyday activities.[1] Despite these benefits, researchers have raised concerns that smartphone use may also encourage problematic behavior, including addiction and social withdrawal. This has given rise to the concept of *nomophobia* (no-mobile-phone-phobia), a condition marked by feelings of anxious, distress, physical unpleasantness and hardship, and even trembling due to non-access to mobile devices. Some researchers have gone so far as to suggest its classification as a new psychiatric disorder.[2]

Adolescents frequently use smartphones for studying, gaming, browsing, and social interaction.[3] Over time, this usage often escalates into excessive behaviors, such as habitual phone-checking, compulsive messaging, and anxiety when disconnected or restricted from mobile access.[4,5] A systematic review narrated the nomophobia prevalence ranged from 13% to 79%,[6] while in a meta-analysis study, it was estimated that 70.76% of individuals fall within the moderate to severe range.[7]

Another study conducted on 209 Indian university students revealed that 56.5% showed moderate levels of nomophobia, while 35.4% experienced severe levels.[8] In a sample of 625 Saudi Arabian university students, 63.2% had moderate and 22.1% severe nomophobia. A study conducted on 157 Indian physiotherapy students reported an NMP-Q mean score of 77.6, reflecting a moderate degree of nomophobia.[9] Similarly, 31.3% of high school students were identified as problematic smartphone users.

Given the central role of technology in shaping adolescent lifestyles, nomophobia may emerge as a serious psychological concern, one that compromises real-world

engagement and emotional well-being. Despite widespread smartphone use across the Indian subcontinent, most studies on nomophobia have focused on adult populations with a smaller sample size and inconsistent methodologies.[10,11] By focusing on school-aged youth in India, this research gives an in-depth understanding of the psychological implications of excessive smartphone use and provides evidence to guide preventive strategies and mental health interventions. So, the present study aimed to examine the associations between nomophobia, loneliness, and psychological distress in adolescents.

Methods

Study setting and participants

A prospective cross-sectional study was conducted in the selected private schools in the Delhi National Capital Region (NCR), targeting students aged 14 to 18 years and enrolled in grades 9 to 12. A total of 358 students were recruited using purposive sampling to select schools that met predefined criteria. Within each selected school, an attempt was made to survey all eligible students using a total enumeration approach to ensure comprehensive participation. The inclusion criteria were an age range of 14-18 years, capable of understanding English, and providing informed assent, along with virtual parental consent obtained either via telephone or through Google Forms. Students who were not willing to participate in this study were excluded. The objectives of this study were conveyed to participants, and confidentiality and anonymity were maintained.

Tools for data collection

Data were collected using a structured socio-demographic questionnaire and three standardized psychometric tools. The Nomophobia Questionnaire (NMP-Q) is a 5-point Likert scale, consisting of 20 items for assessing nomophobia with a score range from 20 to 140. The Cronbach's alpha is 0.95. Nomophobia severity was categorized as absent, mild, moderate, or severe based on the established cut-offs.[12,13] Nomophobia severity was categorized as absent, mild, moderate, or severe based on the established cut-offs. The 21-item DASS-21 is a 4-point Likert scale used to evaluate emotional distress. Reliability for depression, anxiety and stress subscales was 0.95, 0.89, and 0.94, respectively.[14] To assess perceived loneliness, the UCLA Loneliness Scale–Short Form (ULS-8) was employed. This scale consists of eight items on a four-point response scale. Students with higher scores reflect more loneliness. The ULS-8 showed good internal consistency ($\alpha = 0.815$).[15]

Statistical Analysis

The present study undertook data analysis and interpretation to systematically organize, condense, and extract meaningful findings from the collected information. Data were analyzed using SPSS software version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were employed to summarize socio-demographic characteristics, patterns of smartphone use, and participants' scores on the NMP-Q, DASS-21, and ULS-8. To determine the factors contributing to psychological distress, separate multiple linear regression analyses were performed for each outcome variable: Depression, anxiety, and stress. Predictor variables included age, gender, average daily smartphone use, time spent on social media, and total nomophobia scores. These models enabled the evaluation of the independent contribution of each variable after adjusting for the others. Regression coefficients (β), along with their 95% confidence intervals and corresponding p-values, were reported. The proportion of variance explained by each model was represented by the coefficient of determination (R^2). A $P \leq 0.05$ is considered significant.

Results

The total number of participants were 358 (mean = 16.06 years with SD = 1.01). Of the participants, 210 were male (58.7%) and 148 were female (41.3%). Most students were in the 10th (34.6%) and 11th (27.9%) grades. The mean age of receiving their first smartphone was 15.59 years (SD = 0.99). In terms of daily smartphone usage, the majority reported using smartphones between 1 and 5 hours per day (50.5%), and most of them reported the main cause of using smartphones was messaging apps (41.9%) (Table 1). Half of the students (50.3%) reported experiencing mild nomophobia, while 25.1% reported moderate levels and 16.2% reported severe levels. Only 8.4% reported an absence of nomophobia. The mean score of nomophobia was 58.41 (SD = 34.56), with subscale means ranging from 10.82 (inability to access information) to 18.60 (inability to communicate) (Table 2). Regarding Psychological Distress and Loneliness, the average scores of the subdomain of DASS-21 were 8.85 (SD = 5.76), 11.40 (SD = 8.19), and 10.68 (SD = 6.63), for depression, anxiety, and stress Scales, respectively. Loneliness, as measured by the ULS-8, had a mean of 20.86 (SD = 4.41) (Table 3).

Correlation Between Nomophobia, Distress, and Loneliness

Nomophobia was found to be positively correlated with every component (depression: $r = 0.16$, $P < 0.05$; anxiety: $r = 0.14$, $P < 0.05$; stress: $r = 0.19$, $P < 0.05$) of DASS-21. Among the specific dimensions of nomophobia, "inability to access information" was notably connected with higher levels of depression ($r = 0.27$, $P < 0.05$), anxiety ($r = 0.26$, $P < 0.05$), and stress ($r = 0.35$, $P < 0.05$). However, no meaningful relationship was observed between overall nomophobia and loneliness (Table 4). Average time spent on social networking sites was found to be associated with components of the DASS-21 scale. Additionally, among socio-demographic factors, gender was negatively associated with stress ($r = -0.12$, $P < 0.05$), suggesting that males reported slightly higher stress levels than females (Table 5).

Multiple Regression Analyses: Predictors of Psychological Distress

Regression analyses revealed that nomophobia significantly

Table 1. Socio-demographic Characteristics and Smartphone Usage Patterns of Participants (N = 358)

Variable	Categories	Frequency (%) *Mean (SD)
Gender	Male	210 (58.7)
	Female	148 (41.3)
Age (years)		*16.06 (1.01)
Academic Level	9th class	86 (24.0)
	10th class	124 (34.6)
	11th class	100 (27.9)
	12th class	48 (13.4)
Age of Receiving First Smartphone		*15.59 (0.99)
	14	56 (15.6)
	15	103 (28.8)
	16	137 (38.3)
	17	54 (15.1)
	18	8 (2.2)
Average Daily Smartphone Use	<30 minutes	59 (16.5)
	30 minutes – 1 hour	83 (23.2)
	1–2 hours	85 (23.7)
	2–5 hours	96 (26.8)
	5–10 hours	21 (5.9)
	>10 hours	14 (3.9)
Average Time Spent on Social Networks	<30 minutes	72 (20.1)
	30 minutes – 1 hour	115 (32.1)
	1–2 hours	84 (23.5)
	2–5 hours	73 (20.4)
	5–10 hours	13 (3.6)
	>10 hours	1 (0.3)
Primary Reason for Smartphone Use	Social networks	70 (19.6)
	Messaging apps (e.g., WhatsApp, Messenger)	150 (41.9)
	Calls and texts	103 (28.8)
	Academic purposes	14 (3.9)
	Reading news	21 (5.9)

predicted all three dimensions of psychological distress (Depression: $\beta = 0.273$, $P < 0.05$; anxiety: $\beta = 0.133$, $P < 0.05$; stress: $\beta = 0.11$, $P < 0.05$). As time spent on social media predicted depression, anxiety, and stress (Depression: $\beta = 0.03$, $P < 0.05$; anxiety: $\beta = 0.02$, $P < 0.05$; stress: $\beta = 0.15$, $P < 0.05$). Among socio-demographic variables, gender was found to be a significant predictor of stress ($\beta = -0.12$, $P < 0.05$), while average smartphone use was a marginal predictor of anxiety ($\beta = 0.01$, $P < 0.05$). The models explained 8.2%, 4.2%, and 10.2% of the variance in depression, anxiety, and stress, respectively (Table 6).

Discussion

The present study concluded that the majority of adolescents experienced mild levels of nomophobia (50.3%), and fewer reported moderate (25.1%) and severe levels (16.2%). These results suggest a milder nomophobia profile in school-aged adolescents compared to university students in other studies. For example, previous research reported moderate and severe nomophobia levels as high as 56.1% and 34.5%, respectively, among university students in India. [16,17.] In comparison to other studies from Saudi Arabia and Turkey, which reported severe nomophobia prevalence of 22.1% and 42.6%, respectively.[5,18] In some cases, severe nomophobia was found in up to 65% of university students. [19] These discrepancies likely reflect differences in sample age, educational level, cultural context, and smartphone usage habits, as well as methodological factors such as sample size and data collection tools.

Table 2. Descriptive Data for the Measured Variables (N = 358)

Nomophobia Levels	Frequency (%)
Absence (<20)	30 (8.4)
Mild (21–59)	180 (50.3)
Moderate (60–99)	90 (25.1)
Severe (>100)	58 (16.2)

Table 3. Descriptive Statistics of Nomophobia Subscales and Psychological Measures (DASS and ULS-8) (N = 358)

Variables	Mean	SD	Min	Max
Inability to access information	10.82	6.21	4	23
Denial of comfort	14.69	10.29	5	35
Inability to communicate	18.60	12.16	6	42
Loss of connectivity	14.29	9.30	5	28
Nomophobia (Total Score)	58.41	34.56	20	128
Depression (DASS)	8.85	5.76	0	24
Anxiety (DASS)	11.40	8.19	0	36
Stress (DASS)	10.68	6.63	0	28
ULS-8 (Loneliness)	20.86	4.41	12	32

In line with previous research,[20-23] this study identified younger age at first smartphone use as a significant predictor of higher nomophobia, particularly across dimensions such as inability to access information and loss of connectivity. This supports the idea that early smartphone exposure, particularly during critical developmental stages, may hinder the development of self-regulation skills and increase digital dependence. [19] Adolescents, compared to adults, may also be more vulnerable due to the symbolic status smartphones hold in peer relationships and identity formation.[17,23]

Nomophobia and psychological distress showed significant positive correlations. Specifically, the inability to access information dimension showed the strongest associations across all three distress domains. These findings reinforce the growing consensus that smartphone overdependence can exacerbate emotional dysregulation, consistent with prior studies, highlighting the mental health risks of digital overuse.[24-25] Contrary to the findings from some earlier research,[24-25] this study did not report a significant relationship between nomophobia and loneliness. This unexpected result may be due to measurement limitations, restricted variability in loneliness scores, or contextual differences in how adolescents perceive

Table 4. Correlation between Nomophobia, its Dimensions, and other Variables (N = 358)

Variables	Inability to Access information	Denial of Comfort	Inability to Communicate	Loss of Connectivity	Nomophobia (Total)
Gender	0.03	–0.01	0.04	0.04	0.03
Age (year)	–0.02	0.01	–0.21*	–0.14*	–0.31*
Age of Receiving First Smartphone	–0.32*	–0.22*	–0.08	–0.17*	–0.14*
Average Daily Smartphone Use	0.01	0.02	0.11	0.11*	0.07
Average Time spent on Social Networks	0.13	0.05	0.08	0.09	0.08
DASS – Depression	0.27*	0.23*	0.06	0.19*	0.16**
DASS – Anxiety	0.26*	–0.09	0.14*	–0.06	0.14*
DASS – Stress	0.35*	0.01	–0.02	0.12*	0.19*
ULS-8 (Loneliness)	–0.02	–0.02	–0.03	–0.03	–0.03

Note: *$P < 0.05$

Table 5. Correlation between Distress Factors and Socio-demographic Characteristics, Nomophobia, and Loneliness (N = 358)

Variables	Depression	Anxiety	Stress
Gender	0.04	0.13	–0.12*
Age (year)	–0.13	–0.17	–0.14
Age of Receiving First Smartphone	0.02	–0.03	–0.02
Average Daily Smartphone Use	–0.05	0.16*	–0.09
Average Time spent on Social Networks	0.19*	0.34*	0.21*
ULS-8 (Loneliness)	0.01	0.06	–0.01
Nomophobia (Total Score)	0.16*	0.24*	0.19*

Note: *$P < 0.05$

Table 6. Multiple Regression Results Predicting Psychological Distress (N = 358)

Variables	β (Depression)	95% CI	*P*-value	β (Anxiety)	95% CI	*P*-value	β (Stress)	95% CI	*P*-value
R^2	0.082			0.042			0.102		
Age	–0.08	–0.18; 0.01	0.10	–0.06	–0.16; 0.04	0.22	–0.05	–0.15; 0.05	0.29
Gender	–0.00	–0.09; 0.09	0.98	–0.02	–0.11; 0.07	0.68	–0.12*	–0.22; –0.02	0.02
Avg. Smartphone Use	–0.01	–0.09; 0.07	0.80	0.01*	0.00; 0.05	0.05	–0.02	–0.09; 0.06	0.73
Time spent on Social Media	0.03*	0.00; 0.06	0.04	0.02*	0.00; 0.05	0.05	0.15*	0.06; 0.24	0.001
Nomophobia (Total Score)	0.27*	0.15; 0.39	<.001	0.13*	0.03; 0.22	0.01	0.11*	0.02; 0.19	0.01

Note: *$P < 0.05$

social connection in the digital age. Future research should further examine the nuanced relationship between digital connectivity and perceived isolation.

Additionally, gender was not significantly associated with nomophobia, echoing some prior findings but differing from others. Notably, gender was a significant predictor only for stress levels in regression analysis, with males reporting slightly higher stress levels. This result warrants further exploration, as gender differences in stress coping and emotional expression may influence technology use patterns. The time that is usually spent on social media was identified as a significant predictor of the DASS-21 scale.

This supports the notion that increased social media engagement may contribute to, rather than alleviate, emotional distress. Adolescents may turn to social platforms as a coping mechanism; however, these platforms often encourage idealized self-presentation and upward social comparisons, which can worsen symptoms of depression and anxiety. [24] Emotional vulnerability, social insecurity, and limited offline support may drive some individuals to develop exaggerated or false online personas, which can offer temporary relief but contribute to distress when offline or disconnected. [25]

Although the regression models confirmed that nomophobia and social media use significantly predicted psychological distress, the explained variances were modest (R^2 ranging from 4.2% to 10.2%). These findings suggest that other contextual and psychological factors, such as sleep patterns, parental relationships, academic pressure, or personality traits, may play important roles in adolescent emotional health and should be explored further in future studies. Additionally, although the current models did not exhibit signs of statistical error, the potential for multicollinearity among behavioural predictors (e.g., nomophobia, smartphone use, and social media time) should be considered in future modelling efforts to isolate independent effects.

Overall, this study adds to the expanding evidence on addiction and how this addiction impacts adolescents' mental health. The findings emphasize the need for

early digital literacy awareness, healthy smartphone habits, and supportive planned interventions targeting emotional regulation and coping, especially among younger smartphone users. These are needed for public health initiatives so that the psychological consequences of excessive tech dependency can be addressed. This study presents several strengths. It employed standardized, validated psychometric tools to assess nomophobia and its association with mental health variables, and it utilised a relatively larger sample size compared to many prior studies.

However, certain limitations, such as cross-sectional and correlational methodology, limit the ability to draw causal conclusions, and dependence on self-report instruments may have introduced bias in participants' responses. Future research would benefit from employing longitudinal designs, probability-based sampling methods, and multicenter studies with nationally representative samples. Despite these limitations, the study provides important insights into an emerging public health issue associated with digital behaviour. In addition, the study contributes to the limited body of research on nomophobia in India and provides a basis for future studies in this field. In addition, the study contributes to the limited body of research on nomophobia in India and provides a basis for future studies in this field.

Conclusion

This study highlighted the widespread presence of mild to moderate levels of nomophobia among adolescents and its significant associations with psychological distress, particularly depression, anxiety, and stress. Early smartphone exposure and high engagement with social media platforms emerged as key behavioural risk factors. The findings of the present study reinforce concerns about digital dependency and its emotional consequences in youth. Given the modest predictive power of the current models, nomophobia should be viewed as one of several interacting factors contributing to adolescent mental health outcomes. These findings highlight the necessity of planned interventions and tech education on digital literacy, as well as the promotion of balanced smartphone use to support psychological well-being in adolescents.

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Authors' Contribution

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Competing Interests

The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Data Availability Statement

The data that support the findings of this study are available upon request from the corresponding author. The data are not publicly available because of privacy or ethical restrictions.

Ethical Approval

Ethical approval for this study was obtained from the Institutional Ethics Committee (Ethical code: AIIMSA2527/06.12.2024, RP-40/2025). All participants voluntarily signed an informed consent after fully understanding the purpose, methods, potential risks, and possible benefits of the study.

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