

Extended Periods of Mobile Phone Usage Jumbles the Sleep Pattern in Medical Students

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Abstract

Objectives: This study aimed to analyze the association between the hours of mobile phone use and, sleep pattern and quality. And to compare the sleep quality of first year MBBS and Nursing students.

Background: Mobile phone use has become extensive in teenagers. Its excess use has amplified public and scientific debate about its possible adverse effects on human health. Prior research indicates that there might be a relationship between daytime sleepiness and excessive mobile phone use in teenagers.

Methods: 120 medical students grouped as cases (n=60) (>3 hours/day of mobile usage) and control (n=60) (≤3 hours/day of mobile usage) were examined for their sleep quality & pattern by Pittsburg Sleep Quality Index (PSQI). A comparison of sleep quality was also made between 40 Nursing and 40 MBBS students. Student 't' test was applied. Probability <0.05 was set as significant.

Results: A significant association of hours of usage and sleep indices were observed, and there was a significant decline in the sleep quality of MBBS students when compared with nursing students. The differences in all the components of PSQI were statistically significant for hours of usage. And the differences were statistically significant for the duration of sleep and day dysfunctioning due to sleepiness between first year MBBS and Nursing students.

Conclusion: Our study concludes that using mobile for > 3 hours/day cause sleep deprivation and day sleepiness which may affect cognitive and learning abilities of medical students. The poor sleep quality of MBBS students may be due to more academic demands.

Keywords: Mobile; Sleep; Medical; Psychological health.

I. Introduction

Although sleep deprivation among adolescents is not a new phenomenon, in recent years sleep has garnered more mainstream, clinical, and academic attention. This comes at a time when there are increased demands on adolescents, that conflict with getting a full night's sleep, which can negatively impact physical, social, and psychological health (Adams et al, 2013). In recent years, the proliferation of electronic devices such as computers and cellphones has been implicated in the poor sleep of young people (Gamble et al, 2014). The pattern of sleep and wakefulness in different subjects is also known to vary with their age, the demands of their occupation, their physiological and psychosocial characteristics, psychiatric illness, and some types of physical illness (Giri et al, 2013).

Information and Communication Technology has percolated deeply into our culture. Most deeply affected are the young adults (Misurya and Singh, 2016). Majority of the students use their phones for social interaction and sharing of thoughts with their parents and friends. Besides calling, the second most common usage of mobile phone is as instrument for coordination of day-today activities such as alarm clock or reminder, for safety purposes, and emergency situations. These multifunction features of mobile phones cause an increase in mobile phone value, leading the users to perceive it as a must-have tool (Gupta et al, 2016). It has become a topic of intense research among contemporary scientists and is frequently a part of post-doctoral research of many of this biomedical scientist's community (Misurya and Singh, 2016).

In the last few years, there has been a growing attention to sleep and sleeplessness- related problems. This interest is mainly due to the recognition that sleepiness and fatigue are becoming endemic in the population (Giri et al, 2013). In addition to the entertainment aspects, electronic devices play an important part in the social lives of adolescents. A more active, stimulating and social media use may, however, affect sleep in a negative way (Hysing et al, 2015). The present study aims to study the sleep quality of undergraduate students in relation to the time they spend using their mobile phones and a comparison of sleep quality was done between the students of different medical professions.

II. Methods

A cross-sectional (observational) study was conducted among the 1st year medical students studying at Government Medical College, Patiala. The protocol was submitted to institutional ethical committee and was approved by them. 120 MBBS subjects and 40 Nursing students volunteered for the study. The subjects having

any past history of any sleep disorder or who were currently on any medication that may affect sleep were excluded from the study. Confidentiality of the subjects was maintained by instructing students not to write their names on the questionnaire.

Experimental Design

To assess the sleep quality of the participants Pittsburgh Sleep Quality Index (PSQI) (Buysee et al, 1989) was used. The scoring was done according to the standardized instructions (Buysee et al, 1989) . The scores of duration of sleep, sleep disturbance, sleep latency, day dysfunctioning due to sleepiness, sleep efficiency and overall sleep quality were aggregated according to the scoring of PSQI, with the score of each individual component indicating 0 as better and 3 as worse. The total PSQI score of ≤ 5 indicated good sleep quality and if the score was > 5 then it indicated poor sleep quality, and the minimum score was 0 and maximum score 18.

Statistical Analysis

The data acquired was analyzed statistically. Student’s paired t-test was used for the analysis. $p < 0.05$ was considered significant.

III. Results

The results in our study reported a significant decline in the sleep quality of the individuals who used mobile phone for more than 3 hours. And a general score of MBBS students was > 5 , when compared with nursing students, which indicated poor sleep. A significant difference was found in the duration of sleep, sleep disturbance, sleep latency, day dysfunctioning due to sleepiness, sleep efficiency and overall sleep quality between the MBBS students who used mobile phone for more than 3 hours a day and those who used it for less than 3 hours a day (Table1 , Figure 1). And the value of each individual component was better in the students who spent less than 3 hours per day using their mobile phone. A statistically significant difference was also found when the total scores were compared, with average value of more than 5, indicating poor sleep quality in those who used mobile phone for more than 3 hours daily.

Table 1: Comparison between students who used mobile phone more than 3 hours and less than 3 hours a day.			
Variables	MBBS >3 HOURS	MBBS <3 HOURS	p Value
Total Score	6.03± 1.88	4.15± 1.21	p<0.001**
Duration of Sleep	1.15± 0.86	0.76± 0.67	0.007*
Sleep disturbance	1.23± 0.49	0.91± 0.27	p<0.001**
Sleep latency	0.9± 0.70	0.58± 0.56	0.007*
Day dysfunctioning due to sleepiness	1.58± 0.74	1.21± 0.69	0.005*
Sleep efficiency	0.2± 0.51	0.05± 0.21	0.03*
Overall sleep quality	0.95± 0.64	0.61± 0.55	0.003*

Highly Significant, *- Significant) Highly Significant, *- Significant)

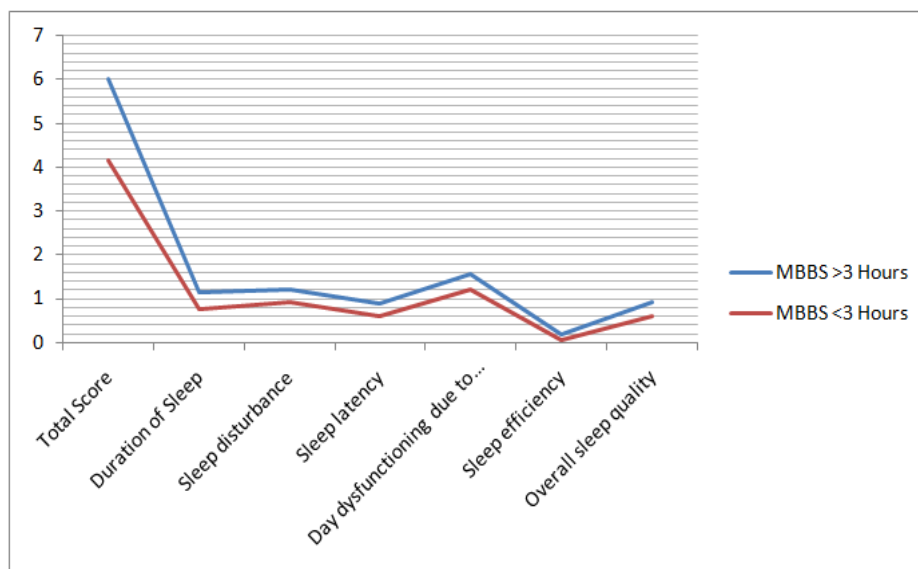


Figure 1: Comparison between students who used mobile phone more than 3 hours and less than 3 hours a day.

Another comparison was done between the B.Sc. Nursing students and MBBS students. And the differences were significant for the duration of sleep and day dysfunctioning due to sleepiness. Nursing students had better score on sleep disturbances and overall sleep quality, although the results were not statistically significant. The total score difference was also found to be statistically significant with nursing students having a better sleep quality (Table 2, Figure2).

Variables	B. Sc. Nursing	MBBS	p Value
Total Score	4.15± 1.98	5.82± 2.53	0.001**
Duration of Sleep	0.57± 0.71	0.97± 0.83	0.02*
Sleep disturbance	1± 0.39	1.05± 0.45	0.59
Sleep latency	0.85± 0.73	0.85± 0.66	1
Day dysfunctioning due to sleepiness	0.92± 0.65	1.35± 0.57	0.002*
Sleep efficiency	0.12± 0.33	0.1± 0.37	0.75
Overall sleep quality	0.67± 0.61	0.8± 0.60	0.36

(** - Highly Significant, * - Significant)

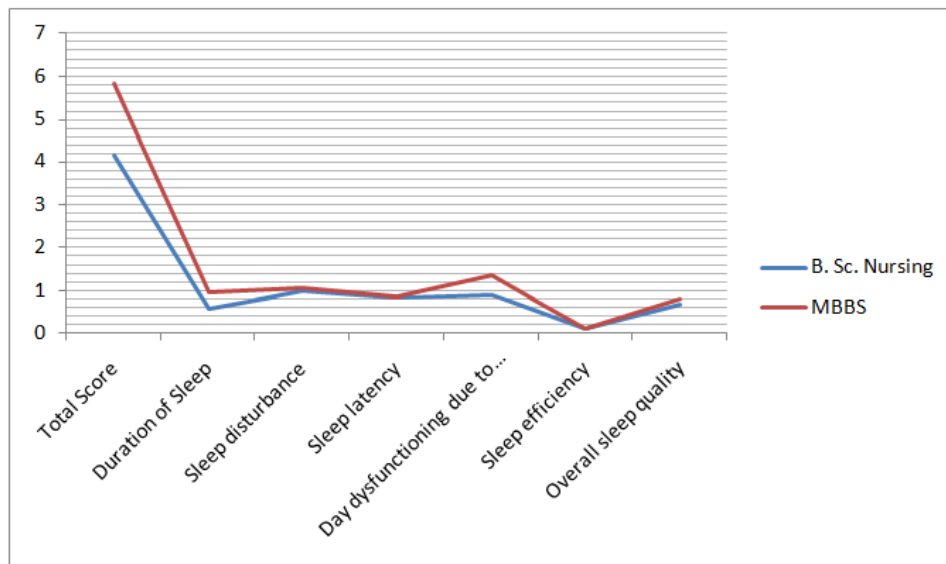


Figure 2: Comparison of sleep quality between MBBS and Nursing students.

IV. Discussion

Mobile phone use has become extensive in teenagers. Excess of mobile phone use has amplified public and scientific debate about its possible adverse effects on human health. Our study shows significant effect of the duration of mobile phone usage on the sleep pattern among the MBBS students. The students who used the mobile phone for less than 3 hours a day (4.15 ± 1.21) had better PSQI scoring, while on the other hand, students who used mobile for more than 3 hours per day had poor PSQI score (6.03 ± 1.88). And a significant decline in the sleep quality of MBBS students (5.82 ± 2.53) was also observed as compared to the nursing students (4.15 ± 1.98). Our results are in consistence with other studies (Thoméé et al, 2011; Gamble et al, 2014; Hysing et al, 2015; Misurya and Singh, 2016; Modi and Bose, 2016; Gupta et al, 2016; Nathan and Zeitzer, 2013). A study by Giri et al, 2013 revealed that daytime sleepiness may result in mood disturbances and increased vulnerability to substance use (Giri et al, 2013).

Nila Nathan concluded that overall number of text messages did not significantly contribute to daytime sleepiness, it is possible that a temporal rearrangement of phone use (e.g., limiting phone use during prescribed sleeping hours) might help in alleviating some degree of daytime sleepiness (Nathan and Zeitzer, 2013). High frequency of mobile phone use at baseline was a risk factor for reporting sleep disturbances and symptoms of depression for the men and symptoms of depression for the women at 1-year follow-up (Thoméé et al, 2011). However PSQI was negatively associated with the hours of usage of mobile in both the genders in the study conducted by saxena yogesh et al (Saxena et al, 2013). A study reported that EMF exposure (mobile usage) in evening influence the physiological factors as sleep quality and the melatonin rhythm (Saxena et al, 2013). Poor sleep quality show negative impact on general health and feeling of well-being along with impaired cognitive function and poor academic performance.[23] (Gupta et al, 2016).

V. Conclusion

Thus, it can be concluded from the results of our study that use of electronic gadgets for an extended period of time during a day can deteriorate the sleep quality of an individual and can lead to poor performance during daytime. The poor sleep quality of MBBS students in comparison to nursing students can be attributed to longer academic hours and more academic burden. The overindulgent adolescents on social media later feel handicapped when they sometimes are unable to access it, which can further lead to feelings of aloofness and depression. It may cast a negative impact on performance of activities requiring higher cognition. Better acknowledgement about the importance of sleep and limited use of cell phones should be encouraged for the well being of future health care practitioners. General awareness should be promoted about ill effects of prolonged periods of technology use upon circadian rhythm disturbances and disturbances of sleep wake cycle.

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