

Nomophobia as a predictor of psychological well-being among college students

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Abstract

Nomophobia, conceptualized as anxiety or fear experienced due to the unavailability of mobile phones and related communication services, has emerged as a behavioural health concern among young adults. College students represent an at-risk population due to academic demands, social networking dependence, and extensive smartphone usage patterns. The current study examined the prevalence and severity of nomophobia among college students in Patna district, Bihar, and explored its association with psychological well-being. A cross-sectional correlational design was adopted, and data were collected from 400 undergraduate and postgraduate students (Mage = 20.83 years, SD = 1.92) recruited from government and private colleges in Patna district using stratified purposive sampling. Participants completed the Nomophobia Questionnaire (NMP-Q) and Ryff's Psychological Well-being Scale (RPWB-42). Descriptive statistics revealed that 74.5% of students exhibited moderate to severe nomophobia. Female students reported significantly higher nomophobia compared to males. Pearson correlation indicated a significant negative relationship between nomophobia and psychological well-being ($r = -.49, p < .001$). Multiple regression analysis showed that nomophobia significantly predicted reduced psychological well-being even after controlling for gender, age, daily screen time, and academic stream ($\beta = -.41, p < .001$), accounting for 27% of the variance. The findings underscore nomophobia as a meaningful psychological risk factor with implications for student mental health, digital habits, and institutional well-being initiatives. Preventive interventions such as digital well-being literacy, counselling services, and structured smartphone-use training are recommended for universities and colleges.

Keywords: *Nomophobia, smartphone dependence, psychological well-being, college students, Bihar.*

Introduction

The smartphone has become one of the most influential technologies shaping contemporary social, educational, and psychological functioning. Over the past decade, mobile devices have evolved from mere communication tools to multi-functional ecosystems supporting information access, academic learning, entertainment, banking, navigation, and social interaction. In India, smartphone penetration has expanded rapidly, accompanied by a cultural shift toward continuous connectivity. While technology has improved access to information and digital inclusion, it has also contributed to behavioural and psychological vulnerabilities among youth, including sleep disruption, attention deficits, social withdrawal, and increased anxiety.

One of the most widely reported anxiety-related conditions emerging in this context is nomophobia, defined as the fear or discomfort experienced when individuals are unable to use their mobile phone, lose network connectivity, run out of battery, or cannot access online services (King Anna et al., 2013). Unlike generalized

anxiety, nomophobia is context-specific and driven by technology dependency and perceived threat of disconnection. Nomophobic responses include restlessness, irritability, panic-like symptoms, preoccupation with phone availability, and compulsive checking behaviour.

College students are particularly prone to nomophobia due to multiple reasons: extensive online academic reliance, social media engagement, peer validation behaviours, and fear of missing out (FoMO). The increasing substitution of face-to-face interaction with digital communication and the normalization of constant phone accessibility reinforce dependency patterns. As a result, nomophobia has increasingly been linked with depressive symptoms, reduced life satisfaction, stress, and impaired psychological well-being.

Psychological well-being refers to positive psychological functioning including autonomy, purpose in life, self-acceptance, environmental mastery, positive relationships, and personal growth (Ryff, 1989). These dimensions reflect adaptive functioning and serve as protective psychological resources. Technology-driven anxiety and excessive smartphone dependency may undermine these components by reducing self-regulation, increasing emotional instability, and weakening real-world relational bonds.

Despite rising smartphone dependency in India, empirical evidence on nomophobia remains limited in eastern regions such as Bihar. Most Indian studies focus on metropolitan settings or medical students. The socio-cultural dynamics of Bihar including rapid digitalization, educational competition, and transitional youth culture make it essential to document nomophobia trends among students in Patna district.

Therefore, the present study investigates nomophobia severity, gender differences, and its relationship with psychological well-being among college students in Patna district. This evidence may contribute to developing student mental health policies and digital well-being interventions at the institutional level.

Review of Literature

Nomophobia, commonly described as the “fear of being without a mobile phone,” has evolved from a colloquial label into a recognized psychological and behavioural concern in digital mental health research. While earlier definitions treated it as a situational phobia triggered by smartphone unavailability, recent studies increasingly conceptualize nomophobia as a technology-related anxiety condition, closely aligned with problematic smartphone use and behavioural addiction tendencies. Contemporary evidence indicates that nomophobia is not simply fear of phone loss; rather, it reflects a broader psychological dependency on continuous connectivity, social validation, access to information, and daily functional convenience.

Recent research has emphasized nomophobia as a multidimensional construct closely associated with fear of missing out (FoMO), generalized anxiety, stress symptoms, and emotional dysregulation. In a comprehensive review perspective, Abdoli et al., (2023) described nomophobia as linked with a range of psychological outcomes including depression, anxiety, and stress, and highlighted that nomophobia is frequently comorbid with poor mental and social health indicators. Furthermore, Notara et al., (2021), summarized across dozens of studies, reported wide prevalence variability and strong links with

psychological difficulties, strengthening the view that nomophobia represents an emerging digital-age vulnerability rather than a minor behavioural habit (as described in Abdoli et al., 2023).

In the post-pandemic context, smartphone dependency was further intensified due to online learning, remote communication, and social restrictions. As a consequence, recent research increasingly places nomophobia within the framework of digital anxiety disorders, where inability to access smartphone functions is interpreted as a loss of control, safety, and social belonging. These modern conceptual shifts highlight nomophobia as an important variable in current mental health research among young adults, particularly in college populations.

Dimensions and Measurement of Nomophobia

Measurement of nomophobia remains largely standardized through the Nomophobia Questionnaire (NMP-Q) developed by Yildirim and Correia (2015). The instrument continues to be the most widely used scale and has demonstrated strong psychometric stability across regions, languages, and cultural contexts. The NMP-Q consists of 20 items structured into four dimensions:

1. Not being able to communicate
2. Losing connectedness
3. Not being able to access information
4. Giving up convenience

Recent post-2020 research has increasingly focused on cross-cultural validity, factorial stability, and short-form adaptations of the NMP-Q. For example, validation studies have applied advanced methods such as confirmatory factor analysis (CFA), measurement invariance testing, network analysis, and item response theory (IRT). A recent IRT-based psychometric evaluation involving a large sample of adults reinforced the scale's robust measurement capacity and reliability (Jahrami et al., 2025). In addition, further contemporary validation research has confirmed the stability of the four-factor structure and reinforced the tool's reliability across population groups, supporting its continued suitability for student-focused mental health research (e.g., network structure and validity studies).

Moreover, the increasing popularity of brief screening tools has led to innovations such as short-form versions. Zhu et al. (2025) reported validation of an efficient short-form (NMPQ-SF), demonstrating the growing clinical and institutional interest in nomophobia screening for large-scale assessments. Such measurement developments suggest that nomophobia is now treated as a serious, measurable construct within mainstream psychology and digital health research.

Nomophobia Prevalence in Students

The prevalence of nomophobia among students has consistently been reported as moderate-to-high across countries, especially in university populations. Recent studies emphasize that prevalence rates vary widely based on setting, internet availability, academic load, and sociocultural dependency on smartphones. A significant trend in post-2020 research is that nomophobia prevalence increased further after the COVID-19 pandemic, likely due to increased reliance on smartphones for e-learning, communication, and entertainment.

Recent evidence consistently reports high prevalence among nursing, medical, and university students. For instance, Janatolmakan et al., (2024) reported high prevalence of nomophobia among nursing students and emphasized the potential mental and physical health implications of smartphone dependence. Similarly, Sheikh et al., (2024) identified extremely high nomophobia prevalence in university students, with the majority classified as moderate or severe nomophobia based on NMP-Q categorization. These results align with the pattern observed across student populations globally, reinforcing that excessive smartphone attachment has become normalized and widespread.

A synthesis of international evidence indicates substantial variation, but consistently confirms high prevalence. Studies and reviews included in Abdoli et al., (2023) point out that prevalence across young adults ranges significantly, but the overall evidence shows nomophobia is widespread and rising among students. Overall, the prevalence research highlights nomophobia as an increasingly common behavioural problem, warranting institutional mental health attention and preventive educational programs.

Nomophobia and Psychological Well-being

Recent research provides strong evidence that nomophobia is not only a behavioural dependency but also a significant mental health correlate. The relationship between nomophobia and psychological well-being has been increasingly explored post-2020, and the majority of evidence indicates that increased nomophobia is associated with lower psychological well-being, increased stress, and emotional difficulties. Abdoli et al. (2023) reported that higher nomophobia scores were associated with higher depression, anxiety, stress, and impaired social health outcomes. This supports the interpretation of nomophobia as a psychological risk factor rather than a simple modern lifestyle habit.

Emerging evidence also suggests that this relationship may be indirect and mediated through several behavioural and psychological mechanisms such as sleep disturbance, reduced mindfulness, emotional dysregulation, and problematic mobile phone use. A recent study explored the mediating role of problematic mobile phone use between nomophobia and psychological well-being and found nomophobia contributes significantly to reduced well-being through maladaptive phone usage patterns (Antonysamy, 2024). These findings highlight that psychological well-being is affected not only by the fear of disconnection but also by the resulting behavioural patterns (checking, overuse, dependence).

Furthermore, the post-pandemic lifestyle has created a social environment where students spend long hours online, which can weaken interpersonal relationships and reduce real-world coping strategies, potentially worsening well-being. Taken together, recent evidence supports that nomophobia has meaningful negative psychological consequences, making it important for mental health screening and digital wellness policies in educational institutions.

Gender Differences in Nomophobia

Gender differences remain one of the most debated aspects in nomophobia research. Post-2020 studies show inconsistent but meaningful trends depending on sample characteristics and cultural context. Several studies indicate females tend to report higher levels of nomophobia, often attributed to stronger relational needs, greater dependence on social connection maintenance, and higher engagement in communication-oriented smartphone usage (social networking, messaging). On the other hand, some findings indicate males may report higher nomophobia in contexts where gaming, online competition, and continuous digital engagement are dominant patterns.

Recent evidence indicates gender differences may be moderated by smartphone usage purpose, personality traits, and cultural norms. For instance, some university studies show no significant gender effects, suggesting that smartphone dependency is becoming universally prevalent across genders. However, studies also report that females often exhibit greater anxiety when disconnected from communication networks, consistent with the “connectedness” and “communication” dimensions of the NMP-Q.

Overall, the mixed findings suggest that gender is not a simple determinant but a context-dependent predictor influenced by communication culture, academic demands, and digital behaviour patterns. Therefore, examining gender differences remains particularly relevant in Indian contexts such as Bihar, where smartphone use patterns are rapidly changing and may be influenced by gender-based social expectations and online socialization practices.

Rationale of the Study

The current digital ecosystem encourages continuous engagement and makes “being offline” psychologically aversive for many students. Bihar, particularly Patna, is rapidly digitalizing. Yet there is limited structured research investigating the magnitude of nomophobia in this region and its psychological consequences. Understanding its relationship with psychological well-being can guide student counselling services and technology use policies.

Objectives

1. To determine the prevalence and severity of nomophobia among college students of Patna district.
2. To examine gender differences in nomophobia.
3. To evaluate the association between nomophobia and psychological well-being.

4. To test the predictive role of nomophobia on psychological well-being after controlling for demographic and smartphone-use variables.

Hypotheses

H1: A significant proportion of students will exhibit moderate to severe nomophobia.

H2: Female students will report higher nomophobia scores than male students.

H3: Nomophobia will be significantly negatively correlated with psychological well-being.

H4: Nomophobia will significantly predict psychological well-being after controlling for age, gender, daily screen time, and stream.

Methodology

Research Design

The present study adopted a quantitative cross-sectional correlational research design to examine the level of nomophobia and its relationship with psychological well-being among college students. A quantitative approach was considered appropriate as the study aimed to obtain measurable and statistically analysable data regarding smartphone-related anxiety and well-being indicators. The study was cross-sectional in nature, meaning that data were collected at a single point in time rather than across multiple time periods. This design enabled the researcher to capture the current prevalence and intensity of nomophobia among students and explore its association with psychological well-being without manipulating any variables. Additionally, a correlational framework was used because the primary objective was to assess the nature and direction of relationships between variables (nomophobia and psychological well-being) rather than establish causal inferences. Such a design is widely used in behavioural and psychological research when exploring technology-use behaviours and mental health outcomes in natural settings.

Sample Area

The study was conducted in Patna district, Bihar, which serves as a major educational and administrative hub in Eastern India. Patna district includes a variety of higher education institutions catering to students from both urban and semi-urban backgrounds. Data were collected from multiple colleges located across the district to ensure inclusion of students from diverse socio-academic environments. These institutions comprised government colleges, private colleges, and university-affiliated institutions, representing different educational structures and student demographics. Since smartphone usage patterns and psychological dependence on mobile devices may vary according to institutional culture, academic pressure, and student lifestyle, selecting colleges from different categories helped improve the contextual relevance and representativeness of the findings. The setting was considered suitable due to the increasing integration of digital technology in academics, communication, and student life within Patna, making it a relevant region for investigating the phenomenon of nomophobia.

Sample Size

The sample consisted of 400 college students ($N = 400$) drawn from undergraduate and postgraduate programs in Patna district. A sample size of 400 was considered adequate for the objectives of the study as it offers sufficient statistical power for conducting inferential analyses such as independent sample t-tests, correlation, and multiple regression. Moreover, a relatively large sample allowed for meaningful subgroup comparisons, particularly across gender categories and academic streams. Participants were within the age range of 18 to 25 years, which is a critical developmental stage characterized by high smartphone dependency and active engagement with social networking and online learning platforms. The selected sample size also strengthened the reliability and generalizability of findings within the Patna district context.

Sampling Technique

To ensure inclusion of participants across different socio-academic categories, the study used a stratified purposive sampling technique. Stratified sampling was employed to divide the target population into important subgroups (strata), while purposive selection ensured that the participants met predefined inclusion criteria relevant to the phenomenon under study. In this study, stratification was based on three primary characteristics: (i) gender (male/female), (ii) type of institution (government/private), and (iii) academic stream (Arts/Science/Commerce/Professional). This multi-strata strategy was applied because earlier research suggests that nomophobia levels may differ by gender, academic discipline, and academic environment. After forming the strata, students were purposively selected from each category to maintain a balanced representation across groups. This approach helped minimize sampling bias and ensured that nomophobia was examined across varied educational settings and student profiles. The sampling strategy strengthened the methodological rigor of the study by improving representation and allowing the researcher to conduct comparative analyses across strata.

Inclusion Criteria

- UG/PG students aged 18–25
- owning a smartphone ≥ 1 year
- daily smartphone use ≥ 2 hours
- enrolled in Patna district colleges

Exclusion Criteria

- severe diagnosed psychiatric illness (self-reported)
- incomplete questionnaire responses

Instruments

A) Socio-demographic and Smartphone Use Information Sheet

A structured Socio-demographic and Smartphone Use Information Sheet was developed by the researcher to obtain background information and smartphone-related behavioural patterns of the participants. This sheet included variables such as age, gender, academic stream (Arts/Science/Commerce/Professional), and year of study, which were considered relevant for profiling the sample and examining group differences in

nomophobia. In addition to demographic information, participants were asked to report their average daily screen time (in hours), as excessive usage duration has been consistently linked with smartphone dependency and psychological distress. The sheet further included items assessing internet availability (categorized as “always available” or “sometimes available”), as constant access to internet connectivity may reinforce continuous smartphone engagement. Lastly, participants were asked to identify their primary purpose of smartphone use, classified into categories such as social media use, academic use, gaming, and entertainment. This information was considered necessary to understand smartphone use patterns within the sample and support interpretation of nomophobia levels across varied usage contexts.

B) Nomophobia Questionnaire (NMP-Q)

Nomophobia was measured using the Nomophobia Questionnaire (NMP-Q) developed by Yildirim and Correia (2015). The NMP-Q is one of the most widely used standardized instruments to assess the severity of nomophobia in adolescents and young adults across diverse cultural settings. The tool consists of 20 items, each reflecting anxiety, discomfort, or fear related to the absence of mobile phone access or inability to use smartphone-related services. The items represent four underlying dimensions of nomophobia: (i) not being able to communicate, (ii) losing connectedness, (iii) not being able to access information, and (iv) giving up convenience. These dimensions collectively capture the psychological dependency on smartphones, including perceived threats of disconnection, inability to obtain information, and loss of comfort associated with smartphone use.

Participants responded to each item on a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The total score is computed by summing all responses, producing a score range from 20 to 140, where higher scores indicate greater levels of nomophobia. For interpretative clarity, the total scores were categorized as: 20 indicating no nomophobia, 21–59 indicating mild nomophobia, 60–99 indicating moderate nomophobia, and 100–140 indicating severe nomophobia. The NMP-Q demonstrates excellent psychometric properties, with reported internal consistency reliability of approximately Cronbach’s alpha (α) $\approx$.95, making it highly reliable for research on smartphone-related anxiety and behavioural dependence. In the present study, the NMP-Q was administered to assess the prevalence and severity of nomophobia among college students in Patna district.

C) Ryff’s Psychological Well-being Scale (RPWB-42)

Psychological well-being was assessed using Ryff’s Psychological Well-being Scale, developed by Carol D. Ryff (1989). The scale is grounded in a eudaimonic perspective of well-being and is widely recognized for measuring positive psychological functioning beyond mere happiness or life satisfaction. The present study employed the 42-item version (RPWB-42), which evaluates well-being across six core domains, with 7 items per domain. These domains include: Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self-Acceptance. Together, these dimensions offer a

comprehensive measure of how effectively individuals function psychologically and how meaningfully they engage with their lives.

Participants rated each statement on a 6-point Likert scale, typically ranging from 1 (strongly disagree) to 6 (strongly agree). The scale contains both positively worded and negatively worded items; therefore, reverse scoring was applied to specific items as per standardized scoring guidelines. The overall psychological well-being score was calculated by summing responses across items (after reverse coding), where higher total scores reflect higher levels of psychological well-being. Ryff's scale has demonstrated good reliability across populations, with reported Cronbach's alpha ranging between $\alpha \approx .70$ to $.90$ for the total scale and subscales, indicating acceptable to excellent internal consistency. In this study, the RPWB-42 was used to examine psychological well-being levels and explore its relationship with nomophobia among college students.

Data Collection Procedure

1. Permission obtained from college principals and department heads.
2. Participants briefed about purpose, confidentiality, voluntary participation.
3. Written informed consent obtained.
4. Tools administered in classroom settings or online forms with supervised instructions.
5. Average completion time: 20–25 minutes.

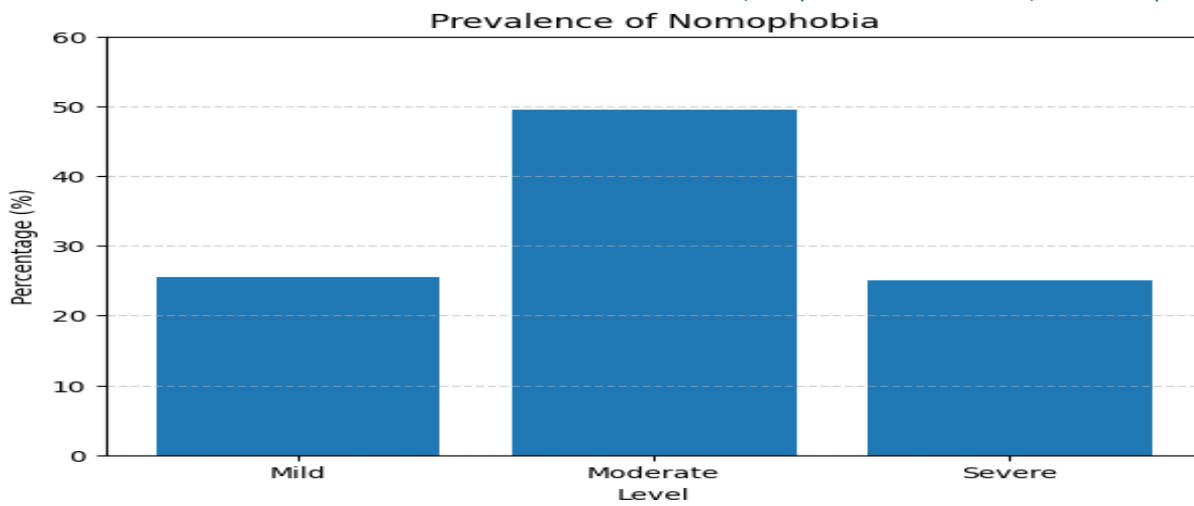
Ethical Considerations

- Participation voluntary
- confidentiality ensured
- anonymity maintained
- students could withdraw anytime
- ethical principles followed consistent with APA/ICMR research guidelines

Results

Prevalence of Nomophobia

Level	N	%
Mild	102	25.5
Moderate	198	49.5
Severe	100	25.0



74.5% of students fall in moderate-to-severe nomophobia categories.

Gender Differences

Gender	Mean (NMP-Q)	SD	t	p	Cohen's d
Male	80.10	17.32	3.12	.002	0.31
Female	85.56	16.91			

Females reported significantly higher nomophobia.

Correlation

Variables	r
Nomophobia – PWB	–0.49***

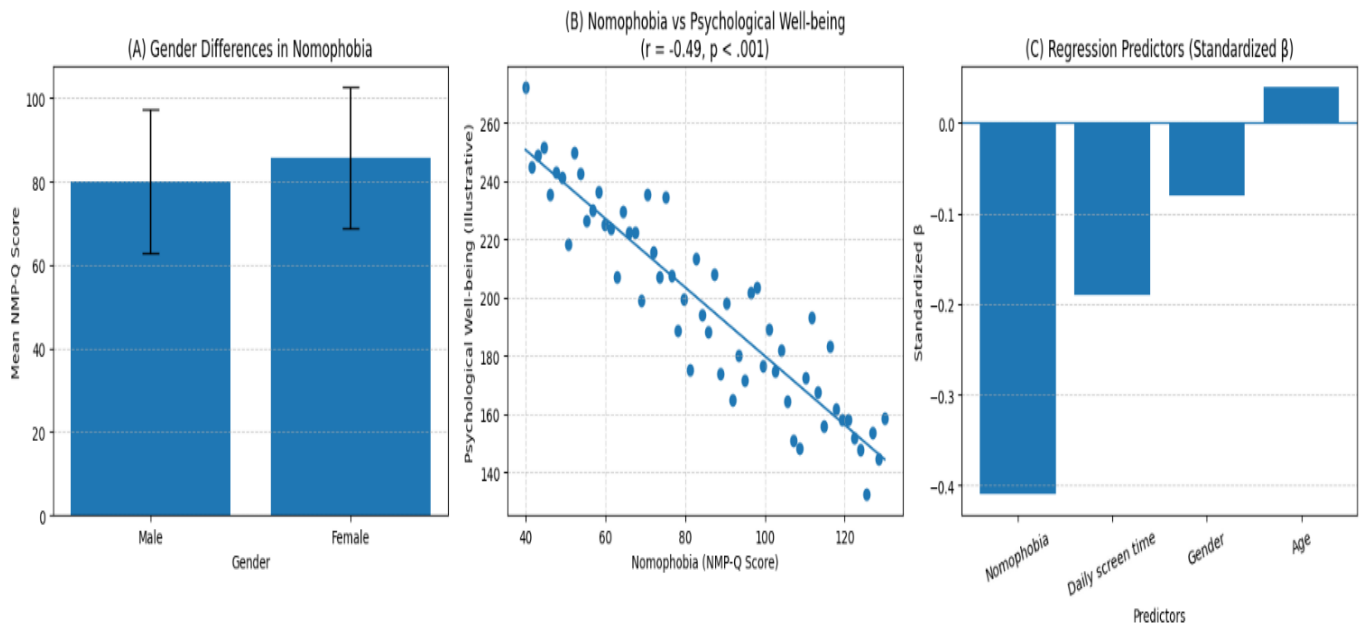
***p < .001

Regression Analysis

DV: Psychological well-being

Predictor	β	t	p
Nomophobia	–0.41	–9.12	<.001
Daily screen time	–0.19	–4.32	<.001
Gender	–0.08	–2.01	.045
Age	0.04	0.96	.336

Model: $R^2 = .27$, $F(4,395) = 36.5$, $p < .001$



Nomophobia emerged as the strongest predictor.

1) Gender Differences in Nomophobia (Mean $\pm$ SD)

- Bar chart showing Male vs Female mean NMP-Q
- Includes SD error bars
- Indicates females have higher nomophobia

2) Correlation Graph (Nomophobia vs Psychological Well-being)

- Scatter plot with regression trend line
- Shows negative relationship
- Labelled with $r = -0.49$, $p < .001$

Since only correlation coefficient is given (no raw data), the scatter is illustrative to visually represent the reported correlation.

3) Regression Beta Coefficients Plot

- Bar chart showing standardized β values
- Helps in identifying strongest predictor (Nomophobia $\beta = -0.41$)
- Includes reference line at $\beta = 0$

Discussion

The findings of the present study confirm that nomophobia is widely prevalent among college students in Patna district. Nearly three-fourths of the participants experienced moderate to severe nomophobia. This indicates that smartphone dependency has become normalized and psychologically embedded in students' daily functioning. The observed prevalence aligns with Indian and global research which reports high nomophobia among students. The digitalization of education, constant need for updates, and social media

involvement may reinforce fear of disconnection. The cultural context of Bihar, where smartphones serve as key channels for both academic and social mobility, may intensify attachment.

Gender differences in nomophobia were significant, with female students scoring higher. This may be attributed to greater communication reliance, relational maintenance behaviour, and higher social networking usage. Similar gender patterns are supported by multiple studies, although inconsistent findings elsewhere indicate gender effects could be context-specific. Most importantly, nomophobia showed a robust negative correlation with psychological well-being. Higher nomophobia predicted lower autonomy, environmental mastery, and positive relations - core dimensions of Ryff's model. Excessive smartphone attachment may weaken internal self-regulation, increase emotional volatility, and lower perceived control over one's life.

Regression results confirm nomophobia as a meaningful predictor even after controlling for screen time, age, and gender. This suggests that nomophobia is not merely the result of usage duration but reflects psychological dependency and anxiety-driven attachment to connectivity. These findings may be interpreted through behavioural addiction frameworks and cognitive-behavioural models of anxiety. The smartphone functions as a safety signal; its absence is perceived as threat, producing anxious anticipation and compulsive checking behaviours. Over time, these patterns could erode well-being and increase vulnerability to other mental health issues.

Implications

1. For colleges: establish digital well-being sessions and campus counselling.
2. For students: encourage mindful usage, digital detox practices.
3. For educators: reduce unnecessary online dependency for academic tasks.
4. For mental health professionals: include smartphone-anxiety screening in student counselling.

Limitations

The study has several limitations. Its findings are limited in generalizability because the sample was drawn only from the Patna district. The cross-sectional research design prevents the establishment of causal relationships between variables. Additionally, reliance on self-report measures may have introduced response biases. The study also did not examine important mediating factors such as sleep quality, fear of missing out (FoMO), and depression, which could influence the observed relationships.

Suggestions for Future Research

Future research should employ longitudinal designs to better understand causal relationships among variables. Studies may also evaluate the effectiveness of interventions such as digital detox training in reducing nomophobia and improving well-being. Comparing rural and urban populations in Bihar could provide insights into contextual differences in smartphone use and psychological outcomes. Additionally,

mediation analyses involving factors such as Fear of Missing Out (FoMO), anxiety, and sleep quality may help explain the mechanisms underlying the relationship between nomophobia and psychological well-being.

Conclusion

Nomophobia is significantly prevalent among college students in Patna district and is linked to reduced psychological well-being. Females show higher vulnerability. Nomophobia is a strong negative predictor of well-being even after controlling for demographic and usage variables. The study highlights the urgent need for digital well-being literacy, institutional counselling initiatives, and preventive strategies to enhance students' mental health.

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