



CROSS-SECTIONAL STUDY ON MOBILE PHONE INVOLVEMENT AMONG MEDICAL STUDENTS OF A TERTIARY CARE TEACHING HOSPITAL OF WESTERN INDIA

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INTRODUCTION

India is the largest market for mobile phone users in the world. Mobile phones is said to be the new epidemic of this century and medical students are no exception to it. On one side wherein the mobile phones are helpful in their study purpose, they also face the likelihood of a possible addiction liability to mobile phones. New operating systems like android and the applications relevant to medical study are helpful, but on the flipside, mobile phones pose a threat in terms of psychological dependence.

ABSTRACT

Background: Mobile phones are said to be the new epidemic of this century. The research was carried out to assess the level of mobile phone involvement among the medical students and its determinants.

Methodology: It was a cross-sectional study carried out among 150 medical students of Bhavnagar using a tool "Mobile Phone Involvement Questionnaire (MPIQ)".

Results: Out of 150 medical students, 92.7% were highly involved with their mobile phone. Self reported data revealed that 40% often thought about their mobile phone when not using it; 50.4% often interrupt whatever else they are doing where they are contacted on their mobile phone; 78% often feel connected to others when they are using mobile phone; 39.3% often lose track of their mobile phone usage; 38.7% feel distressed by thought of being without their mobile phone and 35.9% often have been unable to reduce their mobile phone use. No association found between mobile phone involvement and age, gender, per-capita income, number of family members, expenditure on the phone or type of mobile plan.

Conclusion: Most of the medical students (92.7%) were highly involved with their mobile phone, which was directly correlated with the frequency of their mobile phone usage.

Keywords: Mobile Phone, medical students, addiction, dependence.

There have been researches documenting problematic mobile phone usage in India, but they are a few in number. A study in Madhya Pradesh documented the mobile phone addiction level among medical students at 19%, which seems to be much less given the surge of mobile phone usage since 2009 when this study was published.¹ A study in Chennai did not use any standard tools for measurement and just documented that 90% of them kept their phones with them while sleeping.² There is no published data on the level of mobile phone involvement among medical students of

Bhavnagar. This research was conducted to find out the present level of mobile phone involvement among them.

METHODOLOGY

Study setting: The study was conducted among medical students of Government Medical College, Bhavnagar. The medical college is functional since the year 1996 and the attached tertiary care hospital is catering to around thirty lakh population of Bhavnagar district.

Study design: It was a cross-sectional study conducted among medical students.

Study duration: The study was carried out for a period of 4 months from June-September 2015.

Sample size: The study was conducted on a calculated sample of 150 medical students who were studying in 2nd and 3rd year MBBS in the medical college. The sample size was calculated based on a pilot study of 20 medical students, in which the proportion of medical students highly involved with their mobile phone was found to be 89%. Considering this proportion, the sample size of 150 was calculated with the help of Open Epi software version 2.2 (at 5% absolute precision and 95% confidence level).³

Sampling design: The sampling method used was Simple Random Sampling by selecting 150 random numbers out of a sampling frame of 297 medical students of 2nd and 3rd year MBBS students admitted in the medical college. The random numbers were obtained with the help of Open Epi Software version 2.2.³

Data collection: The data collection tool included a few basic questions on the socio-demographic profile, mobile phone expenditure, type of plan, etc. The tool used for measuring mobile phone involvement was Mobile Phone Involvement Questionnaire (MPIQ) (Walsh 2010).⁴ MPIQ is an eight-item measure of mobile phone involvement based on both behavioural and cognitive addiction components. It includes items measuring withdrawal, cognitive and behavioural salience, euphoria, loss of control, relapse and reinstatement, conflict with other activities, and interpersonal conflict, specifically worded to relate to mobile phone behaviour.

Inclusion criteria: All medical students above 18 years of age, of both gender, studying in 2nd and 3rd MBBS in the medical college and giving written informed consent to participate in the study, were included in the study.

Ethical issue: Written informed consent was taken from the medical students who agreed to participate in the study.

Statistical methods used: Student t-test and chi-square test was applied for uni-variate quantitative and qualitative data respectively. Difference would be said to be significant when p-value <0.05. Data was analyzed using IBM SPSS Statistics version 22 (evaluation copy).⁵

RESULTS

A total of 150 medical students were included in the study. The mean age of the students was 20.25 (+ 1.2) years and most of them were studying in the part I of the third professional year of their MBBS course. The median age of the students was 20 years and ranged from 18 years to 25 years. The socio-demographic profiles of the medical students have been shown in table 1. As elucidated in table 1, 50.7% of the medical students were female; 83.3% were currently single; 78% were living in a nuclear family and 84.7% belonged to class I socio-economic class of Modified Prasad’s classification. Table 2 shows the type of mobile plan, monthly expenditure on mobile and the frequency of mobile phone usage. As mentioned in table 2, 91.3% medical students had a pre-paid plan and the median of frequency of mobile phone usage per day is 50. The range of frequency of mobile phone usage ranged from 3 uses per day to up to 689 uses per day. The mean of mobile phone expenditure per month was 271 rupees with a median of 200 rupees.

Table 1: Socio-demographic profile of the medical students (n=150)

Variables	Frequency (%)
Gender	
Male	74 (49.3)
Female	76 (50.7)
Total	150 (100)
Relationship status	
Single	125 (83.3)
Dating	25 (16.7)
Total	150 (100)
Type of family	
Nuclear	117 (78)
Joint	26 (17.3)
3 generation	7 (4.7)
Total	150 (100)
Socio-economic class	
I	127 (84.7)
II	15 (10)
III	6 (4)
IV	2 (1.3)
Total	150 (100)

* As per Modified Prasad’s classification

Table 3 shows the frequency and percentages of the responses given by medical students on the individual items of Mobile Phone Involvement Questionnaire (MPIQ).

Table 2: Frequency of usage of Mobile phone and expenditure (n=150)

Indicator	Mean (±SD)	Median	Min-Max
Calls received per day	5.39 (±4.142)	4	1 - 20
SMS sent per day	39.4 (±53.298)	10	0 - 200
Calls made per day	5.3 (±5.466)	4	0 - 40
SMS received per day	52.64 (±85.627)	12.5	0 - 500
Phone used for something other than calls/SMS	12.12 (±7.991)	10	0 - 50
Frequency of mobile phone usage*	114.85 (±135.816)	50	3 - 689
Monthly expenditure on mobile (INR)	271 (± 240)		

*single variable after summing up first five variables; Students having Pre-paid 137 (91.3%), post-paid plan 11 (7.3%) and both plan 2 (1.4%)

Table 3: Frequency (%) of the Mobile Phone Involvement Questionnaire (each row n=150)

How much do you agree with the following statements?	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I often think about my mobile phone when I am not using it.	20(13.3)	44(29.3)	17(11.3)	9(6)	26(17.3)	33(22)	1(0.7)
I often use my mobile phone for no particular reason.	16(10.7)	39(26)	18(12)	8(5.3)	32(21.3)	30(20)	7(4.7)
Arguments have arisen with others because of my mobile phone use.	24(16)	39(26)	14(9.3)	13(8.7)	36(24)	18(12)	6(4)
I interrupt whatever else I am doing when I am contacted on my mobile phone.	9(6)	23(15.3)	18(12)	24(16)	42(28)	30(20)	4(2.4)
I feel connected to others when I am using my mobile phone.	3(2)	9(6)	8(5.3)	13(8.7)	48(32)	48(32)	21(14)
I lose track of how much I am using my mobile phone.	12(8)	46(30.7)	11(7.3)	22(14.7)	32(21.3)	20(13.3)	7(4.7)
The thought of being without my mobile phone makes me feel distressed	25(16.7)	37(24.7)	17(11.3)	13(8.7)	25(16.7)	22(14.7)	11(7.3)
I have been unable to reduce my mobile phone use.	18(12)	46(30.7)	20(13.3)	12(8)	29(19.3)	17(11.3)	8(5.3)

Table 4a: Descriptive statistics of individual item scores and mobile phone involvement (n=150)

How much do you agree with the following statements?	Mean	Median	S. D.
I often think about my mobile phone when I am not using it.	3.53	3	1.845
I often use my mobile phone for no particular reason.	3.79	4	1.880
Arguments have arisen with others because of my mobile phone use.	3.51	3	1.853
I interrupt whatever else I am doing when I am contacted on my mobile phone.	4.15	5	1.608
I feel connected to others when I am using my mobile phone.	5.15	5	1.425
I lose track of how much I am using my mobile phone.	3.69	4	1.764
The thought of being without my mobile phone makes me feel distressed	3.57	3	1.964
I have been unable to reduce my mobile phone use.	3.47	3	1.820

Highly involved (at least one individual item score >5) 139 (92.7%); Not highly involved (at least one individual item score <5) 11 (7.3%)

Table 5: Independent sample t-test between mobile phone involvement and variables (n=150)

	Highly involved (n=139) Mean (±SD)	Not highly involved (n=11) Mean (±SD)	p-value#
Age	20.29 (±1.229)	19.73 (±0.786)	0.139*
Per-capita income	11211 (±9416)	10742 (±5101)	0.871*
Total number of family members	4.83 (±1.94)	3.73 (±0.905)	0.063*
Monthly expenditure on phone	275.83 (±246.107)	1.82 (±154.066)	0.398*
Frequency of mobile phone use	119.64 (±138.744)	54.361 (±69.677)	0.015†

Independent sample t-test; *Equality of variances assumed as Levene's test p-value >0.05; †Equality of variances not assumed as Levene's test p-value <0.05

For presenting our results effectively, we combined the percentages of 'somewhat agree', 'agree' and 'strongly agree' into a single outcome of 'agreed'. Among the 150 medical students, 40% agreed that they often thought about their mobile phone when not using it; 46% agreed that they often use their mobile phone for no particular reason; 40% agreed that arguments arisen with others because of their mobile phone use; 50.4% agreed that they often in-

terrupt whatever else they are doing where they are contacted on their mobile phone; 78% agreed that they often feel connected to others when they are using mobile phone; 39.3% agreed that they often lose track of how much they are using their mobile phone; 38.7% agreed that thought of being without their mobile phone make them feel distressed and 35.9% agreed that they often have been unable to reduce their mobile phone use.

Table 4 shows the mean, median and standard deviation of the individual item scores of MPIQ. As shown in this table, out of the 8 items in mobile phone involvement questionnaire, the highest median of 5 among the 150 medical students was found for two items, namely, "interrupting whatever else they are doing when they are contacted on their mobile phone" and "feeling connected to others when they are using their mobile phone". We categorized those respondents who scored five or higher (out of a possible seven) on the Mobile Phone Involvement Questionnaire (MPIQ) as being highly involved with their mobile phone. As shown in table 4, 92.7% of the medical students were highly involved with their mobile phone.

As demonstrated in table 5, those medical students who were highly involved with their mobile phone had a mean age of 20.29 (+1.22) years. By comparison, those medical students who were not highly involved with their mobile phone had a numerically smaller mean age of 19.73 (+0.786) years. To test the hypothesis that those highly involved with their mobile phone were associated with statistically significantly different mean age, an independent samples t-test was performed. The assumption of homogeneity of variances was tested and was satisfied via Levene's F test. The independent samples t-test was associated with a statistically insignificant effect, $t(148)=1.486, p=0.139$. Thus, there was no association between mobile phone involvement among medical students and their age. Similarly, on applying independent sample t-test, there was no statistically significant difference found between mobile phone involvement and per-capita income, total number of family members and monthly expenditure on the phone. However, those highly involved with their mobile phones had statistically significantly higher frequency of mobile phone usage than those not highly involved.

Table 6: Association by chi-square test between mobile phone involvement and variables

	Highly involved* (n=139) (%)	Not highly involved# (n=11) (%)	P-value
Gender			
Male	70 (50.4%)	4 (36.4%)	0.371
Female	69 (49.6%)	7 (63.6%)	
Type of plan			
Pre-paid	127 (91.4%)	10 (90.9%)	0.901
Post-paid	10 (7.2%)	1 (9.1%)	
Both	2 (1.4%)	0 (0.0%)	

*at least one individual item score >5; #at least one individual item score <5

As demonstrated in table 6, a chi-square test of association was performed to examine the associa-

tion between mobile phone involvement and gender. The association between these variables was statistically insignificant, $X^2(1,n=150)=0.799, p=0.371$. There was no statistically significant association between mobile phone involvement and gender. Likewise, there was no statistically significant association between mobile phone involvement and type of mobile plan.

DISCUSSION

This research focused on the mobile phone involvement among the medical students in Bhavnagar. The current study found that medical students (92%) are too much involved with their mobile phones. This was in contradiction with what the study by Dixit S, et al. (2010) found that only 19% of the medical students were nomophobes.¹ The discrepancy can be because that study was carried out a few years back and they used a self-made questionnaire which was not validated. The study conducted in Chennai (2014) highlighted that 52% of the medical students felt that they can't live without their mobile phones.² A study in Bangalore by Pavithra MB, et al. (2015) stated that 39.5% of the medical students suffered from nomophobia (fear of being out of contact with mobile).⁶ They also reported that 27% of the medical students were at risk of developing nomophobia.⁶ Gupta N, et al. (2015) reported that 24.6% of the medical students had difficulty in concentrating in their studies due to late night mobile phone use.⁷ The study conducted in Indore also reported that males had higher dependence on mobile phones than females.¹ The study conducted in Bangalore also stated that males had higher prevalence of nomophobia than females.⁶ The present research, however, did not find any association between mobile phone dependence and gender. It is generally accepted that female are more prone to psychiatric disorders than male.⁸

A study conducted among school going adolescents by Chimatapu SN, et al. (2015) found that 31.3% of adolescents had mobile phone dependence.⁹ Several other research conducted in India found mobile phone dependence somewhere between 33.5% and 40%.^{10,11} Unlike the present research, their research also found that male had a higher dependence liability towards mobile phones.⁹ The present research also highlighted that the involvement of the medical students with their mobile phones was directly correlated with the frequency of their mobile phone usage. This fact was reinforced by the study conducted in Navi Mumbai⁹ among school going adolescents, in which they stated that mobile phone dependence was statistically significantly associated with the amount of time spent on their mobile phones. This

finding was further supported by researchers in Texas and in Pakistan.^{12,13} The association between mobile phone involvement/dependence and gender has not been conclusively proved by studies. A study conducted in Turkey by Demirci K, et al. (2015) found that female were more prone to smartphone addiction than male.¹⁴

As the current research was conducted among medical students, per-capita income and monthly expenditure on mobile did not have a significant bearing on the level of mobile phone involvement. It would be expected that mobile phone involvement would be positively correlated with total number of family members, but the current research did find any association. Thus in this research, we found that the mobile phone involvement among the medical students was having a direct relationship with the frequency of mobile phone usage by them.

CONCLUSION

We conclude from the study that most of the medical students (92.7%) were highly involved with their mobile phone. We also concluded that this was directly correlated with the frequency of their mobile phone usage. The study also highlighted that the mobile phone involvement was not associated with the age, gender, per-capita income, total number of family members, type of plan and monthly expenditure on mobile.

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