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Association between Excessive Use of Mobile Phone and Insomnia among Pakistani Teenagers Cross Sectional Study

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Abstract

Introduction: In the era of modern technology mobile phones have becoming popular, especially in teenagers. Besides of its uses there are various undesirable psychological and physical impact on heath. Aims and objectives: The purpose of this study was to access the link among Excessive Use of Smart Phone and there sleep pattern among Pakistani Adolescents.

Materials and Methods: A detailed cross sectional study was performed on a total of 500 medical graduates range between 18 and 24 years who were using mobile phone atleast a year. Self-designed Questionnaire is given to them having details of their frequency and pattern of using smart phone. Sleep quality was analyzed by using Pittsburg Sleep Quality index .Chi square test was also perform to check the link between frequency of mobile phone and quality of sleep.P value < 0.005 were considered as significant.

Result: Out of 500 participants, the frequency of mobile phone usage was more in males 70% as compare to females30%. Their age varied from 21to 24 with mean age of 20 ± 1.9 years. Most of students use mobile phone in night 188 (38%)and 202 (40%) participants using mobile phone unlimited. 366 (73%) students mentioned that they start using mobile phone at intermediate level and claimed that no surveillance of the mobile phone being done by the parents . Students who were using unlimited mobile phone reported that they take more than 1 hour to sleep that showed a significant (p-value <0.001) correlation between more mobile phone use and time taken to sleep.

Conclusion: The results of our study conclude that excessive mobile phone usage leads to sleep disturbances and poor quality of sleep. That may implement negative effects on student's mental and physical health along with this it can also affect the students' educational performance and daily life activities.

Keywords: Mobile Phone; Psychological Health; Sleep Quality, Nomophobia, Blue Light

I. Introduction

Sleep is altered state of consciousness that constitutes almost one-third of the hours in a human's lifetime. During sleep, connection between brain and body practically motor activities are suspended. Sleep is a keystone of adolescent normal development and growth therefore it is thought that ideally students should aim for at least nine hours of sleep in night in order to perform actively, both physically and mentally. Sleep deficiency may lead to various psychological and physical disorders such as deprive energy, mood swings, inability to concentrate and learn. It has been also associated with increase in obesity (Gupta et al.,2016) (Munezawa, T et al.,2011) (Varshney, A. M. et al.,2017) (Van den Bulck, J.2007)

In this Era of advanced technologies mobile phones are became an essential tool for human beings especially in younger population. Previously these were used only for communication but now advancement in technology has lead mobile phones to be used as mini computers. People generally young population feels that life without cellphone is incomplete, dull and drab. Although significance and benefits of mobile phone cannot be dined but at the same time, their excessive use may implement undesirable effects on health and education. According to a survey, the frequency of mobile phone users has increased from 12.4 million to 7 billion from year 1990 to 2014 globally (Saeb, S. et al.,2015) (Asselbergs, J. et al.,2016)

From year 2000 – 2015 frequency of internet usage is also increased globally 7-fold from 6.5% to 43 % (Parasuraman, S. et al., 2017). According to *GLOBAL MOBILE MARKET* data, Mobile phone subscribers has been increased to 3 million in 2018. India is ranked on second number after US for the usuage of mobile phone (. Majumder, S.et al.,2019) .In today's life that is surrounded by modern technologies, anxiety and stress are has affliction with daily activities. "After constant mobile phone use the fear, anxiety and nervousness of mobile loss or getting mobile less is termed as nomophobia," Number of studies conducted in parts of the world have reported that teenagers are concerned with the idea of losing their mobile phones (Ali, S. et al.,2014) (Prasad, M. et al.,2017) (Dongre, A. S. et al.,2017).Continuous usuage of mobile phone affects people life both physically and mentally. Excessive use of mobile phones is associated with impaired concentration, headache, dizziness, fatigue, dry eyes, computer vision syndrome, stress, sleep disturbances, weakness of thumb and wrist, neck pain and rigidity, increased frequency of tactile hallucinations and nomophobia etc (González-Cabrera, J. et al.,2017).Using the social media can change the sleep duration. The aim of this study is to evaluate the pattern of mobile phone usage among students of a medical university of Pakistan and to assess effects of mobile phones use on their psychological health in the form of sleep quality.

2. Material and methods

A cross sectional study conducted in Baqai Medical University from April 2019 to September 2019. Total 500 students from all classes (i.e. 1st to final year) were recruited for the study. Both male and female students having age between 17 to 24 years were given equal opportunity for participation. Participants who are using mobile phone for more than 2 years were included for the study. Students with the history of sleep disorders, metabolic disorders and drug and alcoholic use were excluded from the study. A self-administrated questionnaire form was designed according to literature survey. Students were informed about the objectives of the study. Verbal and written informed consent was taken from each participant. The questionnaire was having two parts the first part was consisted on the questions regarding demographic data including age, gender, BMI score, academic year, frequency of mobile phone use, at which age they started using mobile phone and at which time they are using more mobile phone, second part assessed the sleep quality with help of Pittsburg sleep quality index.

In the 2nd part of questionnaire questions were asked regarding the sleep quality and it was calculated by using Pittsburg Sleep Quality index (Buysse et., al 1989). The study was approved by Institutional Ethical Committee of Baqai University.

3. Results

Out of 500 participants, the frequency of mobile phone usage was more in males 350 (70%) when compare to females 150 (30%). Their age varied from 21to 24 with mean age of 20 ± 1.9 years. The students reported that most of the time they use mobile phone in night 188 (38%). According to 202 (40%) participants the total hours of mobile phone usage (hours /day) were unlimited. 366 (73%) students mentioned that they start using mobile phone at intermediate level and claimed that no surveillance of the parents being done as shown in table 2. Students stated multiple reasons for use of mobile phone, the highlighted one was surfing social media. The reasons for using mobile phone by the participants in the study group are given in the Table-3.

Table 1. Demographic details of the study applicants

Gender	N (%) 500
Male	350 (70%)
Female	150 (30%)
Age	

18-20yrs	127 (25.4%)
21-24yrs	373 (75%)

Table 2.Analysis of mobile phone usage

Time of mobile phone use	
Morning	144 (29%)
Afternoon	33 (6.6%)
Evening	135 (27%)
Night	188 (38%)
Total hours mobile phone use (hrs/day)	
>1-2 hrs	54 (2.8%)
>3-4 hrs	65 (13%)
5-10 hrs	122 (24.4%)
40-60 mins	57 (11.4%)
Unlimited	202 (40%)
At which class they start using mobile	
at matric level	58 (11.6%)
at intermediate level	203 (40.6%)
at university level	195 (39%)
before matric	4 (0.8%)
Surveillance of mobile phone by parents	
yes	134 (26.8%)
no	366 (73.2%)
Who bears the expenditure of mobile phone	
parents	284 (56.8%)
siblings	125 (25%)
themself	87 (17.4%)
others	4 (0.8%)
Purpose of use of mobile	
study	133 (26.6%)
social media	367 (37.4%)
Places where mobile phone mostly use	
Home	206 (41.2%)
Public places	45 (9%)
Class	178 (35%)
Eating	33 (6.6%)
Driving	71 (14.2%)
Insomnia	
yes	376 (75.2%)
no	124 (24.8%)

Table 3. Sleep routine of participants

Time to go bed	
10am-12am	12 (2.4%)
12am-3am	256 (51.2%)
3am-5am	127 (25.5%)
Time taken to fall a sleep	
30mins	98 (19.6%)
>1hr	47 (9.4%)
>2hrs	355 (71%)

Time to get up in the morning	
5am -7am	159 (31)
7am-9am	202 (40)
9am-11am	139 (28)
Wake at middle of night	
yes	356 (71.2)
not	244 (49)
Sleep quality	
very good	165 (33%)
fairly good	289 (57)
very bad	56 (11.2%)
episodes of disorientation/confusion	
yes	345 (69)
no	155 (31)
Bad dreaming	
Yes	377 (75)
No	123 (25)
Cough/ snore loudly	
Yes	155 (31)
No	345 (69)
Restlessness during sleep	
Yes	405 (81)
No	95 (19)

Students who were using unlimited mobile phone reported that they take more than 1 hour to sleep that showed a significant (p-value <0.001) correlation between more mobile phone use and time taken to sleep. The sleep quality in these participants who were using unlimited mobile was not good (p <0.001) and they fell restless during the sleep and episodes of disorientation were more in these participants as shown in table 2.

Table 4 .Association among mobile phone users and effect on sleep quality

Frequency of mobile phone use	Unlimited use			
	Half an hour	More than 1 hour`	Sleepless whole night	p value
time take to sleep	98 (19.6%)	355 (71%)	47 (9.4%)	0.001
Time taking to go to bed	10am-12am 12 (2.4%)	12am-3am 256 (51.2%)	3am-5am 127 (25.5%)	0.001
Sleep quality	very good 165 (33%)	fairly good 289 (57)	very bad 56 (11.2%)	0.001

4. Discussions

Mobile phone is undeniable in present time, majority of mobile phone users particularly in Asia are Youngers and teenagers (Chen, W. et al.,2005). In our study the frequency of mobile phone use was more in males as compare to females. According to Measuring the Information Society Report the fraction of male mobile users are greater than the women in most countries including Pakistan (Hilbert, M.2011). The night time was highlighted by our students for use of mobile phone that was parallel to the findings of Van den Bulck J. who reported that almost more than half of young population check their mobile phones after they have gone to bed(Van den Bulck, J. 2003) (Eggermont, S. et al., 2006)

In our study most of the students were taking more than 2 hours to fall sleep. Use of mobile phones particularly in night have serious effect on eye sight it is documented that it can damage the central vision, blue light emitted from mobile can disturbed the production of melatonin hormone which regulate the sleep cycle not only this but mobile phone use also lead to a variety of

health problems including heart disease, cancers, weight gain, depression and anxiety (Repacholi, M. H. 2001) (Irmak, M. K. et al.,2002) (Gamble, A. L. et al.,2014).

In our study majority of the students used their cell phones and social media for sharing of thoughts with their friends and families. It was reported in a study that medical students use social media accounts (facebook, whatsapp, and twitter) to overcome the stress produced by pressure of studies and exams (Ali, A. & Shaheen, S. et al.,2019).

Besides its use as contacting device, mobile phones now are featured with documents, alarm, calendars, stop-watch, etc. These multifunction features of mobile phones cause an increase in mobile phone value, leading the users to perceive it as a must-have gadget (Khan, A. S. N. 2009) (Yang, J. 2013).

In our study, 41.2% of students mentioned that they use mobile phones at home which may be due to constant communication with friends. Mobile phones are thought to be a worrying part in educational institutes, and 35% of students in this study declared that they use mobile phones in class rooms where they exchange text messages with friends rather than concentrating on lecture.

The present study showed that excessively long hours of mobile phone use was associated with insomnia, particularly in students using mobile phones for more than 10 hours per day compared with those using mobile phones for less than 1 h per day. This study suggested that overuse of mobile could be a indicator of a higher risk of insomnia.

5. Conclusion

It is conclude that the mobile phone is now becoming essential part and allotment of the life among teenagers. Excessive mobile usage is associated with the poor sleep quality and sleep disturbances. Too much mobile phone usage cause adverse effect on psychological and physical heath.

6. Limitations

Participants were only medical students recruited from single medical university.

7. Suggestions

There is need to conduct such kind of studies on big sample size without age and occupational limit.

Conflict of interest: There was no any conflict of interest by any author.

Ethics approval: Study was approved by Ethical board of Baqai Medical University

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