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# Impact of Nomophobia and Screen Time on Late Adolescents' Physical Activity

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**Abstract**

A fear of being without smartphone, Nomophobia has emerged as a serious digital concern in late adolescents that may influence their physical activity and screen use. This study aims to investigate the relationship between nomophobia, screen time, and physical activity among late adolescents in Lahore, Pakistan. A sample of $N = 195$ was recruited using convenience sampling from various public and private colleges/high schools in Lahore. The current study used Nomophobia Questionnaire (NMP-Q) (Yildirim & Correia, 2015), Questionnaire for Screen Time of Adolescents (QueST) (Knebel et al., 2020), and Physical Activity Questionnaire (PAQ-A) (Kowalski et al., 1997) to measure respective variables among late adolescents. The findings suggest that nomophobia and physical activity are negatively correlated, although the correlation is not statistically significant. Moreover, regression analysis showed that nomophobia and screen time negatively predict physical activity, but the effect size was non-significant. Male participants were found to be significantly more physically active than females. The findings concluded that the higher score of nomophobia might be associated with lower physical activity in youngsters, impacting their physical and mental health. The research suggested that parents, educational institutions, and technology experts should develop policies, interventions, and technologies that promote healthier digital habits and encourage an active lifestyle among youngsters.

**Keywords:** Late Adolescents, Nomophobia, Physical Activity, Screen Time

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## Introduction

Smartphone usage among adolescents is now common, and 95% of American Teens aged 13-17 have constant access to smartphones or their own devices for online-based activities (Anderson & Jiang, 2018). The COVID-19 pandemic further intensified digital dependency via lockdown and online study modes, contributing to a decline in physical activity, increased screen time, and mental health problems like Nomophobia (Tandon et al., 2021).

Nomophobia, a psychological term, means "fear of being out of mobile phone contact." This term is also commonly denoted as "Mobile-phone phobia" and was first used by the UK's post office in 2008 (Bhattacharya et al., 2019). Although nomophobia is not defined as a separate disorder in DSM-5, it is classified as a specific or situational phobia (Kanmani et al., 2017). Attachment theory suggests that individuals might seek connection through mobile devices because of insecure previous bonds and for a substitute emotional security (Bretherton, 1992; McLeod, 2023). Self-determination theory further explains that smartphones might satisfy an individual's autonomy, relatedness, and competence needs, which

makes disconnection anxiety-provoking (Deci & Ryan, 2000).

Screen time is described as the time an individual spends interacting with electronic screens such as smartphones, tablets, television, and gaming devices (Pandya & Lodha, 2021). Based on a survey, teenagers aged 13 to 18 years old spend nearly 7.5 hours per day on screens (Rideout et al., 2019). Building on Piaget's cognitive development framework, recent research indicates that adolescents develop social identities through peer interactions. In addition, the specific content they encounter online can influence how they engage with peers in both virtual and real-life settings (Aulbach et al., 2021).

According to Caspersen et al. (1985), the word "Physical Activity" is defined as an energy expenditure resulting from any bodily movement, which must be produced by skeletal muscles. The World Health Organization (WHO) and other authors suggest 60 minutes of daily physical activity and a moderate level of exercise to maintain adolescents' and children's optimal health (Schmidt et al., 2020). However, raising sedentary behaviors, including mobile phones, tablets, and computers' utilization, have been associated with lower physical activity and higher risk of mobile phone dependence among late adolescents (Elhai et al., 2016; Tremblay et al., 2011).

**Literature Review**

Recently, Nomophobia has been recognized as a serious behavioral concern, specifically among late adolescents. Liu et al. (2022) tried to explore associations between problematic internet use, nomophobia, and physical activity among university students across Taiwan, Malaysia, and Mainland China. Their study declared that nomophobia and weight-related self-stigma are the potential contributing factors of increased physical activity (Liu et al., 2022). Similarly, Torlak et al. (2022) conducted a cross-sectional study and revealed that 66% of university students experienced a moderate to prominent level of nomophobia, which was negatively linked with physical activity. Anshari (2019) further revealed behavioral characteristics of nomophobia, including compulsive smartphone checking, sleeping next to devices, and keeping constant battery back-ups, which showed obsessive–compulsive tendencies and reduced self-control.

Excessive screen time has been constantly linked with diminished physical activity, specifically after the COVID-19 pandemic. Qin and Song (2020) identified that Chinese adults, who spent over 4 hours per day on screen during lockdown, reported insufficient physical activity and a weaker emotional state. In Pakistan, Ijaz et al. (2020) reported that 89.6% of late adolescents were physically inactive, the majority of whom were females, averaging 3-4 hours of screen-time per day. The research findings concluded that women are insufficiently active, have higher screen time, and experience worse emotional states. Awais et al. (2021) state that 64% of participants experienced psychological distress linked to increased screen time and lower physical activity. According to these studies, prolonged digital engagement could displace time for outdoor activities and physical movement. Research also indicates that nomophobia may impact sedentary behaviors and unhealthy lifestyle behaviors. Zeb et al. (2022) suggested a positive link between nomophobia and sleep deprivation, while a significant negative correlation with leisure activities in adolescents and young adults.

Although studies have explored nomophobia, screen time, and physical activity, no one has studied the combined influence of nomophobia, screen time, and physical activity, especially among late adolescents from South Asian Contexts. This research gap is crucial to address youngsters' mental

and physical health impacted by significant figures of nomophobia and screen time.

**Objectives**

- To identify the screen time, nomophobia, and physical activity relationship in late adolescents.
- To investigate whether nomophobia and screen time predict physical activity among late adolescents.
- To determine the gender differences of late adolescents in terms of nomophobia, screentime, and physical activity levels.

**Hypothesis**

- Nomophobia and screen time are expected to be negatively correlated with physical activity.
- Nomophobia and screen time are likely to predict physical activity.
- Gender differences are expected in terms of nomophobia, screen time, and physical activity.

**Method**

**Research Design**

This research utilized a "Cross-sectional correlational method" to identify relationship between nomophobia, screen time, and physical activity.

**Participation & Sampling**

This research utilized the "convenience sampling method" for data collection to best represent the targeted population, which cannot be found at a specific location. The sample size was 195, which was calculated through G-Power's formula with a 95% confidence interval. Questionnaires were filled out in person by students of the 11th and 12th grades. The sample was recruited from private and public colleges in Model Town, Gulberg, Johar Town, and WAPDA Town Lahore.

**Inclusion & Exclusion Criteria**

Late adolescents of 16-19 years old were included in the study. Participants were both male and female students recruited from 11$^{th}$ to 12$^{th}$ grade (A-level or intermediate level). Students from private and government colleges were included. The participants with no electronic device (laptop, computer, mobile, or TV) were excluded. Primarily, the sample size was 200; 5 responses were excluded because of physical disability or other health impairments preventing them from physical activity.

**Table 1**

*Demographic Characteristics of Study Variables (N=195)*

| Variables | *f* (%) | Variables | *f* (%) | Variables | *f* (%) |
|---|---|---|---|---|---|
| **Age (Years)** | | **Gender** | | **Education** | |
| 16 years | 28(14.4) | Male | 106(54.4) | 1$^{st}$ year | 103(52.8) |
| 17 years | 51(26.2) | Female | 89(45.6) | 2$^{nd}$ year | 92(47.2) |
| 18 years | 53(27.2) | | | **College Type** | |
| 19 years | 63(32.3) | | | Government | 102(52.3) |
| | | | | Private | 93(47.7) |

*Note*. f= frequency, %= percentage

**Assessment Tools**

**Demographic Information Sheet**

The study used a self-designed demographic sheet and included age, gender, educational level, and college type variables needed to conduct the study. Furthermore, demographics of possessed electronic devices and any disability/chronic illness were included to screen out exclusion criteria.

**Nomophobia Questionnaire (NMP-Q)**

To measure the severity level of nomophobia, which is a fear of being without smartphone, Yildirim and Correia (2015) developed this

scale. It consists of total 20 items and is divided into 4 categories, including losing connectiveness, giving up convenience and not being able to communicate and access information. The scale, NMP-Q, has Cronbach's alpha coefficient of .94, which indicated a high internal consistency.

**Questionnaire for Screen Time of Adolescents (QueST)**

Knebel et al. (2020) developed QueST to measure screen time activity among adolescents, specifically high-school students. The scale can measure 5 constructs of studying, using social media, video gaming, watching videos, and performing work-related activities. Besides, Knebel et al. (2020) reported that reliability varied across activities, such as video consumption, social media usage, and messaging on weekdays (.41-.76) and weekends (.24-.67), reflecting changes in necessity and interest over time.

**Physical Activity Questionnaire (PAQ-A)**

To measure the 7-day physical activity of adolescents (14-18), Kowalski et al. (1997) constructed this scale, which contains Cronbach's alpha internal consistency of .93 and good content validity.

**Procedure**

The research began with finalizing research topics, objectives, sample size, and measurement scales. All scales were publicly available and free to use; therefore, author permission was not required. Data collection for each participant took approximately 15–20 minutes. For government college participants, each scale item was explained in simple language to ensure comprehension, while participants from private college required only brief instructions. Afterward, data were entered into SPSS version 25 for analysis. Forms were excluded based on the criteria, and the research ended by analyzing and reporting findings.

**Ethical Considerations**

Formal approval to collect data from various colleges was obtained from the Department of Applied Psychology, UMT, and institutional consent was secured through signed permission letters from principals or vice-principals. The participants were voluntarily involved in the study, where none of them was harmed or deceived. Besides, all of them were aware of the research objectives and informed about their rights to withdraw from the study. Participants' personal information was kept confidential and anonymous.

**Results**

The research aimed to find out the connection between screen time, nomophobia, and physical activity in late adolescents, for which, several statistical analyses were conducted. Firstly, the data was checked for all missing values and excluded using inclusion and exclusion criteria. Then, before carrying out the analysis to find relationships among variables, descriptive statistics were taken down to see the average values of each scale. Similarly, psychometric properties, such as Cronbach's α, of each scale were checked to determine their reliability. Afterward, to explore the correlation between above-mentioned study variables, Pearson's Product-Moment Correlation test was initiated. Then, Multiple Linear Regression test was conducted in order to get dependent variable's value prediction based on the independent variables' value. Lastly, the study performed Independent Sample t-test to find out the difference in variables with categories like gender.

**Table 2**

*Cronbach Alpha Reliabilities and Descriptive Statistics of the Measures (N=195)*

| Scales | *k* | *α* | *M* | *SD* | Range |
|---|---|---|---|---|---|
| Nomophobia | 20 | .88 | 83.29 | 23.78 | 28-137 |
| Screen-time | 5 | .79 | 27.82 | 12.53 | 10-64 |
| Physical activity | 8 | .84 | 46.14 | 13.48 | 23-93 |

*Note*. *k*= number of items, *α*= reliability, *M* = mean, *SD*= standard deviation

The results of Table 2 showed that the nomophobia (NMPQ) questionnaire and the Physical Activity (PAQ-A) scale have a high reliability coefficient of .88 and .85, respectively. However, the Scree-Time (QueST) scale seemed to have a moderate to satisfactory reliability of .79.

**Table 3**

*Correlation between Nomophobia, Screen-Time and Physical Activity among Late adolescents (N =195)*

| | Variables | *M* | *SD* | *1* | *2* | *3* |
|---|---|---|---|---|---|---|
| **1.** | Nomophobia | 83.29 | 23.78 | - | .00 | -.09 |
| **2.** | Screen-time | 27.82 | 12.53 | - | - | -0.00 |
| **3.** | Physical activity | 46.14 | 13.48 | - | - | - |

*Note. *p*<.05, ***p*<.01, ****p*<.001

From Table 3, it is evident that nomophobia is negatively correlated with physical activity, but the results are not statistically significant. Moreover, screen time is found to have no linear correlation with nomophobia and physical activity.

**Table 4**

*Multiple-Linear Regression for Determining Effect of Physical Activity on Screen-Time and Nomophobia among Late Adolescents (N=195)*

| Predictors | *B* | *SE* | 95% CI of B | | *β* |
|---|---|---|---|---|---|
| | | | *LL* | *UL* | |
| Constant | 50.75 | 4.13 | 42.61 | 58.90 | |
| Screen-time | -.01 | .08 | -.16 | .15 | -.004 |
| Nomophobia | -.05 | .04 | -.13 | .026 | -.09 |
| $R^2$ | .009 | | | | |
| ΔR | -.001 | | | | |

*Note.* B = unstandardized coefficient Beta, SE = standard error in unstandardized coefficients, CI= confidence interval, LL = lower limit, UL = upper limit, β = standardized coefficient beta

In Table 4, findings of the Multiple Linear Regression test are shown, which was carried out to explore the independent factors' (nomophobia and screen time) influence on the outcome variable (physical activity). From the results, it is indicated that both screen time and nomophobia negatively predict physical activity. In addition, it is found that the two predictors, nomophobia and screen time, explained overall variance .9% with F (2, 192) = .877, $p > .05$. Independence of residuals was assumed with the Durbin Watson value inside the interval 1-3 (1.3).

**Table 5**

*Independent Sample t Test Analysis to Explore Gender Differences in Terms of Nomophobia, Screen-Time and Physical Activity (N=195)*

| Variables | Males (*n*=106) | | Females (*n*=89) | | *t* (195) | *p* | Cohen's *d* |
|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | | |
| Nomophobia | 81.07 | 12.56 | 85.86 | 26.04 | -1.41 | .16 | 0.30 |
| Screen-Time | 29.32 | 12.83 | 26.02 | 11.98 | 1.85 | .06 | 0.84 |
| Physical Activity | 49.46 | 12.68 | 42.19 | 13.41 | 3.86*** | .001 | 2.08 |

*Note.* M = mean, SD= standard deviation, *t* = *t*-statistics, *p* = significance value

The Table 5 showed a statistically significant physical activity difference among the male and female participants with *p*=.001. However, no significant differences in nomophobia and screen time are revealed in terms of gender. The mean and standard deviation of both male and female groups were nearly the same. Moreover, the effect sizes of nomophobia, screen time, and physical activity range from small to large and extremely large among males and females, depicting Cohen's *d*= .30, .84, and .2.08, respectively. In addition, the study found an average of 27 hours per week of screen time among late adolescents. Moreover, participants were found to have a moderate level (60-100) of nomophobia score, 83, along with a lower physical activity level, 46 hours per week.

## Discussion

The study examined the relationship among nomophobia, screen time, and physical activity in late adolescents. Although a negative correlation was observed between nomophobia and physical activity, the link was non-significant. It suggests that the higher nomophobia, the lower engagement in physical activity, but the effect in this sample was weak. Similar results have been found in research conducted by Torlak et al. (2022) on Turkish university students, where nomophobia and physical activity were negatively connected. Kumar et al. (2021) suggest that Indian college students with moderate to high nomophobia have lower physical activity levels.

Screen time and nomophobia were also tested as predictors of physical activity. Both variables showed negative predictive trends, but neither accounted for a significant amount of variance. This showed that while adolescents with higher screen exposure and anxiety of being without their smartphones were less physically active, these factors alone were not strong predictors. Comparable findings were noted by Aulbach et al. (2021), who reported a weak negative prediction of physical activity from screen time. A possible explanation for the weak physical activity observed in late adolescents is the wider influence of environmental factors, such as academic workload and availability of places for recreation. While nomophobia and excessive screen exposure show technological dependence, varied lifestyle demands, and personal motivation might weaken the predictive strength of variables.

The findings of the study also showed gender-based disparities that align with previous findings. Female participants reported a slightly higher level of nomophobia, whereas male participants demonstrated higher screen time and significantly greater physical activity levels. The greater physical activity in males reflects earlier evidence showing higher participation in spare time, evening, weekend, and

weekday physical activities among male college students (Torlak et al., 2022). These differences may just mirror cultural expectations, infrastructural limitations, or varied social norms in which the study was conducted. Many households in this region majorly emphasize academic achievement, restrict spaces for exercise, and reject the institutional promotion of sports, especially for girls, which lowered their overall activity. These cultural and structural factors might explain why Western or regional studies found negative relationships and appear weaker in the present sample.

These differences may mirror cultural expectations, access to support facilities, or varied social norms regarding outdoor activities.

Overall, the findings highlight that although nomophobia and screen time have a negative direction of association with physical activity, their effects were modest in this region. Therefore, interventions to promote healthy technology use must address additional factors like social environment and institutional support before focusing solely on screen exposure reduction.

**Limitations & Suggestions**

The data was collected from public and private colleges in Lahore using convenience sampling; therefore, the results cannot be generalized to all late adolescent population of Lahore, Pakistan. Due to the unavailability of study measures translated into Urdu, responses were collected in English. It might have impacted the accuracy of responses since students from public institutes face a little difficulty in comprehension, although the translation was provided verbally. Henceforth, it is recommended to translate scales into the local language before gathering data from late adolescents. Moreover, it is advised to work on a screen-time measurement scale, specifically for adolescents, which contains closed-ended questions rather than open-ended questions for more reliable responses. Despite being well-validated, Physical Activity Questionnaire (PAQ-A) might not fully capture contemporary activity patterns among the targeted population because of its dated design from 1997. Therefore, future studies are suggested to adopt updated or contextually adapted instruments, considering present-day youth lifestyles.

**Implications**

The current study contributed to the existing knowledge that late adolescents spend an average of 27 hours of screen time per week and have moderate levels of nomophobia, which consequently causes lower physical activity. These findings may help educational institutions to design digital detoxes and promote more physical activities for healthier lifestyles of youngsters. Future studies can explore whether a decrease in nomophobia (via mindfulness training or counselling) can increase a physically active lifestyle. Technology experts can introduce “Digital Balance Mode” in social media or texting app accounts of youngsters using these research findings. Hence, features like a scheduled lockout or pause mode after the detection of allowed screen time hours might encourage physical activity.

**Conclusion**

This study concluded that nomophobia is negatively correlated with physical activity among late adolescents, fulfilling the first hypothesis partially, as screen time showed no linear relationship with physical activity. The results showed that the higher the nomophobia and screen time are, the lower the physical activity level gets. However, findings show no statistically significant correlation and effect size. Furthermore, male late adolescents are found to be significantly more physically active than females, who scored slightly higher in nomophobia and screen time compared to male participants.

**Ethics Statement**

All the ethical standards of APA were met. Informed consent was taken in written form from all the respondents to participate in this study.

**Contribution of Authors**

Sadia: Conceptualization, Investigation, Methodology, Data Curation, Formal Analysis, Writing – Original Draft,

Sitara Kanwal: Methodology, Writing - Reviewing & Editing, Supervision

**Conflict of Interest**

There is no conflict of interest declared by the authors.

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**Data Availability Statement**

The datasets of the current study are not available publicly due to ethical reasons but are available from the corresponding author [S.] upon the reasonable request.

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