

Effect of mobile phone overuse on health of medical students

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ABSTRACT

Background: In this modern era of the 21st century, mobile phones have undoubtedly been part and parcel of our lives as it has revolutionized our lifestyle. We can communicate with one another, retrieve information about education, and can use it for entertainment purpose. However, like all other good things, mobile phone also comes with its own demerits such as it causes various health hazards ranging from insomnia, numbness of fingers, irritability to headache, anxiety, and dreadful addiction. **Objectives:** The aim and objective of this study were to assess adverse health effects of mobile phone use among medical students in a government medical college. **Materials and Methods:** The study was conducted among the medical students in Murshidabad Medical College, West Bengal. A pre-designed, pre-tested, anonymous questionnaire was used to assess the mobile use pattern among the students. **Results:** All the students were using mobile with 28% using it for more than 6 h every day. 43% of students experienced medical problems with majority complained a lack of concentration. Duration of the use of mobile phones was significantly associated with the development of health problem. **Conclusion:** With increased risk of health problems associated with excessive mobile use, one should emphasize on reserving the use of cell phones for shorter conversations and other healthy modes of entertainment.

KEY WORDS: Mobile Phone; Health; Medical Students; Overuse

INTRODUCTION


As of 2015, there were 7.4 billion subscriptions worldwide and the number is increasing every year [Figure 1].^[1,2] Mobile phones use electromagnetic radiation in the microwave range (450–3800 MHz).^[2]

Mobile phone overuse (mobile-phone addiction or mobile phone dependency) is a dependence syndrome seen among certain mobile phone users. Some mobile phone users exhibit problematic behaviors related to substance use disorders.

These behaviors can include preoccupation with mobile communication, excessive money or time spent on mobile phones, and use of mobile phones in socially or physically inappropriate situations such as driving an automobile. Increased use can also lead to increased time on mobile communication, adverse effects on relationships, and anxiety if separate from a mobile phone or sufficient signal.^[3]

A decline in male sperm quality has been observed over several decades among mobile users.^[2-6] A 2012 review concluded that “together, the results of these studies have shown that radio frequency electromagnetic radiation (RF-EMR) decreases sperm count and motility and increases oxidative stress.”^[7,8]

Smartphone addiction can be compared to substance use disorders as they act as a medium to provide the drug of entertainment and connection. While acting as the means by which the drug is consumed. A study conducted at Alabama

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State University on the effects of smartphones on students defines the issue by stating that we are not only addicted to smartphones themselves but also we “are addicted to the information, entertainment, and personal connections (that a smartphone) delivers.”^[9]

People have an affinity for constant entertainment, and smartphones provide the quickest, most easily accessible route to it.

In 2011, the World Health Organization (WHO) working group classified cell phone use as “possibly carcinogenic to humans.”^[2] The International Agency for Research on Cancer of the WHO said, in 2011, that radio frequency is a possible human carcinogen, based on heavy usage which increases the risk of developing glioma tumors.^[10]

With the increased use of mobile phones among students, the present study was undertaken with the objective to assess the adverse health effects of the use of mobile phones on medical students.

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted in Murshidabad Medical College, India, from March 1 to March 31. The study population included all the medical students who were enrolled at the college during the time of the study from first to final year. A self-administered, pre-designed, pre-tested anonymous interview schedule was used after obtaining informed written consent from each participant. The study protocol was approved by the Institutional Ethical Committee. MS Excel sheet was prepared using the collected data for easy analysis, and the charts and tables were made.

RESULTS

A total of 200 students participated in the study giving a response rate of 94%. The profile of the study sample was predominantly male (81%). The mean age of study participants was 21.54 (standard deviation = 1.988).

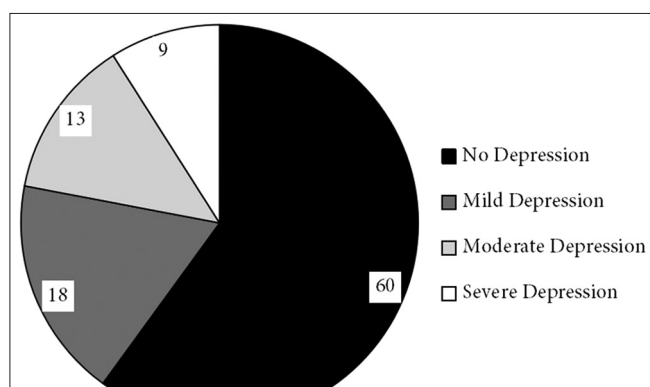


Figure 1: Total worldwide cellular subscriptions

Majority students were hostlers (89.5%), belonged to nuclear family (78%), and were only child of their parents (38%). 64% of students belonged to upper class [Table 1].

As shown in Table 2, most of the students were using mobile phones from the past 2 years and using it at least for 2–3 h per day. 43% of students experienced medical problems. Most commonly reported problem was lack of concentration in 47.6% of students [Table 3].

On applying binary logistic regression to study the effect of sociodemographic variables and mobile pattern use on the development of medical problems, those variables that were found statistically significant were included in multiple logistic regressions. In multivariate analysis, factors that remained statistically significant with development of medical problems were the duration of using mobile phones that had a positive association with the development of medical problems [Table 4].

Table 1: Sociodemographic profile of study participants (n=200)

Variables	Frequency (%)
Year of the study*	n (200)
1 st	72 (36)
2 nd	56 (28)
3 rd	38 (19)
4 th	34 (18)
Gender	
Male	162 (81)
Female	38 (19)
Permanent residence	
Corporation	17 (8.5)
Municipality	90 (45)
Gram panchayat	93 (46.5)
Present residence*	
Day scholar	9 (4.5)
Hostel	179 (89.5)
Paying guest	12 (6)
Type of family	
Joint	44 (22)
Nuclear	156 (78)
Number of siblings*	
Nil	76 (38)
One	59 (29.5)
Two	49 (24.5)
More than two	16 (8)
Socioeconomic status**	
Upper	128 (64)
Upper middle	49 (24.5)
Lower middle	15 (7.5)
Upper lower	8 (4)
Lower	0 (0)

Table 2: Mobile phone uses pattern among students of MSDMCH

Variables	Frequency (%)
Using mobile phone	
Yes	200 (100)
Duration of using mobile phone (years)	
1–2	124 (62)
3–4	46 (23)
>5	30 (15)
Duration of daily mobile using* (h)	
0–1	28 (14)
1–2	23 (11.5)
2–3	47 (23.5)
3–4	26 (13)
4–5	20 (10)
>6	56 (28)

* $P < 0.05$ **Table 3:** Problems experienced by the study population as perceived by them

Variables	Frequency (%)
Experienced medical problems	
Yes	86 (43)
No	114 (57)
Medical problems	
Tingling sensation, numbness of finger	20 (10)
Insomnia	5 (2.5)
Prolonged sleep	26 (13)
Anxiety	19 (9.5)
Lack of concentration	41 (47.6)

Table 4: Multivariate analysis showing factors associated with development of medical problems

Variables	AOR	Significance	95% CI (LL-UL)
Duration of using mobile phones	0.392	0.010	0.192–0.800

CI: Confidence interval, AOR: Adjusted Odds Ratio

DISCUSSION

The present study showed that all students were using mobile phones with 28% of them using it for >6 h/day. 43% of the students experienced medical problems [Table 2]. Lack of concentration was the most common problem reported in 47.4% of students. In our study, prolonged sleep (13%), tingling sensations, and numbness of finger (10%) were prevalent [Table 3] (which were not present before their exposure to mobile). Duration of using mobile phones showed a positive association with the development of medical problems.

Similar kind of a study done by Kumar *et al.* of Malaysia in 2011,^[14] showed that 62% of medical students using

mobile phones faced medical problems. Findings were also corroborated by Francisca study^[15] where using the phone for >1 h by 90% of subjects meant that relative exposure to harmful radiations results in adverse health effects. Another study done by Acharya showed college students being regularly disturbed by frequent calls/messages from others which stopped them from completing the academic activities.^[16] A study conducted by Rapacholi (occupational and environmental health WHO) showed that individuals using mobile phones claimed to have insomnia, tingling and dizziness.^[17] A study conducted by the WHO Europe, in November 2006, also shown similar result about the association between sleep disorder and mobile over use.^[18]

Limitation of the study is that it is a cross-sectional study so causation and association cannot be explained and we are not comparing the subjects with any comparison group.

Recommendation

With the increased risk of health problems associated with excessive mobile use, we should emphasize on reserve the use of cell phones for shorter conversations and other healthy modes of entertainment.

CONCLUSION

Number of mobile phone user is increasing day by day throughout the world as well as in India. The present study showed that Rf-EMR-related medical problems are prevalent in people who are using mobile for years and also spend considerable time daily for the same purpose.

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