EVALUATION OF SCREEN TIME AND ITS ASSOCIATION WITH MENTAL HEALTH, SLEEP QUALITY AND HEALT PERCEPTION IN UNIVERSITY STUDENTS

Bishama Shafaat*, Hamna Masood [1], Saman Anar [2], Moeez Ahmad [3]

Corresponding Author: Bishama Shafaat*

ABSTRACT

Background: The widespread usage of electronic gadgets and the development of digital technology have drastically changed daily life, especially for college students. Prolonged screen usage may be associated with several negative health effects, according to recent studies. The objective was to evaluate screen time and its association with mental health, sleep quality, and health perception in university students.

Methodology: A cross-sectional study was conducted in University of Lahore (UOL) students. The sample taken for the study comprises of 119 students within the age of 19-25 years. The study was completed from April 2024 to June 2024. Screen time was measured by a generally modified structured questionnaire. Mental Health was measured by Patient Health Questionnaire-9 (PHQ-9). Sleep quality was measured by the Sleep Quality Scale (SQS) and Health Perception of students was measured by Short Form -36 (SF-36).

Results: The mean age of the participants was 21.25 ± 1.70. 53.8% were male. 30.3% of students as a whole had no depression. 47.1% of students had mild depression. 22.7% of the students reported having moderately severe symptoms of depression. 17.6% had a minimal sleep disorder 14.3% had a mild sleep disorder. 23.5% had a moderate sleep disorder and 44.5% had a severe sleep disorder. This study concluded that there was a statistically significant association between screen time usage and mental health ($p<0.05$) and that there was a statistically significant association between screen time usage and sleep quality ($p<0.01$).

Conclusion: This study concluded that 60% of the students were involved in high screen time usage. Nearly half of the population was experiencing mild depression and 70% of the students had poor sleep.

Keywords: Health Perception, Mental health, Sleep Quality, Screen time and University students**.**

INTRODUCTION

It is anticipated that by 2026, there will be over 7.5 billion smartphone data plan users worldwide up from the current figure of over six billion. Young people reportedly have more access to smartphones than any other electronic device, taking advantage of this convenience. According to a study conducted in the US, 95% of young people said they had access to a smartphone, compared to just 88% who said they had access to a computer. Given the high rate of smartphone market penetration in the world and among youth subgroups, it is imperative to comprehend the connection between youth population health and smartphone usage(1). The usage of electronic media devices by young people has increased dramatically in the past 10 years. Teenagers are accustomed to spending a lot of time in front of screens(2).

Students often struggle with sleep issues. Only one-third of the more than 7,000 American university students in a recent large-scale study slept for more than seven hours every night. The prevalence of insomnia was found to be 22.2 percent among male students and 34.2 percent among female students in a recent nationwide study of college and university students in Norway. In addition to having a negative impact on mental and physical health, inadequate sleep can also have an academic negative impact on students due to daytime sleepiness and poor sleep quality.(3)

Epidemiological studies indicate that over 50% of Canadian children report screen time of at least two hours per day, but the prevalence of those who do not meet these guidelines remains high.

One of the most prevalent mental illnesses is depression, which affects 350 million people worldwide of all ages. By 2030, depression is expected to be the primary cause of disease burden globally according to World Health Organization predictions. Research indicates that women are more prone than men to suffer from depressive

symptoms. According to studies on sedentary behavior and health risk, depression and a number of chronic illnesses, including type 2 diabetes and cardiovascular diseases are linked to sedentary behavior.(4)

Teenagers and young adults worldwide frequently experience sleep disruptions, insufficient sleep and delayed sleep-wake behavior.(5) Sleep problems have an immense adverse effect on one's emotional and physical well-being. Using a smartphone before going to bed makes it harder to fall asleep and ultimately results in poor-quality sleep. The risk of weight gain, obesity, metabolic syndrome, hypertension, glucose intolerance and diabetes has been linked to poor sleep quality. Lack of sleep impairs cognitive abilities and increases the risk of anxiety, stress and depression.(6)

Perceptions of health are primarily influenced by an individual's diet and degree of physical activity. For instance, university students who followed a healthy diet reported feeling less stressed and depressed.Declining health perception has been linked to poor quality of sleep, with physical activity having a positive influence on sleep quality in students. However, addiction to mobile phones has been found to have negative impacts on both perceived health and counteract the positive effects of physical exercise on sleep quality. In essence, physical activity and screen time have opposing effects on sleep quality.(7)

Screen use, particularly before bedtime, has been linked to poor sleep quality and disrupted sleep patterns. Given the importance of adequate sleep for cognitive function, academic performance, and overall well-being, understanding the impact of screen time on sleep quality is essential for promoting healthy sleep habits among university students. Students' perceptions of their own health can influence their lifestyle choices and behavior. Excessive screen time may negatively affect health perception, leading to decreased physical activity, poor dietary habits, and neglect of self-care practices. Understanding how screen time influences health perception can inform targeted interventions to promote healthier lifestyle choices among university students. This study raises awareness among students about screen time effects on their life. The aim of this study was to investigate the evaluation of screen time using

different types of screens (computers, smartphones, tablets, TV) with mental health, sleep quality and health perception of university students.

MATERIALS AND METHODS

Study Design:

The study design was cross-sectional.

Setting:

Data was collected from University of Lahore students.

Study Duration:

The study was completed within two months after synopsis approval.

Sample Size:

The sample size of my study was 119. Sample size of this study was calculated by using software Correlation Sample Size(7).

Sample Technique:

The convenient non-random sampling technique was used for the selection from University students.

Sampling criteria
Inclusion criteria

- Age 19-25 years student. (4)

- Both male and female students. (15)

- Time spent on any type of device or any type of digital media platform is more than four hours. (4)

- Students using any digital media device such as a computer, mobile, tablet, or television. (4)

Exclusion criteria

- Students already diagnosed with psychiatric disorders. (4, 31)

- Students who did not have complete data for demographic information. (8)

- Research that used screen-based devices to aid functionality. (31)

Methodology

A cross sectional study was conducted among University of Lahore (UOL) students. The study sample size was a 119. For seeking the permission from the participant, written consent form was taken from each participant. The confidentiality of data was maintained. Data was collected through standardized structured questionnaire from recruited students who fall on inclusion criteria. Sleep quality was assessed by Sleep Quality Scale (SQS), Health perception of students was assessed by Short Form -36 (SF-36), Mental health was assessed by Patient Health Questionnaire-9 (PHQ-9) and screen time was assessed by generally modified structured questionnaire.

RESULTS:

Table 1: Age

N= 171	
Mean	21.25
SD	1.70
Minimum	19
Maximum	25

Above table showed the descriptive statistics of age. The mean age of the participants was 21.25 with the standard deviation of 1.70.

Table 2: Usage of Type of Device

	Frequency	Percent
Smartphone	72	60.5
Tablet	18	15.1
Laptop/Computer	18	15.1
Gaming Console	11	9.2
Total	119	100.0

This table shows the descriptive statistics of usage of device type. The majority of devices, as shown by 72 respondents (60.5%) said they use smartphones. Tablets are the second most popular device, used by 15 of the respondents or 18 people. Tablets and laptops are equally utilized by respondents (15.1%), with 18 of them reporting the use of computers. The least often used device, as reported by 11 respondents (9.2%).

Table 3: Categories of screen time usage of students * health is excellent Cross tabulation

		Health is excellent		Total
		Definitely True	Mostly True	
Categories of screen time usage of students	Minimal Use	23	6	29
	Moderate Use	14	4	18
	High Use	54	18	72
Total		91	28	119
		P=0.026		

The above table shows the statistically significant association between health perception and screen time usage (p=0.026).

*Table 4: Categories of screen time usage of students * Categories of PHQ-9 score Cross tabulation*

		Categories of PHQ score			
		None/Minimal	Mild	Moderate	Total
Categories of screen time usage of students	Minimal Use	8	14	7	29
	Moderate Use	6	6	6	18
	High Use	22	36	14	72
Total		36	56	27	119
		P<0.05			

The above table shows the statistically significant association between screen usage time and mental health (p<0.05).

*Table 5: Categories of screen time usage of students * Categories of sleep quality Cross tabulation*

		Categories of sleep problem				
		Minimal	Mild	Moderate	Severe	Total
Categories of screen time usage of students	Minimal Use	4	5	4	16	29
	Moderate Use	2	4	7	5	18
	High Use	15	8	17	32	72
Total		21	17	28	53	119
		P=0.010				

The above table shows the statistically significant association between sleep quality and screen usage time (p=0.010).

DISCUSSION:

The widespread usage of electronic gadgets and the development of digital technology have drastically changed daily life, especially for college students. Prolonged screen usage may be associated with a number of negative health effects, according to recent studies. Stress, anxiety, and depression are a few mental health conditions that have been connected to excessive screen use. Screen habits may also have an impact on university students' perceptions of their health and well-being(8). Excessive screen time has been linked to poor nutritional choices, decreased physical activity, and sedentary behaviour—all of which exacerbate the sense of ill health. By investigating the relationship between screen usage and university students' reported health, sleep quality, and mental health outcomes, this study seeks to close this gap. Comprehending these correlations is essential for formulating focused interventions and encouraging more healthful screen habits in this demographic (9).

The effects of excessive screen time on general health, physical activity, and the development of the mind and social skills in adolescents and young people have been demonstrated. Screen-based technologies are widely utilised and ingrained in today's youth. A prior study has shown that screen time and adult psychological health are independently correlated. Adolescents' decreased psychological wellbeing, lower physical activity levels, and higher screen time have all been linked in recent studies(10).

The American Academy of Pediatrics recommends that children and adolescents limit their total screen-based entertainment time to a maximum of two hours a day (Council on Communications and Media, 2013). However, nowadays adolescents spend more time on sedentary activities based on screen studying or for entertainment (Schaan et al., 2019) due to the high availability of technological devices, so this cut-off point must be reviewed and monitor the access to technological devices by children and adolescents(11).

In the current study, 24.4% of the students were using minimally. 15.1% of the students were using it moderately. 60.5% of the students were using high. According to Wu et al findings, college students are more likely to experience psychological issues when

they have high ST and low PA, both separately and in combination. Complex underlying systems may be responsible for the detrimental consequences on health(2). The displacement of time that could have been devoted to PA is one way that ST is thought to impact health. 30.3% of students as a whole had no depression. 47.1% of students had mild depression. 22.7% of the students, reported having moderately severe symptoms of depression.

In the present study, it was found that there was a statistically significant association between screen time usage and sleep quality (p=0.01). 17.6% had a minimal sleep disorder 14.3% had a mild sleep disorder. 23.5% had a moderate sleep disorder and 44.5% had a severe sleep disorder. As seen in the Silva et al study, the association between screen exposure and sleep in adolescents is commonly observed, and this relationship may be explained by the fact that excessive exposure to the blue light of the screen can suppress melatonin production, altering aspects of the circadian cycle and increasing mental and physiological arousal(12). The wavelength of the blue light emitted and the viewing distance from the screen can influence the impact that this blue light may have on sleep. However, the present study did find a significant association between sleep quality and exposure to screen time only in devices with more interaction(11).

In another study there was a perspective discussed that adolescents emphasize that TV may to help fall asleep, thus partly explaining the non-association between this electronic device and poor sleep quality. This non-association can also be related to the viewing distance from the TV, which is usually greater than other devices. The interaction pattern of allied devices including the use of social networking seems to impact the sleep quality and anxiety in adolescents. For example, in a study conducted by Tekin et al with 268 young adolescents, it was found that 37% reported having lost sleep due to the use of social networking sites. In this sense, greater interactivity and a multitude of access possibilities, including computer games, may influence usage patterns and stimulate physiological responses concerning the central nervous system, increasing the state of excitation, and impairing sleep patterns(13).

The limitations of the study are only data was collected from University of Lahore students so the results can't be generalized to other university students. Other one the

study design was cross-sectional so it limits the causal relationship. Data was reported by students so there is a chance of self-reporting biasness by students. It is recommended to conduct a longitudinal study should be conducted to understand the causal relationship between mental health, and screen time. Study should be conducted on a larger scale.Future research should develop and measure the impacts of interventions and their potential consequences on sleep, health, and well-being.In the future research should do by controlling screen exposure time, the form of computer use (study, work, or entertainment), bedtime and chronotype-related adolescent sleep (morning, intermediate and evening).

CONCLUSION:

This study concluded that 60% of the students were engaged in high screen time usage. Nearly half of the population was experiencing mild depression and 70% of the students had poor sleep. The study concluded that there is a statistically significant association between screen time usage and mental health ($p<0.05$), indicating that higher screen time is linked to increased symptoms of depression. Similarly, a statistically significant association was found between screen time usage and sleep quality ($p=0.01$), suggesting that greater screen time is correlated with poorer sleep quality.

REFERENCES

1.   Brodersen K, Hammami N, Katapally TR. Is excessive smartphone use associated with weight status and self-rated health among youth? A smart platform study. BMC Public Health. 2023;23(1):234.

2.   Wu X, Tao S, Zhang S, Zhang Y, Chen K, Yang Y, et al. Impact of screen time on mental health problems progression in youth: a 1-year follow-up study. BMJ Open. 2016;6(11):e011533.

3.   Brombach RK. The Influence of Different Types of Screen Time on the Relation Between Insomnia Symptoms and Depressive or Anxiety Symptoms in College Students. 2023.

4.   Kleidermacher LE, Olfson M. Gender Differences in the Association Between Screen Time and Depression. AJPM focus. 2024;3(2):100176.

5.   Echevarria P, Del-Ponte B, Tovo-Rodrigues L, Matijasevich A, Halal CS, Santos IS. Screen use and sleep duration and quality at 15 years old: cohort study. Sleep Medicine: X. 2023;5:100073.

6.   Lu H, Liang G, Li D-L, Liu M-X, Yin Z-J, Li Y-Z, et al. Sleep quality as a mediator of the relationship between screen time and negative emotions among Chinese college freshmen. Psychology, Health & Medicine. 2023;28(10):2883-96.

7.   Lundstrom FW. Screen time, sleep duration and health perception among university students: a cross-sectional study: University of Split. School of Medicine; 2023.

8.   Liu S, Wing YK, Hao Y, Li W, Zhang J, Zhang B. The associations of long-time mobile phone use with sleep disturbances and mental distress in technical college students: a prospective cohort study. Sleep. 2019;42(2).

9.   Kim H-J, Kim J-S. The relationship between smartphone use and subjective musculoskeletal symptoms and university students. Journal of physical therapy science. 2015;27(3):575-9.

10.   Wu X, Tao S, Zhang Y, Zhang S, Tao F. Low physical activity and high screen time can increase the risks of mental health problems and poor sleep quality among Chinese college students. PloS one. 2015;10(3):e0119607.

11.   Wang W, Jiang J, Qi L, Zhao F, Wu J, Zhu X, et al. Relationship between mental health, sleep status and screen time among university students during the COVID-19 pandemic: a cross-sectional study. BMJ open. 2023;13(12).

12.   Tao S, Wu X, Zhang Y, Zhang S, Tong S, Tao F. Effects of sleep quality on the association between problematic mobile phone use and mental health symptoms in Chinese college students. International journal of environmental research and public health. 2017;14(2):185.

13.   Tekin U, Alpgan Ö. Association between screen time of mobile devices and TV and school readiness in preschool children: a cross-sectional study. Developmental Neuropsychology. 2023;48(2):47-55.