

Effect of Mobile Usage on Sleep Quality among Young Adults

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ABSTRACT

Objective: To determine the effect and prevalence of mobile usage on sleep quality among young adults. **Methods:** The study is descriptive research conducted on the young adults of the Lucknow city. The study group included 200 students. Questionnaire on Mobile-Related Sleep Risk Factors, the Problematic Mobile Phone Use Scale were used for evaluating the mobile phone addiction level and the Pittsburgh Sleep Quality Index for assessing the sleep quality. Descriptive statistics and correlation analysis were used for analysing the data. **Results:** The result revealed that the students started using mobile phones at very young age and it was observed that the greater number of Using mobile for at least 30 minutes after the lights are turned off. The sleep quality worsens with increasing mobile phone addiction level ($p < 0.05$). **Conclusion:** The sleep quality worsens with increasing addiction level. It was concluded that referring the students with suspected addiction to advanced healthcare facilities, performing occasional scans for early diagnosis and informing the students about controlled mobile phone use would be useful.

Keywords: Mobile addiction, Sleep quality, sleep problem, sleep risk factors

As India has the world's second largest mobile phone user base and Wireless communication has emerged as one of the fastest diffusing media on the planet, fuelling an emergent 'mobile youth culture', it will be interesting to explore the attitude of undergraduate students towards the use of mobile phones for educational purposes. We all know that mobile phones provide multitude of features and services so much so that mobile phone has become an important part and parcel of everyday modern life. Thus, increased popularity of cell and smart phones in recent years has attracted research attention.

The advancement of mobile phone communication has moved quickly. During ongoing years, the utilization of mobile phones has expanded significantly and has been resembled by gawning a concern about the consequences for sleep and sluggishness ascribed to exposure to the blue light delivered by mobile phones during late night use. Showing that the late-night cell phone causes adverse effect on sleep would flag a far and widespread public health problem. New generation mobile phones enable people not only to talk but also to connect to the virtual networks constantly from anywhere thanks to their computer and internet connection features. Currently, the mobile phones have become an important

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part of the daily life of the individuals and started to be considered as an imperative tool by the users.

What is Sleep?

Sleep is a physiological state of unawareness which is regulated homeostatically (Brown, 2012). Sleep is a crucial predictor of general health and well-being, and getting a decent night's sleep is critical for a person's consistently good physical and mental well-being. Sometimes in the past individuals imagined that sleep was simply a time when the body and mind "shut off" for a couple of hours every night to rest in preparation for the next day. Be that as it may, presently researchers comprehend that neither the body nor the mind "shut down" when we rest truth be told, they are frequently working considerably harder than they do during the day, going through cycles to re-establish cells, process information, and improve wellbeing.

- **REM SLEEP** - REM sleep happens about every 90 minutes during the night. Adults usually spend about one-fifth of the night in REM sleep and the remaining 4 fifths in non-REM sleep. Infants spend at least half of the time they are asleep in REM sleep.
- **NREM SLEEP** - In non-REM sleep you go through 4 stages. During stage 1 you are in transition between being awake and asleep and wake easily. During stages 2, 3 and 4, your eye movement's stops your body temperature falls and you are deeply asleep.

Smartphones are technological devices that significantly impact people's daily lives, changing their habits and behaviors. The utilities and capabilities of these devices are increasing, and the foresight is that this tendency will grow in the following years. However, the problematic use of smartphones has increased dangerously (Osorio, et.al.,2021). Many studies demonstrate that smartphone addiction impairs sleep quality. Young adults today have grown up with smartphones as an evident part of their daily lives (Tarokh, et.al,2010). The reason is that the usage of smartphones goes beyond routine calls, allowing one to enjoy games, online shopping, various social interaction activities, and administrative work anytime and anywhere, and has brought us a convenient life (Demirci, et.al.,2015). Smartphones have also been proven helpful for students as a potential tool to "learn anywhere" (Payne, et.al.,2012). A recent review by Sohn and his colleagues (2019) reported that one in every four children and young people are suffering from Problematic cell phone use (PSU), which is linked to depression, anxiety and poor sleep quality.

Objective: To determine the effect and prevalence of mobile usage on sleep quality among young adults.

Hypothesis: Excess Mobile phone use will be negatively related to sleep length and sleep quality.

METHODOLOGY

Sample

For the present study, 200 young adults of age group 19-22 years were taken. Among 200 participants, 100 were males and 100 were females from Lucknow city.

Inclusion Criteria

- The students between 19 and 22 years who were willing to participate in the study.
- The students who use mobile phone daily, even if they use it for a brief moment.

Exclusion Criteria

The students suffering from

- Any diagnosed sleep disorder.
- Any diagnosed chronic respiratory problem (including nasal congestion, chest infections, asthma, adenoids, allergic rhinitis)
- Any chronic physical or mental illness, affecting their sleep.
- Using any prescription medication for at least last 3 months.

Instruments

- **Questionnaire on Mobile-Related Sleep Risk Factors-** This online questionnaire (generated by using Google forms) was designed by the authors based on relevant required information, extracted from few previous studies (Haugh., et., 2015; Sahin et.al, 2015). The face validity of the questionnaire was confirmed by three physicians, whereas test retest technique was used to verify the reliability (interval of three weeks) with a group of 30 students ($P = 0.002$; $r = 0.84$). Questionnaire includes seven items which focus on the following areas: Total duration of mobile use/day, using mobile while in the bed when the lights have been turned off, using blue light filters on mobile, keeping the mobile under pillow, keeping the mobile 2 meters away from the bed and putting the mobile on airplane mode while sleeping.
- **Mobile Phone Problematic Use Scale -10 (MPPUS-10):** Milena Foster, Katharina Roser, Anna Schoeni and Martin Rosli): The MPPUS-10 is a shorter version of original version of MPPUS that consists of 27 items. MPPUS-10 consist of 10 items that measure the excessive or problematic mobile phone use. In this, 10 items cover addictive symptoms like withdrawal, craving, peer acceptance, loss of control and negative life consequences. The 10 items have to be answered in a 10-point Likert scale ranging from 1 (“not true at all”) to 10 (“extremely true”) resulting in a final score theoretically ranging from 10 to 96.
- **Pittsburgh Sleep Quality Index (PSQI):** The PSQI was developed by Carole Smyth. The PSQI is a 19-item self-report index that assesses sleep quality and disturbances over the responder’s past month. It consists of 24 questions, including 19 self-report questions and 5 questions to be answered by spouse or roommate. The 24 questions of the index that are scored consist of 7 components. Each component is assigned a value of 0-3 points. The total score of the 7 components gives the total score of the index, which ranges from 0 to 21. A total score higher than 5 indicates poor sleep quality.

Procedure

Participants consist of 200 college student and the survey was done through an online google form which contain the demographic sheet and all questionnaire booklet. The Forms were shared through mails and WhatsApp with the message of providing the detailed introduction of why this survey is conducted and only if their willing to do the survey was totally voluntary. The participants were assured that their results will be kept confidential. They were also requested to give their honest response. Then the result was used to find the mean, standard deviation and the correlation between them.

RESULTS

The study group consisted of 200 (100) female and (100) male respondents. The scores obtained through questionnaire of mobile-related sleep risk factors are shown in Table 1.

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Table 1-Prevalence of “Mobile-Related Sleep Risk Factors”

Mobile-Related Sleep Risk Factors	Scores %
Mobile screen usage time \geq 8 hours/24 hour	75%
Watching video \geq 3 hours/24 hours	24.8%
Using mobile for at least 30 minutes after the lights are turned off (without a blue light filter in mobile)	86.3%
Keeping the mobile near the pillow while sleeping	74.2%
Putting mobile on airplane mode while sleeping	20.9%
Using blue light filter on mobile while using mobile in dark	2.7%

Prevalence of mobile-related sleep risk factors are shown in above table. Only 20.9% respondents used airplane mode, while 74.2% respondents kept the mobile near the pillow while sleeping. The blue light filter feature was used by only 2.7% respondents. It was observed that the greater number of Using mobile for at least 30 minutes after the lights are turned off.

During the result it was seen that students were sleeping approximately 6.95 hours a night, and had a moderate sleep quality. The result also showed that the students started using mobile phones at such a young age approximately at the age of 14 they received their personal mobile phones. Then, the correlation between Sleep length, Sleep Quality and Problematic mobile use were performed using Pearson correlation and we obtained the following results:

Table 2-Pittsburgh Sleep Quality Index score

	Mean	Standard Deviation
Sleep Length	6.99	0.76
PSQI score (Sleep Quality)	5.45	1.42

Above table indicates the mean and standard deviation of sleep length i.e. 6.99 and 0.76 and sleep quality i.e. 5.45 and 1.42 of the respondents respectively.

Table: 3 Mobile Phone Problematic Use Scale-10 score

	Mean	Standard Deviation
MPPUS score	50.29	18.40

Above table indicates the scores of problematic mobile phone use. The mean is 50.29 and SD is 18.40.

Table: 4 Correlation between MPPUS-10 and PSQI

	N	Correlation Coefficient R	t-value	p-value
Sleep Length	200	-0.01	2.35	.01
Sleep Quality	200	0.16	2.42	.01

Correlation is significant at the 0.05 level(two-tailed)

Correlation is significant at the 0.01 level(two-tailed)

Our hypothesis was that student who are problematic mobile phone users will report less sleep and poor-quality sleep as compared to other students. As, we can see from the above table that sleep length ($r = -0.01$, ns) was not significantly related to problematic mobile phone use, but it was seen that sleep quality ($r = 0.16$, $p = 0.01$) was significantly related to

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problem mobile phone use. Hence, it showed students with higher problematic mobile phone use tend to experience poor sleep quality as compared to others. These results provide partial support for the hypothesis as problematic mobile phone users was related to poor sleep quality but not with sleep length.

DISCUSSION

This study aims at finding the sleep risk factors related to mobile and relationship between the impact of excessive mobile phone use on the sleep pattern of young adults. Proper sleep is important for adolescents (Max., et al., 2015). The participants were from Lucknow city, U.P. Various researches have been conducted on the sleep length and its relation with mobile use but there were less studies that focuses on the importance of the sleep quality and its relation with the excessive mobile phone use. In general, the result indicated that problem mobile phone use was related to sleep quality, but not with the sleep length. The present study revealing that many individuals are highly addicted into their mobile phones that they not able to shut off this behaviour when needed and thus this behaviour is affecting their lifestyle in a negative manner, because of this behaviour individuals are not able to power off their mobile phone when needed and are so into it. One of the reasons might be that they have developed a habitual behaviour towards their mobile phone even in the late-night hours. The adverse effect of excessive mobile phone use is not only limited to poor sleep pattern lack of sleep in adolescents is becoming an important health issue worldwide (Owens, 2014). For example, spending most of their time on the mobile phone screen leads to incrementally increased stress on the cervical spine that may cause immense neck pain when there is a continuous stress on the cervical spine. Another example may be students are spending sleepless nights spending their time on the mobile phones that may lead to sleep deprivation and day time fatigue, which can affect our immune system.

Many other people, such as college students choose to deprive themselves for sleep in order to keep up with all their demands of time and mobile phone being one such reason. But we should always keep in mind that sleep is an important restorative activity, and people who deny themselves sleep may be doing more harm to themselves than they realize. Good quality sleep is essential for college going students as there are immense pressure in today college life lot of activities and pressure to perform good in academics. Students deprived from a quality sleep can cause various physical, mental and emotional problems. In this study it gives an extra hand to show the importance of sleep quality and how students are addicted to their smartphones after lights are off. This cause students to awake late nights thus being sleep deprived and daytime fatigue thus using unwanted things such as smoking, drug abuse, alcohol and some other to tackle with that fatigue thus leading to poor physical as well as mental health. Students are so much into these activities that eventually they become addicted to these and thus it become a part of their lifestyle. Let us take an example of parents they are easily sleeping even there are sounds of loudspeakers nearby but immediately are awake at the sound of their crying baby. Just as parents have developed their ears for crying baby similarly college students have developed their ears for the notification sound coming from their mobile phones that force them to awake even in the deep sleep. Think this mobile phone has become so much addictive to them that even a minute sound of a mobile can may the awake. This situation arises with a lot of college students and have affected their sleep quality to worse which is causing a lot of stress among the students as a student with these habits may experience this feeling many times in their life and thus interrupting their sleep pattern and sleep quality thus spending sleepless nights. In this present study as we can see college students are drawn toward mobile phone and thus high rate of stress, anxiety, tiredness and many other symptoms are observed in the college

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going students because of the lack of quality sleep they are ignoring. This study also shows as how important it is for a college to have a counselling cell so that the students already addicted to it can be shown the right path and help the student to overcome it. This type of addiction is categorized under behaviour addiction and thus common young college students, they are attracted toward drug addiction, smoking, alcoholism and many other unwanted things there might be other reasons like peer pressure, but mostly students at such young age find a way to overcome the daytime fatigue because of the poor-quality sleep. This leads them to deeper way that has no way back and can make their life hell that they might find attractive, enjoyable from outside but they are not thinking about the consequences such things may lead them to.

CONCLUSION

It is seen in the present study that excessive mobile phone use is related with the poor sleep quality among young adults. As, youngsters are the future of the country so it must be taken into account and something should be done to enhance their lifestyle rather than letting them carry their same unhealthy lifestyle. There is a need to provide proper training, counselling that help them to bring back to the right path and make them realize the importance of a quality sleep.

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Conflict of Interest

The author(s) declared no conflict of interest.

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