ORIGINAL RESEARCH ARTICLE
pISSN 0976 3325 | eISSN 2229 6816
Open Access Article (CC BY-SA)
www.njcmindia.org
DOI: 10.5455/njcm.20211012041331

A Study on Effect of Mobile Phone among College Students in Chennai

Shanthi Edward[1], Vijaykumar Edward[2], Mahim[3]

[1]Professor, Department of Community Medicine, Sree Balaji Medical College and Hospital, Chennai
[2]Assistant Professor, Department of General Medicine, Sree Balaji Medical College and Hospital, Chennai
[3]MBBS student, Department of Community Medicine, Sree Balaji Medical College and Hospital, Chennai

ABSTRACT

Background: Smart phones have become an integral part of our life, especially among the younger population. Due to its overuse, the effects caused by mobile phones and electromagnetic field also show an increasing trend. Hence this study was conducted to assess the ill effects of mobile phone use among the college students in Chennai.

Methods: Cross sectional study was conducted among college students, Chennai, from May 2019 to June 2019. Males and Females between 17 to 23 years of age were included in the study. A total of 125 students selected by convenient sampling technique were included in the study. The study was conducted using a questionnaire, covering particulars related to mobile phone usage and its ill effects on them. Data entry and analysis was done using SPSS version 23.

Results: Proportion of participants with different ill effects includes pimples (18.4%), sleep disturbances (16%), loss of interest in studies (15.2%), fatigue (11.2%), headache (9.6%), restlessness (8.8%), and redness of eye (6.4%), irritability (6.4%), dizziness (4.8%), thumb pain (3.2%) and earache (1.6%).

Conclusion: Students needs to be educated regarding the health problems owing to the over usage of mobile phones and large-scale studies are needed to assess the extent of the problem.

Key words: Mobile phone, college students, ill effects, adolescents

INTRODUCTION

Mobile phone has become an integral part in majority of human being's life. In the past decade the usage of mobile phone has increased enormously, especially in India. Mobile phones made communication so easy and it is so cost effective and faster than other modes of communications. Besides communication, mobile phones helps us to replace gaming gadgets, alarms, camera, tape recorder, calendars, etc., and even these days it doses the works of personal secretary. Due to usefulness, available apps, information, entertainment, mobile usage has become habitual to all.

Though it is commonly used by people of all age groups, the most vulnerable population to get affected is the children and adolescent age group peoples. Since the culture of using mobile phones in the schools has not become so popular in India, we do face the adverse effects of mobile phone use among adolescents more commonly. Since, it has become vital element to every person; it is a reason of addiction too.[1] The addiction is spreading continuously among college youths and teenagers.

The younger age group is becoming so dependent upon the smart phones as they are having so many features from Internet browsing to surfing the social media. This consumes maximum time and leading to psychological dependency and distraction from studies causing ill health. There is an increased incidence of mental health problem in India and around the

How to cite this article: Edward S, Edward V, Mahim. A Study on Effect of Mobile Phone among College Students in Chennai. Natl J Community Med 2022;13(2):85-89. DOI: 10.5455/njcm.20211012041331

Financial Support: None declared | **Conflict of Interest:** None declared | **Date of Submission**: 12-10-2021 **Date of Acceptance**: 25-01-2022 **Date of Publication**: 28-02-2022

Correspondence: Dr. Shanthi Edward (Email: edwardshanthi56@gmail.com)

world. [1] Due to quick development in technology and widespread use of smart phones and their effect on communication and interaction in our professional and personal life, it is important to study the positive as well as negative effect of the smart phone uses. The mobile phones create an Electro Magnetic Field (EMF) around us and exposure to this electromagnetic field can lead to many ill effects. Some symptoms documented with the mobile users are headache, earache and warmth sensation, concentration difficulty and fatigue. [2] But exposure to electromagnetic field is currently not known to have any major ill effects.

Mobile phone over use for more than a decade and exposure to electromagnetic field has been found to be associated with increased risk of brain tumors but no confirmatory report is there.[3] Musculoskeletal problems have been documented due to extensive texting on mobile phones.[4] Addiction to mobile phones and the psychological dependency is seen in extensive mobile phone users.[5] Over use of mobile phones has been associated with complains like anxiety, insomnia depression[6], psychological distress [7] and an unhealthy lifestyle. [8] With this background we planned this study to assess the ill effects of mobile phone use among college students. To assess the ill effects of mobile phone use among the college students in Chennai.

METHODOLOGY

This study was done as a cross sectional study in an urban area of Chennai district to assess the ill effects of mobile phone usage among healthy college students, Chennai. The study was conducted during the months of May 2019 to June 2019. Males and Females between 17 to 23 years of age were included in the study. As per the convenience of the research team, applying universal sampling technique, all the 125 students studying in second years MBBS were included as study participants.

Institutional ethics committee approval was obtained. The principal investigator explained the purpose of the study to each participant and a written consent was obtained from the participants prior to the commencement of the study. The participants were also informed that their participation was voluntary and that they could withdraw from the interview at any time without consequences. Every effort was made, to be sure that all information collected from the participants, remain confidential.

A pre-tested semi structured self-administered questionnaire was prepared by the principal investigator in in English language to collect details about the mobile phone usage and various problems faced due to them. Internal and external validity was established in consultation with experts in the field.

Statistical Analysis: Data entry and analysis was done using Statistical Package for Social Sciences (IBM SPSS) 23 version software. Descriptive statistics was done and the results were presented in frequency and percentages.

RESULTS

In this study among 125 participants regarding mobile phone usage 98.4% of them have mobile phones and 1.6% of the participants do not have mobile phone. Maximum of 99.2% of the students use smart phones whereas 0.8% of the student only use ordinary type of mobile phone. In this study 44.8% of the students started using mobile phones at the age of 16-18 years whereas 36% of the students started using mobile phones at the age of 18 years and above and 19.2% of students used mobile phones from the age of 12-15 years itself. (Table 1)

Hours of mobile phone usage among the study participants was found to be 2-4 hours, 4-6 hours and 6-8 hours in 24.8%, 48% and 27.2% of the participants respectively. (Table 2)

Most of 53.6% of the students use their mobile phones during daytime and 46.4% of the students use mobile phone during night time.

Table 1: Type and age at first usage of mobile phones of the participants

Variables	Frequency (%)
Has mobile phone	
Yes	123 (98.4)
No	2 (1.6)
Type of mobile phone	
Ordinary phone	1 (0.8)
Smart phone	124 (99.2)
Age at first usage of mobile phone	
12-15 years	24 (19.2)
16-18 years	56 (44.8)
After 18 years	45 (36)

Table 2: particulars related to habits of using mobile phone

Habits of using mobile phone	Frequency (%)
Mostly mobile phone used during	
Day time	67 (53.6)
Night time	58 (46.4)
Place of keeping mobile phone during sleep	
Far away	73 (58.4)
Under the pillow	52 (41.6)
Phone accessories used	
Bluetooth	22 (17.6)
Hands free	24 (19.2)
None	79 (63.2)
Side of ear commonly used for talking	
Left	27 (21.6)
Right	82 (65.6)
Not sure	16 (12.8)
Place where the mobile kept during mobilization	
In the bag	28 (22.4)
Pocket	88 (70.4)
Pouch	9 (7.2)

Table 3: Duration of time spent on various mobile phone activities

Variables	Frequency (%)
Hours of mobile phone use/day	
2-4 hours	31 (24.8)
4-6 hours	60 (48.0)
6- hours	34 (27.2)
Mobile phone commonly used for	
Playing Games	10 (8)
Reading	7 (5.6)
Social media	66 (52.8)
Surf internet	21 (16.8)
Watching movie	21 (16.8)
Hours spend on social media/day	
1-2 hours	93 (74.4)
More than 3 hours	28 (22.4)
More than 6 hours	4 (3.2)
Hours spend on playing games on phone	
1- 2 hours	49 (39.2)
3 hours and more	11 (8.8)
Never played games	65 (52)
Listening to songs through head phones	
Most of the time	57 (45.6)
Never	14 (11.2)
Sometimes	54 (43.2)
Average number of calls/days	
Less than 5 calls	66 (52.8)
05 -20 calls	50 (40)
More than 20 calls	9 (7.2)
Hours of sleep/day	
Less than 4 hours	4 (3.2)
4-6 hours	18 (14.4)
6 -8 hours	89 (71.2)
More than 8 hours	14 (11.2)
Participants response regarding interest in studies	
Most of the time	19 (15.2)
Some time	81 (64.8)
Never	25 (20.0)
Reasons for not avoiding mobile phones	
Difficult to do it	60 (48.0)
Laziness	24 (19.2)
Never bothered about it	26 (20.8)
Not realized	15 (12.0)

While sleep 58.4% of the participants responded that they keep their mobile phones away from them whereas 41.6% of the participants have their phones near the bed or under the pillow. Regarding phone accessories use maximum of 63.2% of participants do not use it, while 19.2% and 17.6% of the participants use hands free and Bluetooth device respectively. During mobilization 70.4% of students answered that they keep their mobiles in their pockets whereas 22.4% keep the mobiles in their bags and 7.2% in the pouch. (Table 2)

Mobile phones are commonly used for social media by 52.8% of the participants followed by surfing internet and watching movie by 16.8% of the participants each. Playing games and reading was the reason for mobile phone usage among 8% and 5.6% of participants respectively. In this study 74.4%, 22.4% and 3.2% of the students spend 1-2 hours, more than 3 hours, more than 6 hours in mobile phone for social media alone in a day respectively. Likewise for playing games 39.2% and 8.8% of students spend 1-2 hours and 3 hours and more on phone per day respectively where 52% of students have not used their mobiles for playing games. Of the total 125 students 45.6% of them use mobile phones for hearing music, 43.2% listen music sometimes and 11.2% never use their mobile phone for songs.

Students who get less than 5 calls a day was found to be 52.8% and 5 to 20 calls a day was 40% and 7.2% of students get more than 20 calls a day in this study. In this study 65.6% of the students use their right ear for talking in mobile phone. Most of the study participants nearly 71.2% of them have 6-8 hours sleep per day, followed by 14.4% students who sleep for 4-6 hours and 11.2% students sleep for more than 8 hours a day. While 3.2% of the students have less than 4 hours sleep per day. (Table 3)

This study found that common health problems due to mobile phone usage as reported by participants were pimples (18.4%), sleep disturbances (16%), loss of interest in studies (15.2%), and fatigue (11.2%). (Table 4)

Table 5 shows the association between ill effects faced by mobile phone usage and duration of mobile phone use. Around one third of the study participants who experienced headache were using mobile phone for more than 4 hours. It was found that. 81.8% of the participants who experienced fatigue were mobile phone users using more than 4 hours. Nearly 84.8% of them who had pimples used mobile phone for more than 4 hours association between them was found to be statistically significant ($P<0.05$). They were at 3.09 times increased odds of using mobile phone for more than 4 hours. (Table 5) Among the participants, 80% and 20% of them reported that they felt lost interested in studies and never lost interest, respectively.

Table 4: Ill effects reported by the participants

Ill effects of mobile phone usage	Most of the time	Sometimes	Never
Headache	12 (9.6)	73 (58.4)	40 (32.0)
Dizziness	6 (4.8)	36 (28.8)	83 (66.4)
Fatigue	14 (11.2)	42 (33.6)	69 (55.2)
Ear pain	2 (1.6)	29 (23.2)	94 (75.2)
Restlessness	11 (8.8)	56 (44.8)	58 (46.4)
Sleep disturbance	20 (16.0)	57 (45.6)	48 (38.4)
Pimples	23 (18.4)	43 (34.4)	59 (47.2)
Thumb pain	4 (3.2)	18 (14.4)	103 (82.4)
Redness of eye	8 (6.4)	31 (24.8)	86 (68.8)
Irritability	8 (6.4)	46 (36.8)	71 (56.8)

Table 5: Association between ill effects reported by participants and mobile phone usage

Ill effects of mobile phone usage	Mobile Phone Use		Chi-Square	P Value	Odd's Ratio	95% CI
	>4 hours (%)	< =4 hours (%)				
Headache						
Yes	65 (76.5)	20 (23.5)	0.230	0.632	1.23	0.52-2.90
No	29 (72.5)	11 (27.5)				
Dizziness						
Yes	31 (73.8)	11 (26.2)	0.066	0.798	0.89	0.38-2.09
No	63 (75.9)	20 (24.1)				
Fatigue						
Yes	45 (81.8)	10 (18.2)	2.796	0.247	1.21	0.85-1.65
No	48 (69.6)	21 (30.4)				
Ear Pain						
Yes	22 (71)	9 (29)	0.396	0.529	0.747	0.30-1.85
No	72 (76.6)	22 (23.4)				
Sleep disturbances						
Yes	56 (72.6)	21 (27.3)	0.657	0.417	0.702	0.29-1.65
No	38 (79.2)	10 (20.8)				
Pimples						
Yes	56 (84.8)	10 (15.2)	6.98	0.008*	3.09	1.31-7.30
No	38 (64.4)	21 (35.6)				
Redness of eye						
Yes	32 (82.1)	7 (17.9)	1.42	0.23	1.77	0.68-4.45
No	62 (72.1)	24 (27.9)				
Irritability						
Yes	44 (82.7)	9 (17.3)	3.68	0.298	1.25	0.88-1.65
No	50 (69)	22 (31)				

Even after knowing the health effect of mobile phone usage, participants responded for using mobile phones in this study were found to be difficult to stop usage of mobiles among 48% of the students, 20.8% of the students responded that they are not bothered about the hazards while 19.2% students were lazy and 12% responded the reason as not realized about the effects of mobile phone usage. (Table 2)

DISCUSSION

In the present study, due to mobile phone usage participants were exposed to pimples (18.4%), sleep disturbances (16%), loss of interest in studies (15.2%), fatigue (11.2%), headache (9.6%), restlessness (8.8%), redness of eye (6.4%), irritability (6.4%), dizziness (4.8%), thumb pain (3.2%) and ear ache (1.6%) most of the times

Similar study conducted in Chennai by Balaji et al [9] reported that 64.3% of study participants had experienced health problems like headache, sleep disturbance, ear pain and irritability. He also found that addictive behavior of youngsters towards mobile phones resulted in poor academic performances also. Jayanti et al [11] reported that headache was found to be the commonest symptom (51.47%) followed by irritability/anger (50.79%). Other common mental symptoms included lack of concentration and poor academic performance, insomnia, anxiety etc. Among the prevalent physical symptoms, body aches (32.19%), eye strain (36.51%) and digital thumb (13.8%) were found to be more prevalent.[11] Another study conducted by Szyjkowska A et al[10] among college students reported that 70% complained of headache and 20% of dizziness.

The common problems faced by these participants can decrease their productivity in their everyday life and can lower their academic performances and relationship with friends and peers which if left unattended can lead to behavioral problems.

Gaby et al[12] conducted a study among students of Sweden and found that restlessness was a common problem among those who use their mobile phones excessively.

In the present study, 80% of them reported that they felt lost interest in studies and 20% never. Jennifer et al[13] in their study stated that attention deficit, was more common due to increase in mobile phone usage, which results in poor academic performance. Attention deficit is another major problem among teenage and adolescents which could result from increased mobile phone use which can lead to various learning disorders in the future. [13]

Sleep disturbance was one of the common symptoms observed among the youngsters with excessive use of mobile phones. Sara et al [14] in found that high mobile phone use was associated with sleep disturbances and symptoms of depression. Lack of sleep and disturbances in sleep patterns can be caused due to mobile phone use especially using them before going to sleep. It can alter the circadian rhythm of melatonin in the mobile phone users cheating the brain in thinking that its still active and functioning even after lying down to sleep. This can lead to delay in falling asleep. This can cause reduced sleep duration and fatigue.[15]

In the present study, 45.6% of participants reported that they listen to songs with head phones and

Volkow et al [16] conducted a study on this aspect and reported that loud music over the phone may be a contributing factor for hearing loss. Research has shown that chronic mobile phone usage can lead to high frequency hearing loss in the dominant ear.[17] With the recent advent of various types of wireless headphones and earbuds which are widely available, people need to be aware of the various side effects to chronic mobile phone use with headphones and earbuds.

CONCLUSION

With rapid advancement in technology, easy availability and accessibility of mobile phones, its widespread use by students in on the rise. This study highlights the most common problems they face in their everyday life like headache, fatigue, irritability etc. which may reduce their productivity and become a cause of concern. Health education measure must be organized and provided to them so that the students use the mobiles in a more productive way.

REFERENCES

1. Statistics Sweden: Health and medical care 1980-2005. LE Living conditions. Stockholm Sweden; 2006.
2. Johansson A, Nordin S, Heiden M, Sandström M: Symptoms, personality traits, and stress in people with mobile phone-related symptoms and electromagnetic hypersensitivity. Journal of Psychosomatic Research 2010, 68(1):37-45.
3. SSM: Recent Research on EMF and Health Risks. Sixth annual report from SSM:s Independent Expert Group on Electromagnetic Fields. SSM Report 2009:36 Swedish Radiation Safety Authority; 2009.
4. Ming Z, Pietikainen S, Hänninen O: Excessive texting in pathophysiology of first carpometacarpal joint arthritis. Pathophysiology 2006; 13:269-270.
5. Billieux J, Van der Linden M, D'Acremont M, Ceschi G, Zermatten A: Does impulsivity relate to perceived dependence on and actual use of the mobile phone? Applied Cognitive Psychology 2007; 21:527-537.
6. Jenaro C, Flores N, Gómez-Vela M, González-Gil F, Caballo C: Problematic internet and cell-phone use: Psychological, behavioral, and health correlates. Addiction Research and Theory 2007; 15:309-320.
7. Beranuy M, Oberst U, Carbonell X, Chamarro A: Problematic Internet and mobile phone use and clinical symptoms in college students: The role of emotional intelligence. Computers in Human Behavior 2009; 25:1182-1187.
8. Ezoe S, Toda M, Yoshimura K, Naritomi A, Den R, Morimoto K.Relationships of personality and lifestyle with mobile phone dependence among female nursing students. Social Behavior & Personality 2009; 37: 231-238.
9. Balaji A, Swapna S, Saranya N. A Descriptive study on behavior associated with mobile phone usage and its effect on health among medical students in Chennai. J Evol Med. Dent. Sci. 2014;3:1590-5
10. Szyjkowska A, Bortkiewicz A, Szymczak W, Makowiec-Dabrowska T. Subjective symptoms related to mobile phone use--a pilot study. Pol MerkurLekarski. 2005; 19:529-32.
11. Acharya JP, Acharya I, Waghrey D. A study on some of the common ill effects of cell-phones amongst college students. Journal of Community Medicine and Health Education. 2013; 3:1-4.
12. American Academy of Sleep Medicine. "Excessive Mobile Phone Use Affects Sleep In Teens, Study Finds." ScienceDaily. ScienceDaily, 9 June 2008. Available from https://www.sciencedaily.com/releases/2008/06/080609071402.htm. Accessed on 12 October 2021.
13. Jennifer, M. Sleep affected by late night cell phone, technology use. The New England Journal of Medicine. 2014:344;79–86
14. Thomée S, Härenstam A, Hagberg M. Mobile phone use and stress, sleep disturbances, and symptoms of depression among young adults-a prospective cohort study. BMC public health. 2011;11(1):1-1.
15. Shrivastava A, Saxena Y. Effect of mobile usage on serum melatonin levels among medical students. Indian J Physiol Pharmacol. 2014 Oct 1;58(4):395-9.
16. Volkow ND, Tomasi D, Wang GJ, Vaska P, Fowler JS, Telang F, Alexoff D, Logan J, Wong C. Effects of cell phone radiofrequency signal exposure on brain glucose metabolism. JAMA. 2011;305(8):808-13.
17. Velayutham P, Govindasamy GK, Raman R, Prepageran N, Ng KH. High-frequency hearing loss among mobile phone users. Indian Journal of Otolaryngology and Head & Neck Surgery. 2014 Jan 1;66(1):169-72.