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Association of nomophobia with physical activity among youth: An observational study

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Abstract
Background: Nomophobia, defined as the fear or anxiety of being without a mobile phone, is an emerging concern among youth and may influence lifestyle such as physical activity.
Objective: This study aimed to examine the association between nomophobia and physical activity levels among youth.
Methods: An observational study was conducted using convenience sampling. A total of 200 participants completed the Nomophobia Questionnaire (NMPQ) and the International Physical Activity Questionnaire (IPAQ). Descriptive statistics were calculated, and Pearson's correlation test was used to determine the strength and direction of the relationship between NMPQ and IPAQ scores.
Results: The analysis revealed a moderate negative correlation between NMPQ and IPAQ scores ($r = –0.4032$), which was statistically significant ($t = –6.19982$, $p < 0.001$). This indicates that as nomophobia severity increases, physical activity levels decrease. Descriptive findings showed that inactive participants had higher NMPQ scores than minimally active participants, particularly in mild and moderate nomophobia categories.
Conclusion: The results indicate an inverse association between nomophobia and physical activity among youth. Addressing mobile phone dependency through awareness and intervention programs may help encourage more active lifestyles. Future research using larger and more diverse samples is recommended to further explore this relationship.

Keywords: Nomophobia, physical activity, youth, NMPQ, IPAQ, observational study

Introduction

Smartphone is revolutionary invention that able to change the world. In the people or especially among youth mobile phones play great role to maintain social identity, to make socially more active and also it is a great source of information. [1]

About 83.72% of the world population over 6 million people use smart phone according to statista in xs2022. [2] According to Telecom Regulatory Authority of India the total population is 1339.2 million among them 1186.8 million subscribers use mobile phone. [3] Nowadays smartphone become undivided part of everyone's life, it is important because of many advantages of technology. With various advantages excessive use of smartphones causes many problems. It produces behavioral modifications. [4]

This technology significantly influenced our lives and social interactions. Younger people engage in different activities on smartphones like studying, entrainment, internet browsing, using social media and communication. [5] Students mental and physical health also affects by smartphone addiction. [6]

A systemic review of the literature between 2012 and 2022were include 8 studies found that smartphone addiction associate with following factors like physical health leading to musculoskeletal disorders neurological problems ,academic performance impulsivity self - esteem reduces ,social interactions ,solitude and suicidal behaviour .[7] A study done at tertiary care hospital in south India a cross sectional study was carried out among the 150 medical students 67[44.7%]were smartphone addicted PSQI revealed 77[51.3%]of poor sleep quality it is equivalent to half of the participants. [8]

The studies also show that excessive use of smartphone associates with poor eating habits ,increase risk of nutritional deficiencies ,and potential health issues .sedentary lifestyle resulting in reduced physical fitness and higher risk of obesity and cardiovascular diseases in future.[9]Smartphone significantly correlates with eating habits ,depression ,anxiety ,difficulty in falling asleep night ,eating fast food ,drinking carbonated soft drinks skipping breakfast and physical activity.[10] some studies shows that higher no. of students having internet addiction ,problematic smartphone use ,anxiety ,depression ,and psychological distress.[11]There were significant positive relationship among the emotion deregulation and problematic smartphone use ,analysis revealed that emotion deregulation as a no. of temporal mediators in the link between psychological distress and problematic smartphone use.[12]

Youngsters or high school students and middle age people having smartphone which are more prone to higher risk to mental health. They experience the suicidal thoughts and even attempt suicide. [13]

Studies also revealed that one in five smartphone users experiences musculoskeletal symptoms .A significant association was found between upper limb musculoskeletal disorders and smartphone addiction.[14] Shoulder pain ,neck pain ,back pain were found in smartphone users.[15] Smartphone use leads to increased muscle activity in upper trapezius, erector spinae an neck extensor muscles and also rise in head flexion angle, head tilt angle ,and forward head posture ,such as postural and muscular alterations causes the development of musculoskeletal disorders.[16] Musculoskeletal problems arise by using smartphone the popular term are neck syndrome and text thumb associates

with smartphone this problems.[1] Musculoskeletal problems arise by using smartphone are short term for starting but later causes long term disability.[17]

The term nomophobia no mobile phone phobia is the fear of being out of mobile contact it is first introduces by pilot study conducted by United Kingdom post office 2008. [18]

Nomophobia is connected with behavioral addiction of smart phone causes anxiety while disconnected from mobile phone or smartphone. [19] Some studies show that association between nomophobia and negative mental health. [20]

Changes in breathing pattern, trebling excessive sweating, restlessness, confusion, and rapid hear beat these are common observed symptoms in Nomophobia. [21] Nomophobia also affects on diets and eating hobbits. [22] Additionally Nomophobia may serve as an indicator or contributing factors to the underlying disorders. [21]

Addiction of smartphone affects physical activity it contributes to reduce physical activity like walking leading to prolong sedentary life style and behaviour which negatively impacts on day to day activities. [23] Studies also shown that youngsters prefer devoting their free time to mobile devices instead of participating in physical activities. [4]

There are studies done on impact of nomophobia various aspects like posture, physical activity, anxiety levels and sleep patterns. [24] Studies consistently shows that regular physical activities improve quality of life. [23] Physical activity is promising, cost effective and easily accessible treatment option for individuals having anxiety. [25]

Most of the studies shows that physical activity has been consistently associated with improvements in self-esteem, self-concept and symptoms of depression anxiety and stress. [26] The American heart association currently recommends>30mins of moderate physical activity most days of week for primary prevention of CVD and Stroke. [27]

Psychosocial factors may influence both mental and physiological pathways, however these
mechanism is not yet completely understood. [28] Studies have shown that engaging in physical activity on regular basis lowers the risk of morbidity and mortality from various chronic disease, while also improve physical fitness and overall functional ability. [29]

Nowadays, smartphone become a part of daily life in youngsters. Excessive use has led to the behavioral modifications causes the nomophobia -which is anxiety or fear of being without a mobile phone.

Among youth physical activity level decreases due to modern lifestyle which plays important role in physical and mental health. Prolonged screen time linked with sedentary lifestyle which contribute to different health problems like obesity. Cardiovascular problems and poor mental health. Due to increasing dependence on smartphone and reducing physical activity. It is important to investigate the relationship between physical activity and nomophobia.

This study will help to assessment of the nomophobia and its effects among the youth and study will helpful to understand behavioral related habits. It will spread awareness about smartphone side effects and also its effects on physical activity. It is also showing that how physical activity plays role in healthy life style maintained. positive effects of the physical activity and effects of low physical activity.

Materials and methodology

Study Population

This observational study was conducted on 200 college-going students of both genders aged 18–25 years, recruited through convenience sampling from various colleges in Kopargaon city. The study was carried out over a period of six months. Ethical clearance was obtained by institutional commitee prior to the commencement of the study, and all participants were informed about the study procedure in detail. Written informed consent was taken from each participant, and they were assured of the right to withdraw at any stage. Student were included if they were within the age group of 18–25 years, owned a smartphone, were willing to participate, and were able to understand and complete the questionnaires. Participants were excluded if they had any severe disability limiting physical activity, learning disability or cognitive impairment, or were unwilling to provide consent.

Outcome measures

For data collection, two standardized questionnaires were used. The Nomophobia Questionnaire (NMP-Q), developed by Yildirim and Correia (2015), is a 20-item scale designed to assess the fear of being without a mobile phone. Each item is rated on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), giving a total score between 20 and 140. Higher scores indicate greater severity of nomophobia, categorized as mild (20–59), moderate (60–99), and severe (100–140). The NMP-Q has excellent reliability and validity, with a Cronbach's alpha of 0.945. [30]

To assess physical activity, the International Physical Activity Questionnaire–Short Form (IPA-Q SF) was used, which was standardized by Craig *et al*. (2003). This 7-item questionnaire records the frequency and duration of vigorous, moderate, and walking activities undertaken during the last seven days, along with time spent sitting. Responses are converted into Metabolic Equivalent of Task (MET) minutes per week, and participants are classified into low (<600 MET-min/week), moderate (≥600 MET-min/week), or high (≥3000 MET-min/week) physical activity levels. The IPAQ-SF has shown good reliability and acceptable validity across different populations, making it suitable for large-scale research. [31]

Statistical analysis

The collected data were entered into Microsoft Excel for analysis. Descriptive statistics mean and standard deviation were calculated for Nomophobia Questionnaire (NMP-Q) and International Physical Activity Questionnaire (IPAQ) scores. Participants were categorized into levels of nomophobia (mild, moderate, severe) and physical activity inactive, minimally active. None of the participants fulfilled the criteria of HEPA active so it was excluded from study. The association between NMP-Q and IPAQ scores was assessed using Pearson's correlation coefficient (r) to determine the strength and direction of the relationship. Statistical significance was set at ($p < 0.001$).

Result

Table1: NMPQ score MEAN and SD

MEAN	SD
77.225	32.07895998

Table 1. Shows the mean and standard deviation of the nomophobia questionnaire (NMP-Q) Score. The mean

NMP-Q score was found to be 77.23 ± 32.08 which indicate the average level of the nomophobia among participants with a moderate variation.

Table 2: IPA-Q Score MEAN and SD.

MEAN	SD
705.975	429.5336718

Table 2. Shows the mean IPA-Q Score to be shows the mean IPA-Q score to be 705.98 ± 429.53, reflecting the average level of physical activity among the participants. The large standard deviation suggests a wide variability in physical activity levels within the sample.

Table 3: NMP-Q level MEAN and SD.

	MILD	MODERATE	SEVERE
MEAN	40.5313	79.3125	116.179
SD	13.8472	15.07415741	7.69677

Table 3. Detailed breakdown of nomophobia levels categorized as mild, moderate, and severe. The mean score for participants with mild nomophobia was 40.53 ± 13.85, for moderate nomophobia 79.31 ± 15.07, and for severe nomophobia 116.18 ± 7.70. These results clearly show a progressive increase in nomophobia severity with decreasing variability in the severe group.

Table 4. MEAN and SD of IPAQ level.

	INACTIVE	MINIMALLY ACTIVE
MEAN	380.693	65.25
SD	122.58	27.7711043

Table 4. classifies physical activity levels as inactive and minimally active. Participants who were inactive had an average IPAQ score of 380.69 ± 122.58, while those who were minimally active had a mean score of 65.25 ± 27.77. This data highlights a significant difference in physical activity levels among different groups.

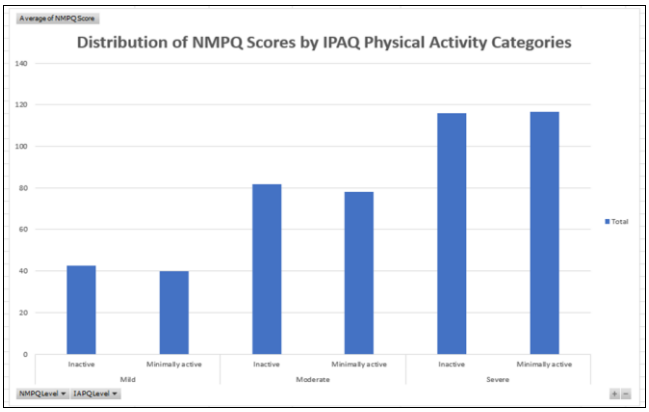

Fig 1: Distribution of NMP-Q scores by IPA-Q categories

Fig 1. Shows The composition of NMPQ levels across IPAQ physical activity categories indicates a trend where higher nomophobia severity is associated with lower physical activity. In mild and moderate nomophobia categories, inactive participants consistently showed higher NMPQ scores than minimally active participants. In the severe category, NMPQ scores remained high for both physical activity groups, suggesting that as nomophobia severity increases, physical activity level becomes uniformly low. This pattern supports the hypothesized negative association between nomophobia and physical activity among youth.

To examine the relationship between NMPQ AND IPAQ Pearson's correlation test was performed. The correlation coefficient (r-value) was found to be –0.4032, which indicates a moderate negative correlation between nomophobia and physical activity levels. This suggests that as nomophobia increases, the level of physical activity tends to decrease among the participants.

The t-value was calculated as –6.19982, and the p-value was 3.2×10^{-9}, which is highly significant ($p < 0.001$). Therefore, the result shows a statistically significant association between the two variables.

Discussion

The current research looked at the link between nomophobia and physical activity among young people between the ages of 18 and 25 who are enrolled in college. The results indicate a fair negative association (r = -0.40, p) between the two variables. In university students, Demircioğlu and Genç (2024) studied the impact of nomophobia on physical activity, anxiety, posture, and sleep quality. Their findings revealed that, in addition to other variables including sleep quality and anxiety, nomophobia had a detrimental impact on physical activity levels. This emphasizes how excessive smartphone usage might have an impact on students' mental and physical well-being. [24] In a similar vein, Bichu and Kumar (2021) [4] investigated the link between nomophobia and physical activity among physiotherapy students. They found a significant negative association between the two variables, indicating that higher rates of nomophobia are associated with lower levels of physical activity. [4] In another study, Torlak *et al*. (2022) examined this link among Turkish university students and discovered a modest but statistically significant negative correlation, with the connection being more pronounced among female students. Their data reinforce the data indicating that nomophobia is a growing behavioral problem that can have an impact on adolescent physical activity habits. [25]

Our research further revealed a mild inverse relationship between nomophobia and physical activity levels, in line with the results of these earlier investigations. However, there are some variations in technique. Our study focused solely on the correlation between nomophobia and physical activity, while Demircioğlu and Genç placed a greater emphasis on physical activity along with posture, anxiety, and sleep. [24]

Furthermore, the IPAQ-Short Form was used in our research to measure activity levels, while Bichu and Kumar used the IPAQ-Long Form (LF). [4] For extensive offline surveys, SF is more succinct, straightforward, and efficient. Our study included students from several colleges in Kopargaon, resulting in a more diverse sample, whereas their participants were only limited to physiotherapy students from one university.

Similarly, unlike the study by Torlak *et al*. Which was conducted online with students from a single university, [25] Our study collected data offline from participants across several colleges. These differences highlight the uniqueness of the current study design while still supporting the broader conclusion that nomophobia is negatively associated with physical activity in youth.

The results of the current study match prior research indicating a negative correlation between nomophobia and

physical exercise. This study's technique, offline data from several colleges in Kopargaon, guarantees a more varied representation, distinguishes it from earlier studies which frequently depended on online surveys within a single university. Moreover, the IPAQ-SF was used in this study, which provides physical activity level in less time-consuming shortened periods than other research using the IPAQ-LF. These methodological variations broaden the literature by offering a wider view on how nomophobia relates to physical activity across diverse student populations.

The data show that among young adults, excessive smartphone usage is significant as it can help to lower physical activity and have negative effects on health. Future research should seek for bigger and more varied samples while also standardizing assessment instruments to enable better comparison across studies. Practically, these findings can assist colleges and healthcare providers in creating focused initiatives that foster active, healthy lifestyles among students and encourage responsible smartphone use.

Conclusion

The present study demonstrated a significant moderate negative correlation between nomophobia and physical activity among youth ($r = –0.4032$, $p < 0.001$). This indicates that as nomophobia levels increase, physical activity levels tend to decrease. The findings suggest that higher dependence on mobile phones may contribute to reduced engagement in physical activity, highlighting the need for awareness and lifestyle modifications to promote healthier habits among young individuals.

Limitations

The study used a convenience sampling method, which may not represent the entire youth population and can limit the generalisability of results. Both nomophobia and physical activity were assessed using self-administered questionnaires, which are prone to recall bias and social desirability bias. Since data were collected at a single point in time, the study cannot establish cause-and-effect relationships between nomophobia and physical activity. The sample was restricted to college-going youth aged 18–25 years, which may not reflect patterns in other age groups or non-student populations. Variables such as academic stress, lifestyle habits, sleep quality, or mental health status were not controlled, which may have influenced both smartphones use and physical activity level.

Future Scope and Recommendations

Prospective or experimental techniques can be used in future studies to establish a causal link between nomophobia and physical exercise. Reaching several age groups, working professionals, or school adolescents might provide more thorough knowledge. Using accelerometers, pedometers, or digital tracking applications for physical activity, as well as smartphone tracking for nomophobia, might improve accuracy. Comparing urban versus rural teenagers, different professional paths (medical vs non-medical), or gender-based analysis might show differences. One more thorough picture could result from exploring the connection between nomophobia and anxiety, depression, sleep quality, and academic success. To reduce nomophobia and boost activity levels, studies could examine tactics like time management, digital detox, or physical activity promotion campaigns.

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