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Original Research Article

ASSESSMENT OF MOBILE SCREEN TIME, SLEEP QUALITY, AND COGNITIVE FUNCTIONS IN YOUNG ADULTS

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ABSTRACT

Background: Screen time has drastically increased in recent times due to the increased availability of the internet and artificial intelligence. Irrespective of the age groups, all are addicted to the screens. They must be educated about the excessive usage of mobile phones, presenting the scientific data. **Aim and objectives:** The present study was undertaken to observe the mobile screen time, sleep quality, and academic performance in young adults.
Materials and Methods: The present study was a cross-sectional study that included 200 young adults. Their mobile screen time was recorded from the respective mobile phone apps. One week of screen time was observed, and the average time was considered. Sleep quality was assessed using the Insomnia Severity Index. Spatial memory was recorded using the spatial memory test. Verbal memory was assessed using verbal memory tests.
Results: With the increase in screen time, the sleep quality deteriorated. With the increase in screen time, the spatial and verbal memory scores decreased.
Conclusion: There was a severe decline in sleep quality in excessive screen time users. The same is reflected in the cognitive functions. As there was a decline in the spatial and verbal memory. These individuals must be educated to reduce the screen time for their health. The study recommends that this screening should be conducted in all young adults regularly and aware their awareness about the consequences to improve their mental and physical health.

Keywords: Mental health, Memory, young adults, Sleep quality, Stress.

INTRODUCTION

Screen time has drastically increased in recent times due to the increased availability of the internet and artificial intelligence. Irrespective of the age groups, all are addicted to the screens. Mobile phones become like a body part; more than that, young adults are addicted to them. Excessive use of mobile phones causes young adults to lose valuable time if they spend time in games and other video apps like Instagram etc. This excess of mobile usage affects their emotional status. Further, excessive use of the mobile phone adversely affects sleep quality and duration, and this will continue in a vicious cycle. This will have detrimental effects on psychological health and overall quality of life. This also affects physical health. Because the use of the screen for too long limits the physical activities of young adults. Physical activity is the most important aspect required in this age group. Ultimately, this will affect their cognitive functions like attention and concentration, and memory. Hence, their academic performance will be affected. So it is the need of the time to observe the screen time of the young adults. There are various apps available that can be installed, and some are pre-installed in the gadgets that monitor and store the data of usage of screen time. They must be educated about the excessive usage of mobile phones, presenting the scientific data. Hence, the present study was undertaken to

record the screen time in young adults and educate them about the consequences of the excess use of screen time and to encourage them to limit their screen time.

Aim and objectives: The present study was undertaken to observe the mobile screen time, sleep quality, and academic performance in young adults.

MATERIALS AND METHODS

The present study was a cross-sectional study that included 200 young adults after obtaining voluntary, written, informed consent. The study protocol was approved by the institutional human ethics committee. Willing, male and female participants, within the age group of 18-24, apparently healthy, and using a smart mobile phone or iPhone were part of the study. After recruitment, all the participants underwent a general physical examination by a physician to screen for any health-related issues. Their mobile screen time was recorded from the respective mobile phone apps. One week of screen time was observed, and the average time was considered. Sleep quality was assessed using the Insomnia Severity Index. Spatial memory was recorded using the spatial memory test. Verbal memory was assessed using verbal memory tests. After the data collection, the data was entered into the excel sheet and analysed using SPSS 22.0 version software. Based on the time spend on the screen, they were divided into four groups 0-3 hours, 4-6 hours, 7-10 hours, and more than 10 hours. Data was presented as frequency and percentage for qualitative data and mean and SD for quantitative data.

RESULTS

Demographic data were presented in Table 1. With the increase in screen time, the sleep quality deteriorated. With the increase in screen time, the spatial and verbal memory scores decreased (Table 2).

Table 1: Demographic data of the participants

Parameter	Mean and SD
Age (years)	20.33±1.80
Height (cm)	170.67±7.09
Weight (kg)	51.82±8.07

Data was presented as mean and SD.

Table 2: Distribution of the participants based on the number of hours of screen time

Parameter	0-3 hours	4-7 hours	7-10 hours	>10 hours
Frequency and percentage	22 (11)	141 (70.5)	20 (10)	17 (8.5)

Data was presented as frequency and percentage

Table 3: Sleep quality, cognitive functions among the young adults concerning mobile phone usage

Parameter	0-3 hours	4-7 hours	7-10 hours	>10 hours
ISI score	7±3.2	11±4	16±6.8	17±5
Spatial memory	6±2	6±2.3	5±1	5±0.2
Verbal memory	5±2	5±1	4.3±2.1	4±1

Data was presented as mean and SD.

DISCUSSION

The present generation is highly dependent on online sources and various social media apps and games. They are addicted to the internet. At the same time, there is a revolution in the internet, also like from 2G now it is % G and 6 G is on the way. Similarly, artificial intelligence and other sources must depend on electronic gadgets to the maximum extent.[2] Their availability in all places made it easy to use. Further, different types of gadgets, right from computers, tablets, mobile phones, and now smart watches, where the internet can be accessed. However, research reported that there are detrimental effects of excess use of these, as it increases the screen time. Mood changes, sleep disturbances are the key problems that are reported. At the same time excess of screen time reduces physical activity and further deteriorates the quality of life. Sleep is essential for any individual because it has multiple benefits, like the restoration of body energy. Lack of sleep is associated with increased stress, depression, and a compromised immune system as well. As the young adults are excessively addicted to screen time, the blue light that is emitted by these gadgets hurts the circadian rhythm and limits the release of the sleep hormone melatonin. It is well known that a lack of sleep leads to an excess of daytime sleepiness and adversely affects cognitive functions. Cognitive functions, especially memory, is most important for young adults. It was reported that excessive use of the screen causes severe lack of sleep and hazardous effects. For such a teenager, when their screen time was limited, there was an improvement in sleep 3 A study revealed that the majority of young adults sleep much less than the recommended time.[4,5] It was reported that lack of sleep causes increased weight gain, making the individual more prone to metabolic syndrome. Lack of sleep was reported to have adverse effects

on working memory.[6-8] The present study results are per the earlier studies, as we have observed a decline in sleep quality and decreased memory scores. With the increase in screen time, the memory scores deteriorated, and sleep quality was poor. The participants of our study were counselled regarding the adverse effects of excessive use of screen use and instructed to limit their screen time to less than 2 hours per day. The study recommends such an initiation in all areas to improve the sleep quality in young adults and also their overall quality of life.

CONCLUSION

There was a severe decline in sleep quality in excessive screen time users. The same is reflected in the cognitive functions. As there was a decline in the spatial and verbal memory. These individuals must be educated to reduce their screen time for their health. The study recommends that this screening should be conducted in all young adults regularly and aware their awareness about the consequences to improve their mental and physical health.

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