



**Exploring the Interplay of Smartphone Addiction, Sleep Quality, and  
Social Isolation: An Empirical Investigation**

**<sup>1</sup>Harleen Kaur**, Master of Arts, Clinical Psychology

Amity Institute of Psychology and Allied Sciences, Noida, India

hkour9847@gmail.com

**ABSTARCT**

Smartphones have become the prevailing virus of our era, ensnaring nearly everyone in their grip. Originally designed to foster connectivity and a sense of unity among people, smartphones have ironically led to feelings of social isolation and dependency. Furthermore, smartphone addiction has also led to a decline in sleep quality. The study aimed to evaluate the interplay among smartphone addiction, sleep quality and social isolation. A total of 102 samples were obtained, 51 of which were males and 51 of which were females between the age of 18 to 26 years. The Smartphone Addiction Scale-Short Version (SAS-SV), The Pittsburgh Sleep Quality Index (PSQI) and UCLA loneliness scale were the tools employed in this study. Statistical tools like Pearson correlation and the independent sample "t" test were used to evaluate the connection between the variables. It was discovered that there is no gender difference between smartphone addiction, sleep quality and social

isolation. A significant correlation exists between social isolation and sleep quality, although no such relationship was found among smartphone addiction, sleep quality, and social isolation. The findings of this study underscore the importance of increasing the quality of sleep to minimize the social isolation experienced by the young adults.

**Keywords:** *smartphone addiction, sleep quality, social isolation*

## INTRODUCTION

Smartphones have become the prevailing virus of our era, ensnaring nearly everyone in their grip. Despite the incredible technology they offer, many people, particularly the youth, have turned a blind eye to their negative repercussions. In India, smartphone addiction rates range from 39% to 44%, highlighting a significant societal concern. Originally designed to foster connectivity and a sense of unity among people, smartphones have ironically led to feelings of social isolation and dependency. A global survey conducted in 2021 revealed that 43% of Indians experience loneliness, ranking India third globally in terms of loneliness prevalence.

Furthermore, smartphone addiction has led to a decline in sleep quality. The emission of rays from smartphones disrupts our circadian rhythm, thereby impacting the overall quality of sleep. Dr. Murali Mohan B V, Senior Consultant in Internal Medicine and Pulmonology at Mazumdar Shaw Medical Center, Narayana Health City, Bangalore, underscored that approximately 30% of the Indian population suffers from insomnia, while nearly 24% of adults are affected by sleep apnea. The feeling of social isolation is also associated with poor sleep quality among young adults. The study aims to explore the connection between smartphone addiction, social isolation, and sleep quality specifically in young adults.

India has a significant population of young adults aged 18 to 26. If smartphone addiction contributes to feelings of social isolation and poor sleep quality, then addressing smartphone

addiction could potentially improve these feelings and sleep quality. By identifying smartphone addiction as a factor influencing poor sleep quality and social isolation, interventions can be tailored to enhance overall well-being. Previous research has established a relationship between smartphone addiction, poor sleep quality, and feelings of social isolation. However, further investigation is needed to understand these connections better and explore potential gender differences. Through this study, we aim to bridge this knowledge gap and provide insights that can guide interventions aimed at enhancing sleep quality and reducing feelings of isolation among young adults.

### **Smartphone Addiction**

Smartphone addiction, also known as problematic smartphone use or smartphone dependency, refers to the excessive and compulsive use of smartphones, often resulting in negative consequences for an individual's physical health, mental well-being, social relationships, and overall quality of life. This phenomenon has become increasingly prevalent with the widespread adoption of smartphones globally. Smartphone addiction has become a pervasive issue in modern society, affecting individuals of all ages. With the convenience and connectivity offered by smartphones, many find themselves increasingly reliant on these devices, often to the detriment of their well-being.

Excessive smartphone use can lead to a range of negative consequences, including impaired social relationships, decreased productivity, and adverse effects on mental and physical health. The constant availability of entertainment, social media, and information at our fingertips contributes to compulsive behavior and difficulty in controlling usage habits. Addressing smartphone addiction requires awareness, self-regulation, and the establishment of healthy boundaries to strike a balance between technology use and personal life. Intervention strategies may include setting limits on screen time, practicing mindfulness, and seeking professional support when necessary. By recognizing the signs of smartphone addiction and taking proactive steps to manage it, individuals can reclaim control over their lives and promote overall well-being.

## Social Isolation

Social isolation refers to a state in which an individual lacks meaningful contact or interaction with others. It can occur due to various factors such as geographical location, physical disabilities, mental health issues, or societal circumstances. Social isolation can have profound negative effects on an individual's physical health, mental well-being, and overall quality of life.

### Effects of Social Isolation

- **Mental Health:** Social isolation is associated with an increased risk of depression, anxiety, and other mental health disorders. Lack of social support and meaningful relationships can exacerbate feelings of loneliness and isolation.
- **Physical Health:** Chronic social isolation has been linked to adverse health outcomes such as hypertension, cardiovascular disease, weakened immune system, and premature mortality.
- **Cognitive Decline:** Prolonged social isolation can contribute to cognitive decline and impair cognitive function, particularly in older adults.
- **Quality of Life:** Socially isolated individuals often report lower levels of life satisfaction and subjective well-being compared to those with strong social connections.

Addressing social isolation requires concerted efforts at both individual and community levels. Encouraging participation in social activities, fostering inclusive environments, and leveraging technology for communication and connection are essential strategies to mitigate social isolation and promote well-being. By recognizing the impact of social isolation and implementing proactive measures to combat it, communities can strive to create a more supportive and connected society where everyone feels valued and included.

## Sleep Quality

Sleep quality refers to the overall effectiveness and restorative nature of sleep experienced by an individual. It encompasses various factors including duration, continuity, depth, and subjective

satisfaction with sleep. Understanding and promoting good sleep quality is crucial for maintaining overall health and well-being.

### Components of Sleep Quality

- **Duration:** The total length of time spent asleep, typically recommended to be around 7-9 hours for adults.
- **Continuity:** The ability to maintain uninterrupted sleep throughout the night without frequent awakenings.
- **Depth:** The quality of sleep stages experienced, including the proportion of deep (slow wave) sleep and rapid eye movement (REM) sleep, which are essential for physical and mental restoration.
- **Efficiency:** The ratio of time spent asleep to the total time spent in bed, reflecting how effectively sleep is utilized.
- **Subjective Satisfaction:** The individual's perception of the restfulness and refreshment obtained from sleep, which can vary based on personal preferences and lifestyle factors.

### REVIEW OF LITERATURE

Rathakrishnan et al. (2021) investigated the connection between academic achievement, sleep quality, and smartphone addiction. The study investigated the association between academic achievement, sleep quality, and smartphone addiction by conducting quantitative research on 323 students at a public university in Sabah. The study employed a basic random sampling technique. This study made use of the Pittsburgh Sleep Quality Index (PSQI) and the Smartphone Addiction Scale Short Version (SAS-SV). Both descriptive and inferential analysis were conducted using SPSS as an analytical tool. The study used Pearson correlation to evaluate its premise. The findings showed that university students' academic performance decreased with increasing smartphone addiction. The results also demonstrated that kids may perform poorly academically if they have poor-quality sleep.

It has been discovered that smartphone addiction and bad sleep quality are related, with university students' excessive smartphone use being linked to poor sleep quality.

Chatterjee et al. (2021) assessed the relationship between background characteristics and smartphone addiction in relation to sleep quality among medical students during each semester. Using a self-administered questionnaire consisting of four parts—Socio-demographic characteristics, General health questionnaire (GHQ-12), Smartphone addiction scale-short version (SAS-SV), and Pittsburgh sleep quality index (PSQI)—a cross-sectional study involving 224 medical students at a tertiary care teaching hospital in North India was carried out. According to research, 46.15% of men and 33.33% of women are addicted to smartphones. According to their PQSI ratings, 63.39% of the study participants had trouble sleeping, and their GHQ scores indicated that 62.05% of them had poor health. Overall PQSI scores showed a favorable connection with GHQ, SAS-SV, and daily smartphone use duration scores.

Kaya (2021) analyzed the relationship between smart phone usage, sleep quality and depression. Eight hundred and four students who owned smart phones were given the Information Form, Smart Phone Addiction Scale-Short Version, Pittsburgh Sleep Quality Index (PSQI) and Beck Depression Inventory (BDI). The descriptive statistics, independent sample *t*-test, one-way ANOVA, correlation analysis and multivariate regression analysis were used for analysis data. Mean age of the students in the sample was  $20.93 \pm 2.44$ . It comprised female (65.0%) and male (35.0%) students. All students used smart phones. The daily smart phone usage duration was  $7.85 \pm 4.55$  hour. According to the multivariate linear regression analysis results, significant relationships were statistically determined in the positive way between the smart phone addiction and PSQI point ( $p < .01$ ) and BDI point ( $p < .01$ ). Consequently, a relationship exists between smart phone usage, poor sleep quality and depressive symptoms in university students. The university students, whose depression point is high and sleep quality is poor, should be followed up with regarding the smart phone addiction.

Dhamija et al. (2021) sought to investigate how common smartphone addiction is among medical college students and how it relates to sleep disturbance and self-esteem. Using standardized questionnaires, the prevalence of smartphone addiction, self-esteem, and sleep disturbance were assessed in a cross-sectional analytical study. The questionnaires were the Pittsburgh Sleep Quality Index Assessment, the Rosenberg Self-Esteem Scale, and the Smartphone Addiction Scale Short Form. The percentage of medical college students who were addicted to their smartphones was 52%. Addiction to smartphones was more common in guys than in girls. A noteworthy correlation was observed between the addiction to smartphones and disruption of sleep. Nevertheless, there was no discernible link found between low self-esteem and smartphone addiction. Research indicates that a significant number of medical students suffer from smartphone addiction, which is linked to inadequate sleep.

Ghosh et al. (2021) studied the impact of smartphone addiction on nursing students' sleep in a West Bengal municipality town. A cross-sectional, observational, questionnaire-based study was conducted on University College of Nursing, WBUHS B.Sc. nursing students. There are three sections to the questionnaire. The first section dealt with sociodemographic data; the second portion used the Smartphone Addiction Scale (SAS) to measure the addictive phenomena linked to excessive smartphone use; and the third and final section used the Pittsburgh Sleep Quality Index (PSQI) to measure the quality of sleep. According to SAS, 45 out of 91 pupils had a smartphone addiction, whereas 46 students were deemed to be free of addiction. 82.42% of pupils scored poorly on the PSQI, compared to 17.58% who scored well. Age and smartphone addiction were shown to be significantly correlated, as was the relationship between daily calls and sleep quality.

Ram (2021) aimed to evaluate how young individuals' emotional regulation and sleep quality are affected by excessive smart phone use. A total of 300 samples were obtained, 150 of which were boys and 150 of which were females between the ages of 18 to 40 years. The Smartphone Addiction Scale (SAS) by (Kwon et al., 2013), the Sleep Quality Scale (SQS) by (Yi et al.) and the Emotional

Regulation by (Gross & John, 2003) were the tools employed in this study. A practical sampling technique was applied. Statistical tools like Pearson correlation and the independent sample "t" test were used to evaluate the connection between the dependent and independent variables. It was discovered that there is no gender difference in the strong relationships between smart phone usage and emotional regulation and sleep quality.

## METHODOLOGY

### Purpose

To assess the relationship among smartphone addiction, sleep quality and social isolation of young adults.

### Hypothesis

H1: There would be a significant correlation between Smartphone addiction and Sleep quality.

H2: There would be a significant correlation between Smartphone addiction and social isolation.

H3: There would be a significant correlation between social isolation and Sleep quality.

H4: There would be significant difference between males and females with Smartphone addiction, Sleep Quality and Social isolation.

### Sample

Purposive Non probability sampling was chosen, with a sampling size of 102 subjects out of which 51 were female and 51 were male. The age range of the subjects were kept between the range of 18 to 26 years (Young adults).

### Measures

#### Sleep Quality

*The Pittsburgh Sleep Quality Index:* The Pittsburgh Sleep Quality Index (PSQI), a self-reported assessment, was created by Buysse, Reynolds, Priest, Berman, and Kupfer to evaluate

subjective sleep quality over a longer period. Internal reliability is  $A = .083$ , test-retest reliability on a global scale is .85, sensitivity is 89.6%, and specificity is 86.5%. Seven-part scores are obtained by consolidating the 19 components, 10 items that comprise the PSQI. Every component has a score between 0 and 3, with greater characteristics denoting worse sleep. The seven-part scores are then added to get the Global PSQI score, which is a number between 0 and 21. Around the world, a PSQI score of five or higher indicates poor sleep quality.

### Smartphone Addiction

**Smartphone Addiction Scale-Short Version (SAS-SV):** The SAS-SV is a self-reported tool used to assess the degree of smartphone addiction. There are ten items on the scale. The instructions were to "please indicate to what extent you agree that this is true for you" to each participant, who then had to respond to the questions. A 6-point Likert scale, with 1 denoting "strongly disagree" and 6 denoting "strongly agree," was used to record responses. The internal consistency and concurrent validity of SAS were verified with a Cronbach's alpha of 0.911. The validity of the SAS-SV scale has been supported by convergent and concurrent construct evidence, as demonstrated by its cross-cultural and cross-national construct validity verification and correlation with other measures.

### Social isolation

**UCLA Loneliness Scale:** A 20-item measure intended for assessing an individual's subjective experiences of social isolation and loneliness. Either O ("I often feel this way"), S ("I sometimes feel this way"), R ("I rarely feel this way"), or N ("I never feel this way") are the ratings given by participants to each item. Since it was first published, the measure has undergone two revisions: one to add reverse-scored items, and the other to streamline the language. In terms of test-retest reliability over a one-year period ( $r = .73$ ) and internal consistency (coefficient  $\alpha$  ranging from .89 to .94), it is extremely trustworthy. Significant connections between the scale and other loneliness measures suggested that the scale has convergent validity. Significant associations with measures of how adequate a person's interpersonal relationships are, as well as correlations between loneliness and

health and well-being indicators, all supported the construct validity of the study. According to confirmatory factor analyses, a model with two method factors that reflected the orientation of the question wording, and a global bipolar loneliness factor offered a very excellent fit to the data across samples.

## Procedure

After the finalization of the topic, the tool or questionnaires of the variables were distributed among students for data collection. Instructions were briefly explained as all the questionnaires used in the study are self-reported. Before collection of data from the subjects, consent was taken, and it was explained that their identities and the collected individual data would be kept confidential. The individual scores were computed for each questionnaire and SPSS will be used to generate the statistical analysis of the scored data.

## ANALYSIS OF DATA

### RESULT

**Table 1**

*T -test Between Group 1 (Females) and Group 2 (Males)*

|      | GROU<br>P | N  | MEAN  | STD.<br>DEVIATION | STD. ERROR<br>MEAN | T      | SIG (2<br>TAILED) |
|------|-----------|----|-------|-------------------|--------------------|--------|-------------------|
|      | <b>1</b>  | 51 | 33.65 | 10.41             | 1.46               |        |                   |
| SAS  | <b>2</b>  | 51 | 33.53 | 11.02             | 1.54               | 0.055  | 0.956             |
|      |           |    |       |                   |                    |        |                   |
|      | <b>1</b>  | 51 | 7.08  | 3.89              | 0.54               |        |                   |
| PSQI | <b>2</b>  | 51 | 7.57  | 4.60              | 0.64               | -0.581 |                   |
|      |           |    |       |                   |                    |        | 0.563             |
|      | <b>1</b>  | 51 | 21.63 | 12.07             | 1.69               |        |                   |
| UCLA | <b>2</b>  | 51 | 21.39 | 15.74             | 2.20               | 0.85   | 0.933             |

Table 1 shows the mean difference between group 1 (females) and group 2 (males) on various variables by independent sample t test.

First is Smartphone addiction scale, which represent the significant difference between males and females for smartphone addiction. The mean difference is 33.65 and 33.53, with standard deviation of 10.411 and 11.02. T test is 0.055 and significance value is 0.956 ( $0.956 > 0.005$ ), which shows that there is no significant difference between the two groups in terms of smartphone addiction. Second is PSQI, which represent the significant difference between males and females for sleep quality. The mean difference is 7.08 and 7.57, with standard deviation of 3.893 and 4.605. T test is -0.581 and significance value is 0.563 ( $0.563 > 0.05$ ), which shows that there is no significant difference between the two groups in terms of sleep quality.

Lastly UCLA, represent the significant difference between males and females for social isolation. The mean difference is 21.63 and 21.39, with standard deviation of 12.075 and 15.738. T test is 0.85 and significance value is 0.933 ( $0.933 > 0.05$ ), which shows that there is no significant difference between the two groups in terms of social isolation.

**Table 2**

*Descriptive statistics*

|      | MEAN  | STD. DEVIATION | N   |
|------|-------|----------------|-----|
| SAS  | 33.59 | 10.665         | 102 |
| UCLA | 21.51 | 13.963         | 102 |
| PSQI | 7.32  | 4.250          | 102 |

Table 2 represents the Descriptive statistics of the given data of 102 participants, with mean and standard deviation of 33.59 and 10.665 for smartphone addiction (SAS), 7.32 and 4.250 for Sleep quality (PSQI), 21.51 and 13.963 for social isolation (UCLA).

**Table 3***Pearson's correlation among Smartphone addiction, Sleep quality and social isolation***Correlations**

|      |                     | SAS  | UCLA               | PSQI               |
|------|---------------------|------|--------------------|--------------------|
| SAS  | Pearson Correlation | 1    | .093               | .189               |
|      | Sig. (2-tailed)     |      | .354               | .057               |
|      | N                   | 102  | 102                | 102                |
| UCLA | Pearson Correlation | .093 | 1                  | .364 <sup>**</sup> |
|      | Sig. (2-tailed)     | .354 |                    | .000               |
|      | N                   | 102  | 102                | 102                |
| PSQI | Pearson Correlation | .189 | .364 <sup>**</sup> | 1                  |
|      | Sig. (2-tailed)     | .057 | .000               |                    |
|      | N                   | 102  | 102                | 102                |

<sup>\*\*</sup>. Correlation is significant at the 0.01 level (2-tailed).

**Table 3** represent the correlation among smartphone addiction, sleep quality and social isolation.

- Smartphone addiction shows a positive correlation ( $r = 0.093$ ,  $p$ ) with social isolation, with 0.354 sig. value (2 tailed) which is not significant ( $0.354 > 0.01$ ).
- Smartphone addiction shows a positive correlation ( $r = 0.189$ ) with sleep quality, with 0.057 sig. value (2 tailed) which was not significant ( $0.057 > 0.01$ ).
- Social isolation shows a positive correlation ( $r = 0.364$ ) with sleep quality, which is significant, with 0.000 sign value ( $0.000 < 0.01$ ).

**DISCUSSION**

The aim of the study was to assess the relationship among smartphone addiction, sleep quality and social isolation of young adults. The responses were collected using Smartphone addiction Scale SV, Pittsburg sleep quality index scale and UCLA loneliness scale. Scoring of the responses were performed in MS Excel, followed by the analysis in SPSS. Pearson correlation was used to measure the relationship between smartphone addiction, sleep quality and social isolation. Independent sample

T test was used to measure the mean difference between the two groups of males and females on the various variables (smartphone addiction, sleep quality and social isolation). Descriptive statistics were also performed on the data.

The result showed there is no significant relationship between smartphone addiction and sleep quality. Hence, Hypothesis 1 is rejected, as there lies no significant correlation between them. The findings are supported by Selçuk (2019) Smartphone addiction was not associated with sleep quality.

The result showed that there is no significant relationship between smartphone addiction and social isolation. Hence Hypothesis 2 is rejected, as there lies no significant correlation between them. The findings are supported by Parent (2022) Smartphone addiction was not associated with feelings of social isolation.

The result showed that there is a significant relationship between social isolation and sleep quality. Hence hypothesis 3 is accepted, as there lies a significant correlation between them. The findings are supported by Bin Yu (2018) Social isolation is independently associated with poor sleep quality.

The result also showed that there is no significant difference between the two-gender group of males and females on smartphone addiction, sleep quality and social isolation. Hence, Hypothesis 4 is rejected as there is no significant difference between males and females with Smartphone addiction, Sleep Quality and Social isolation. The findings are supported by Gracia (2021) stating that no difference was found between the groups of male and female students in smartphone addiction. Sakakibara (1998) Subjective sleep quality does not differ between men and women, but objective sleep quality is significantly worse in men than in women. Lunstad (2015), with results remain consistent across gender, with no differences between objective and subjective social isolation.

## CONCLUSION

The current study assessed the relationship among smartphone addiction, sleep quality and social isolation of young adults. The findings of this paper confirmed the correlation of social isolation with sleep quality, but no correlation was found between smartphone addiction with sleep quality and smartphone addiction with social isolation. In contrast, the association of smartphone addiction with sleep quality and social isolation was not significant, indicating no such direct relationship between them, which implies that smartphone usage does not directly correlate with the lack of sleep quality and feelings of social isolation experienced by the young adults. Additionally, the association of social isolation with sleep quality were assessed which showed a significant positive correlation, implying there is a significant effect of social isolation on sleep quality of young adults, meaning the feeling of social isolation is affected by the quality of sleep of young adults. The study also explored significant difference between males and females on smartphone addiction, sleep quality and social isolation, indicating no such difference between the two genders. Therefore, the findings of this study underscore the importance of increasing the quality of sleep to minimize the social isolation experienced by the young adults.

## Practical Implications

- **Intervention Programs:** Understanding the relationship between smartphone addiction, sleep quality, and social isolation can inform the development of intervention programs aimed at reducing smartphone addiction and improving sleep hygiene among young adults. These programs could include cognitive-behavioral therapy, mindfulness training, or digital detox initiatives.
- **Technology Design:** Smartphone manufacturers and app developers can use insights from the research to design features that promote healthy smartphone use habits. For example, incorporating features that track and limit screen time, or implementing "do not disturb" modes to improve sleep hygiene.

- **Parenting and Education:** Parents and educators can benefit from the research by gaining insights into the impact of smartphone use on the well-being of young adults. This knowledge can guide them in setting appropriate limits and providing guidance on responsible technology use to promote healthy development.

### **Limitations**

- The sample size was relatively small. A larger sample size would provide for a more comprehensive and wide-ranging data pool.
- Reliance on self-report measures may introduce response biases such as social desirability or recall bias.
- The study may overlook potential confounding variables that could influence the relationship. Factors such as socioeconomic status, mental health conditions, substance use or sleep related issue should be considered and controlled for in the analysis to minimize their impact on the findings.

### **Futures Scope**

Further studies should focus on exploring or consider the relation or effects of other variables such as mental health conditions, socioeconomic status, lifestyle factors, etc. which will give a multi-dimensional perspective on smartphone addiction and the subsequent relationship with sleep quality and social isolation.

## REFERENCES

- Balan Rathakrishnan, Singh, S., Mohammad Rahim Kamaluddin, Azizi Yahaya, Mohd, Ibrahim, F., & Zaizul Ab Rahman. (2021). Smartphone Addiction and Sleep Quality on Academic Performance of University Students: An Exploratory Research. *International Journal of Environmental Research and Public Health*, 18(16), 8291–8291. <https://doi.org/10.3390/ijerph18168291>
- Chatterjee, S., & Kar, S. K. (2021). Smartphone addiction and quality of sleep among Indian medical students. *Psychiatry*, 84(2), 182-191.
- Dhamija, S., B Shailaja, Chaudhari, B., Chaudhury, S., & Saldanha, D. (2021). Prevalence of smartphone addiction and its relation with sleep disturbance and low self- esteem among medical college students. *Industrial Psychiatry Journal*, 30(3), 189–189. <https://doi.org/10.4103/0972-6748.328813>
- Ghosh, T., Sarkar, D., Sarkar, K., Chanchal Kumar Dalai, & Arnab Ghosal. (2021). A study on smartphone addiction and its effects on sleep quality among nursing students in a municipality town of West Bengal. *Journal of Family Medicine and Primary Care*, 10(1), 378–378. [https://doi.org/10.4103/jfmprc.jfmprc\\_1657\\_20](https://doi.org/10.4103/jfmprc.jfmprc_1657_20)
- Kaya, F. (2021). Smart phone usage, sleep quality and depression in university students - Fadime Kaya, Nihal Bostanci Daştan, Erkan Durar, 2021. *International Journal of Social Psychiatry*. <https://journals.sagepub.com/doi/abs/10.1177/0020764020960207>
- Ram, N. (2021). Effects of Excessive Smartphone Usage on Emotional Regulation and Sleep Quality among Young Adults. *Annals of the Romanian Society for Cell Biology*, 3682–3688. <https://www.annalsofrscb.ro/index.php/journal/article/view/2918>