

Review Article

Mobile phone usage pattern among undergraduate medical students in a Medical College of West Bengal, India

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One of the most prominent and widespread product of technology in today's world is the 'Mobile phone'. Although a boon for better communication; there have been endless controversies over frequent use of mobile phones. The study was conducted to find out the pattern of mobile phone usage among undergraduate medical students and to determine any hazards faced by them and their involvement with mobile phones. It was a cross-sectional study conducted at IQ City Medical College, Durgapur, District Burdwan, West Bengal, India during July to August 2015 among 252 undergraduate medical students. Statistical Package for Social Sciences (SPSS) software (version 19.0) was used for analysis. Maximum students used their mobile phones in class (42.5%). About 67.1% were aware of hazards related to mobile phone usage. The most commonly experienced symptom was headache (61.5%), followed by ringxiety (34.7%). Half of the subjects could not live without phone for a single day. Dependence on mobile phone and its hazards have become an issue nowadays due to the multiplicity of its functions. Rules and regulations need to be placed in time regarding its use is the need of the hour.

[J Indian Med Assoc 2019; 117(8): 11-5]

Key words : Mobile phone use, smartphone, headache, ringxiety, medical students.

One of the most prominent and widespread product of technology in today's world is the 'Mobile phone'. Gone are the days when phones were considered a rich man's luxury; mobile phones have reached people of all ages and economic status. Reduction in cost of handsets, communication, smaller size etc. has contributed to the surprisingly rapid adoption rate of mobile phones by the people, especially the young generation¹.

Most of the mobile phones nowadays are addressed as 'smartphone', as they offer more advanced computing power and connectivity than any regular mobile phone. With a smartphone, the user can do multitasking on the go like- make voice calls, video calls, SMS and MMS; it's like a laptop integrated with a phone. Smartphones have thus been aptly repositioned as a "new information medium"².

Although a boon for better communication; there have

been endless arguments and counter researches over frequent use of mobile phones and their long term effects due to low powered radiofrequency transmission³.

One of the major bulks of the subscription base of mobile phone users is comprised of college students. They defend their usage by citing various uses of the mobiles; the most common being searching infotainment sites for their curriculum based works. Mobile phones satisfy the need for individualisation and yet also signify being a part of a peer group⁴.

In this background, the present study was conducted to find out the pattern of mobile phone usage among undergraduate medical students and to determine any hazards faced by them with excessive usage and their involvement with mobile phones.

MATERIALS AND METHODS

The present study was an institutional based observational epidemiological study having a cross-sectional design conducted at IQ City Medical College situated in Durgapur, District Burdwan, West Bengal. This is a private medical college established in 2013, which enrolls 150 students every year for MBBS course. The college is attached with a multispecialty hospital – Narayana Hrudayalaya Hospital. Study period was July to August 2015, and the study population comprised of senior most 2

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batches ie, 4th semester and 2nd semester batches of MBBS students both male and female, having mobile phone. The two batches comprised of 146 and 149 students respectively. Pretesting of the questionnaire was conducted upon 10 students: 5 students from each batch for pilot study. These 10 students were omitted from the final study. Thus altogether 285 ([146 + 149] – 10) students were approached for the final study. The students who did not submit the questionnaire or submitted almost incomplete questionnaire were excluded from the study. Finally analysis was done on 252 students with a response rate of 88.4%. No sampling was done and complete enumeration method was followed. Study tool was pre-designed and pre-tested structured self administered questionnaire. Students were approached after class hours and were briefed about the purpose of the study and were asked for informed written consent. The study was approved by Ethics Review Board (ERB) of the institute.

Operational definition: We classified the mobile phone usage in the class as follows: Yes: When mobile phone is used every day during class hours. No: When mobile is never used during class hours. Rarely: When mobile phone is used during class hours but less than 2 days in a week. Prolonged use of mobile phone: When mobile phone was used for 2 hours or more in a day, was termed as prolonged mobile phone usage. Mobile phone hazards known: A checklist of hazards of mobile phone usage after extensive literature review was prepared and if the student correctly answered any one of them, then it was taken as “yes” hazard known. Ringxiety: The phenomenon of mistakenly thinking that mobile phone is ringing / vibrating⁵. Nomophobia: Nomophobia was defined as fear of being without mobile phone⁵.

Collected data were compiled on Microsoft Excel worksheet. Categorical data were expressed as proportions. Statistical Package for Social Sciences (SPSS) software (version 19.0) was used for analysis.

RESULTS

Out of 252 study subjects, highest number of participants was in the age group of 20 to 21 years, followed by 18 to 19 years (35.3%) and least number of subjects was in the age group of less than 18 years. About, 53.6% were females and rest 46.4% were males; 46.5% of them were in the 2nd semester and 53.5% were in 4th semester. Majority i.e. 81.4% were hostelites, 85.7% belonged from urban area, and 88.1% were Hindus. Highest numbers of respondents (92.8%) were in Upper Class as per modified BG Prasad socio-economic status scale.

All the students had mobile phone. The maximum number of handsets was in the price range of Rs. 10001-

Rs. 15000 (25.7%), followed by more than Rs. 20001 (25.3%); while least number of students (8.4%) had mobile phone in the price range of Rs 1000-5000. About, 96.6% of the subjects owned smartphones.

The most pursued purpose for buying mobile phone was ‘Feel it’s a necessity in today’s life’ (75%) followed by ‘Connectivity with near and dear ones’ (44.8%), while 3.9% students cited ‘Other reasons’, like taking pictures, recreational purposes etc. Most of the subjects ie, 73.1% were using mobile phones for more than 3 years while least numbers of respondents (1.5%) were using mobile phones for less than 1 year. Highest numbers of respondents (34.5%) had changed more than 3 mobile phone sets till date, while least numbers of respondents (9.1%) had changed 1 mobile phone set till now.

The most common answer about using mobile phone was ‘Helps stay connected with near and dear ones’ (86.9%), followed by makes life convenient (69.8%) and makes me feel safe (48.1%); while 6.3% students said ‘Other reasons’ (6.3%), like recreation in idle time, multitasking, educational purposes etc.

The most commonly done task on mobile phone was ‘Calling family and relatives’ (98.3%), followed by internet browsing (90.3%) and social networking (87.5%); while least was ‘Other reasons’ (12.4%), like photography, online shopping, navigation by GPS etc. The task on which maximum time spent was ‘Social Networking’ with a median value of 45 minutes, followed by internet browsing (40 minutes); while minimum time was spent on checking email with a median value of 10 minutes.

Regarding the amount of total recharge (including all costs) and other charges done on phone at a time, majority were under the category of Rs 201-400 (36.4%) and Rs 401-600 (19.2%). Regarding to internet expenditures on phone, majority came under the category of Rs. 101- 200 (41.7%), followed by Rs 201-300 (25.4%). About 0.8% subjects did not spend on internet.

Maximum students used their mobile phones in class (42.5%); and in contrast only 26.6% students did not use phone in class. Maximum number of subjects (76.4%) used mobiles in class to surf the internet, followed by texting or chatting, which comprised of 75.4%. The most common purpose of browsing was ‘Recreational activities’ and ‘Social networking’ (93.8% each), and less common was ‘Information, news and general affairs’ (50.6%) (Table 1). Maximum ie, 45.8% subjects did not use mobile phones while driving (45.7%); while least number of subjects use mobile phones while driving (3.6%).

About 67.1% were aware of mobile phone related hazards. The most commonly experienced symptom was

Table 1 — Distribution of the study subjects according to whether mobile phone used in class

Responses	Frequency	Percentage
Mobile phone used in class (n = 249*):		
Yes	106	42.5%
No	66	26.6%
Rarely	77	30.9%
Activities done during class (n = 106):		
Receive/ make calls	20	18.8%
Texting/ chatting	80	75.4%
Listening music/ Watching Videos	30	28.3%
Surfing internet	81	76.4%
Playing games	59	55.7%
To check time	72	67.9%
Others	9	8.4%
Purpose for browsing internet (n = 81**)		
Education related	71	87.6%
Information, news and General affairs	41	50.6%
Updates and apps	53	65.4%
Recreation (music,video,movies,games etc)	76	93.8%
Social Networking	76	93.8%
Online shopping and Banking	42	51.8%

*3 respondents did not share their answers
 **Multiple answers were recorded

headache (61.9%), followed by ringxiety (34.9%), nomophobia (17.1%) and dizziness (15.3%) (Table 2). In 86.8% of the respondents kept their cell phones off at night; in contrast 13.2% did not switch off mobile phone at night.

Half of the respondents said they could live without phones for a day; while the remaining half of the subjects could not live without phone for a single day. Maximum number of respondents (81.9%) stated the reason to be the need to stay connected with near and dear ones and the least (8.1%) said the reason as to feel addicted to mobile phones and have to keep it near (Table 3).

DISCUSSION

Mobile phone is one of the greatest inventions in today’s time. Although, it is extremely essential as a tool

Table 2 — Distribution of the study subjects according to if any hazard related to mobile phones known or not

Variables	Frequency	Percentage
Hazards known (n=243*)		
Yes	163	67.1%
No	80	32.9%
Symptoms experienced after prolonged mobile phone usage (n=163**):		
Headache	101	61.9%
Dizziness	25	15.3%
Vomiting	7	4.2%
Ringxiety	57	34.9%
Nomophobia	28	17.1%
Any other	3	1.8%

*9 students did not share their answers
 **Rest did not experience any symptoms; multiple answers were recorded

Table 3 — Distribution of the study subjects according to involvement with mobile phone

Involvement with phone	Frequency	Percentage
Stay without phone (n = 246*):		
Yes	123	50%
No	123	50%
Reason if can’t stay without mobile (n=111**):		
Stay connected with near and dear ones and feel secure in case of emergencies.	91	81.9%
Dependent on mobile phone for various tasks, even basic chores.	13	11.7%
Feel addicted to using mobile phone, have to use it or keep it near.	9	8.1%
Recreation and feel updated with outside world	26	23.4%

*6 respondents did not respond
 **Out of 123 respondents 12 respondents did not respond to this question and the rest responded that they could stay without phones for a day. Multiple responses were recorded.

for communication and interpersonal interaction, but at the same time it has been criticised due to an increased risk in its problematic use in the recent times along with its hazards. In this background, the present study was conducted to find out the pattern of mobile phone usage among undergraduate medical students and to determine any hazards faced by them with excessive usage and their involvement with mobile phones.

Present study was a questionnaire based study, which was pre-designed with the help of all available literatures regarding mobile phone usage. Again it was pre-tested beforehand in the same settings; and same diagnostic criteria were applied for all the participants. Thus it is least likely to have introduced measurement bias in this study. About 11.6% students were non responders. Usually non responder bias arises from responders due to differences in demographic, socioeconomic, cultural, lifestyle and medical characteristics. Since, they more or less belonged from same socio-cultural backgrounds and are in same cohort presently, this type of bias is also very unlikely to happen in this situation.

The present study revealed that the use of mobile phones was almost universal, as also supported by Subba SH *et al*⁵. This implies that most of these students feel that mobile phones are very essential in today’s life and hence it’s a must to have one cell phone. The main purpose behind buying a cell phone among the subjects was connectivity with near and dear ones, similar to the findings of Subba SH *et al*, Zulkefly SN *et al*^{5,6}. The reason could be due to the fact that, some portion of the students was from different parts of our country and their parents found it easier to keep in contact with their children through mobile phones. It is just a touch away from near and dear ones

and it also makes life convenient through different applications in smart phone like ticket booking, bill payment, readymade information, scanner, photo, games, music, news etc.

Majority of the respondents (73.1%) were using mobile phones for more than 3 years, which implies that most of the subjects had been using mobile phones for quite some time, mostly since high school.

Our study showed that most of the study subjects changed their cell phones within a span of 1.5-2 years. Changing mobiles frequently to get a better model / brand is considered as a stylish accessory and a status symbol and hence it creates a feeling of belongingness with peers as also found in a study by Fortunati L *et al*⁷ Similar to present findings, Mittal *et al* also reported frequent changing of handsets among the students⁸. Also mobile phones offer major technological innovations, tools for which youngsters demonstrate a special inclination and skill⁹. The maximum number of handsets was in the price range of Rs10001-Rs15000 (25.7%). This implies that students invest a lot in buying and maintaining it. Total monthly cost of recharge on mobiles was maximally found to be under the category of Rs 201-400 (36.4%), which is in accordance with Subba SH *et al*⁵, who also found Rs300/- on an average. Datta S *et al*, Prajapati D *et al* also found monthly expenditure around Rs. 250-500/- per month^{10,11}. In contrast, Zulkefly SN *et al* found this amount to be little higher, which amounted to about Rs800 among Malaysian college goers⁶. However, this difference could be due to the difference in purchasing power parity in two different countries.

Earlier one couldn't have imagined being able to do multitasking on a single device like-internet-browsing, gaming, texting, emailing, social networking, and phone calling. A smart-device (ie, smart-phone or tablet) allows these activities to be conducted anytime and anywhere and that too within a single device. In this study, 96.6% of the subjects owned smartphones, proportion much higher compared to study by Datta S *et al* in Kerala (77%). 10 Those who did not have smartphone, had much less mobile phone involvement than those having a smartphone as also supported by Harwood J *et al*¹².

Internet browsing is frequently done by students. The tasks are done mostly – recreation and social networking. Internet usage emerges as the main factor for mobile phone use in this study. So maybe this internet addiction is related to increased problematic mobile phone use, especially seen in smartphone users as also seen in the study done by Harwood J *et al*¹². Similar findings have also been noted by Toda M *et al*, where lonely people used mobile more

frequently that leads to problematic cell phone use¹³.

In the present study, majority of the students (42.5%) used cell phones in class. This shows a disturbing trend among today's students. Students, especially medical undergraduates are expected to maintain complete discipline in class especially so as to become responsible health care providers of tomorrow. Using mobile phones in class disturbs concentration and attention span and harms them. This result is almost similar to the results obtained in a study by Paul B *et al* (where 35.9% used mobiles in class)¹⁴ and Subba *et al*⁵. However, Mahmoodabad *et al* found the proportion was bit higher (84%)¹⁵. This could mean that they are too dependent on mobiles and that they could not resist the temptation of using them even where they were prohibited. In previous studies, students used to receive calls in class and now in smartphone era, internet surfing has become the commonest activity.

In the present study, only 3.6% students used mobile phones while driving, which is quite alarming though the percentage is quite less. This finding was in fact quite contrary to the findings of Paul B *et al*, where majority of students preferred mobile phone use on road which is dangerous¹⁴. While, 18.6% students used phone while driving in a study by Mahmoodabad *et al*¹⁵.

About 67.1% students were aware of mobile phone related hazards. Most stated radiation and cancer as the ill-effect, followed by cerebral problems, hearing problems and so on. Thus majority knew the harmful effect of using mobile phones excessively which is a positive finding similar to the findings of Paul B *et al*¹⁶.

Most commonly experienced symptom in the present study was headache (61.9%), ringxiety (34.9%) and nomophobia (17.1%). Thus a majority of the subjects are experiencing hazards related to prolonged use which is disturbing to note as this may cause problems later on. Similar to present study, ringxiety was experienced by 34.6% students by Subba *et al*, which in turn hampered studies⁵. However, Datta S *et al* found ringxiety among 60.5% of medical students¹⁰. Cancer, specifically brain cancer, like glioma and its correlation with phone use, is also an ongoing investigation¹⁶. Hence, awareness against hazards of mobile phone use needs to be disseminated among the students. Ringxiety, as an indicator of the mobile phone addiction, was further supported by the fact that a similar proportion of students said they would be either very or extremely upset if there was network inaccessibility.

About, 86.8% of the respondents kept their cell phones off at night; and 13.2% didn't. This is a positive finding because problematic mobile phone use affects sleep quality as supported by White AG *et al*¹⁷. So the majority not

using phones at night may be a good sign that the majority may not experience insomnia due to mobile phones and may have quality sleep.

In 50% students committed that they could not stay without cell phones for a day, which implies that they are heavily relied upon mobiles and may be indicative of problematic cell phone use, similar to findings of Mitta A *et al*¹⁸. Subba SH *et al* also found that, nine out of 10 students would immediately replace a lost set⁵.

Present article has elicited multiple facets of mobile phone usage like purpose of buying, commonly used tasks, presence of any hazards, and dependence with mobile phones. In addition, the study has also included smart phones – these are the strengths of the present communication. Only limitation is the study was conducted in a college, where 90% of the subjects belonged to higher socio-economic status. Main tasks done in mobile phone has been gradually changing over the time with introduction of the smart phones. Usage pattern is pretty different from the previous studies. Thus future research direction would be needed to find out the new underlying factors to address and limit the mobile phone usage pattern among students.

CONCLUSION

The pattern of mobile phone usage among the medical students appeared to be problematic, as a large proportion of students using it indiscriminately, spending much money, killing more time, suffering from various types of hazards and they use their phones at restricted times and places. Dependence on mobile phone and its hazards have become an issue nowadays due to the multiplicity of its functions. Rules and regulations need to be placed in time regarding its use is the need of the hour.

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