Original Article

DOI: 10.7860/JCDR/2017/20858.9341

Dentistry Section

Nomophobia: A Cross-sectional Study to Assess Mobile Phone Usage Among Dental Students

MONIKA PRASAD[1], BASAVARAJ PATTHI[2], ASHISH SINGLA[3], RITU GUPTA[4], SABYASACHI SAHA[5], JISHNU KRISHNA KUMAR[6], RAVNEET MALHI[7], VENISHA PANDITA[8]

ABSTRACT

Introduction: Mobile phones were originally seen as a gadget for communication but currently, the internet enabled mobile phones have become an integral part of our daily life. Their benefits are incomparable but at the same time, they have some negative effects too.

Aim: To assess the pattern of usage of mobile phones and its effects on the academic performance of students.

Materials and Methods: A descriptive cross-sectional study was conducted amongst 554 students of D. J. College of Dental Sciences and Research through a self-administered questionnaire to collect the data regarding the usage and associated anxiety with mobile phone.

Results: About 39.5% students agreed that they score low marks in professional exams if they spend more time on phone. The number of students who frequently checked their cell phone during their classes or while doing clinical work were 24.7% . A total of 24.12% of the students were found to be nomophobic and at risk of being nomophobes were 40.97%. A statistically significant difference was found among preclinical, clinical, interns and postgraduates regarding the usage and effect of mobile phone on them.

Conclusion: The pattern of usage of mobile phone among dental students showed alarming indication that students have been addicted to mobile phone which in turn affect their academic performance in a negative way. It would be useful to advise the students about the controlled as well as proper usage of mobile phone.

Keywords: Education, Internet, Lifestyle

INTRODUCTION

The utilization of technical knowledge has a worldwide importance due to its contributions to human existence and due to the strengthening of socioeconomic relations universally. Telecommunications has been revealed as one of the rapidly spreading media on the planet, encouraging an emergent "mobile culture" in younger generation [1,2]. A mobile phone (also known as a cellular phone, cell phone and a hand phone) has made our life easier by making and receiving telephone calls over a radio link to the farthest places of the world irrespective of our presence at any place [3,4].

In olden times, individuals were dependent on phone just for communication purpose but now they have a thirst for it due to countless benefit it provides. Nowadays, cell phones have become a principal part of our lifestyle, a means of communication and a basic requirement as the mobile phone provides innumerable benefits like internet, social networking, personal diary, e-mail dispatcher, calculator, calendar, video game player, camera and music player [5]. Indian market has become evident as the second largest consumer market after China for mobile phone handsets [6].

As per Telecom Regulatory Authority of India (TRAI), there are about 980.81 million mobile phone subscribers in India making it the world's second largest mobile phone user country in 2015 (TRAI, 2015) [7].

Undoubtedly, we are heading towards an era where mobile phones are not just for talking and texting, but also for the use of internet and its related activities [8].

The students become disturbed without their mobile phone, when there is no network coverage or battery has drained out or balance is not there and thus, losing their contact with the mobile definitely affects the concentration level of persons in a negative way. This is known as Nomophobia which refers to discomfort, anxiety, nervousness or anguish caused by being out of contact with a mobile phone [9-11].

According to the teens, on one side phones have made their life more comfortable, convenient and more safer but on the other side extreme mobile phone use has led to poor perceived health which includes tiredness, stress, headaches, and concentration difficulties [8,12-14]. Among the teenagers, the unregulated usage and over dependent attitude on these devices have caused distraction in their academic activities due to the excessive time channeled to these devices. Studies have shown a direct relationship between student's performance and academic excellence as those using mobile phones are more distracted and are less attentive during lecture and other academic work [15].

Thus, ownership of a mobile phone has social, economic, psychological and educational ill effects on medical students as it usually impact their attitude and behaviour towards academic activities [16].

Thus, increased demand of cell phone mainly smart phones in recent years has attracted research attention. Although, there has been substantial groundwork into the effect of mobile phone use on medical care in general, its influence on dentistry has still not been investigated. Hence, this study was carried out to understand the usage pattern of mobile phones and its effects on the self perceived academic performance of students among dental students.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among the dental students studying at D. J. College of Dental Sciences and Research, Modinagar city, which is located in the western part of Uttar Pradesh, India. Students from all academic years including interns and postgraduates using mobile phone and willing to participate were included in the study. Ethical approval was obtained from the Institutional review board. Informed written consent was

obtained from all the study participants. Participation in the study was voluntary and confidentiality of data was maintained.

A self administered questionnaire was distributed among 588 students who gave their consent to participate in the study after explanation of the study design and protocol. They were given reminder the next day and finally the questionnaire was collected personally after three days. The study duration was from January 2016 to March, 2016. The questionnaire consisted of three parts. The first part assessed student demographic data including age, gender and academic year, type of mobile phone used and the age at which they started using mobile phone, second part assessed the associated anxiety with the mobile phone which consisted of 11 questions (Question 1-11). Students were then categorized based on the usage of mobile phones into nomophobes and risk of nomophobia. These 11 questions were designed based on the study conducted by Ramadu RV et al., in 2015 in India as well as Yildrim C et al., in 2015 in Turkey [6,17].

The questionnaire which assessed nomophobia (Question 1-11) had eight elements:

A) Response on near completion of mobile data or shortage of balance in mobile

B) Response due to inability of being connected with social media due to non usage of phone or any of its functions

C) Response for not using the phone for a week

D) Time period of having mobile phone with self

E) Tension in the form of anxiety and stress due to non-timely response

F) Loss of mobile and battery discharge

G) Response shown due to phone ringing at inappropriate time.

H) Spending time more than 3 hours on phone calls per day

The third part assessed the attitude towards the usage of mobile phones and consisted of eight questions (Question 12-19). Every question was mandatory.

The questionnaire was modified and pretested by a pilot study on 112 of the study participants which comprised of 20% of the total study sample. Reliability of the questionnaire was analyzed by using Test-Retest conducted over two week duration, and the intra-rater reliability of the participants for the questions was assessed using kappa (k) and Weighted kappa values. Internal consistency of the questionnaire was estimated by applying Chronbach's-Alpha (α) .

The individual responses thus, obtained were then compiled, processed and analyzed. Scoring was allotted depicting maximum to minimum mobile phone association.

Participants having score of ≥ 40 were categorized as nomophobic, 34-39 score - at risk of nomophobia, < 34 score – normal.

All questions were based on five point Likert scale ranging from strongly disagree to strongly agree.

STATISTICAL ANALYSIS

The returned questionnaires were coded and entered on computer, using SPSS (Statistical Package for Social Sciences) software, version 16.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistical method (mean±standard deviation) were applied. Kruskal wallis test, Mann-whitney U-test and chi-square test was applied to compare the attitude of phone usage among the students. The level of significance was set at $p<0.05$.

RESULTS

The questionnaire based study was carried out among the 588 students regarding the usage of mobile phone. Reliability measured through Test-Retest showed measured kappa (k) of 0.84 and weighted kappa (k) of 0.90. Internal consistency measured through Chronbach's-Alpha (α) was found to be α=0.82.

Among 588 dental students, 554 students responded to the questionnaire thus, the response rate was 94.21%. Only completely filled questionnaire were considered for this study. The mean age of the subjects was 21.99±2.95 years (range: 17-35 years). All subjects used android phones and the mean age when the subjects started using the android phone was 16.96 years. Around 47.1% were males and 52.9% were females. Overall, 34.3% respondents belonged to preclinical group (BDS 1st year and IInd year), 33.9% were from clinical group (BDS IIIrd and Final year) and 16.3% were interns and 15.5% were postgraduate students [Table/Fig-1].

Characteristics	N=554(%)
Gender	
Males	261(47.1)
Females	293(52.9)
Education	
Preclinical	190(34.3)
Clinical	188(33.9)
Interns	90(16.3)
Postgraduates	86(15.5)
Age at which participants started using the mobile phone	
Age (in years)	
16 Years	126(22.7)
17 Years	331(59.8)
18 Years	89 (16.1)
19 Years	08 (1.4)

[Table/Fig-1]: Distribution of study subjects according to gender and educational qualification.

[Table/Fig-2] shows the response of students in percentage towards the attitude and associated anxiety with mobile phone based on their academic year i.e., preclinical, clinical, interns and postgraduates and their mean scores as well as in total. It was found that there was statistically significant difference among the four groups on perception of usage of mobile phones and associated anxiety with it. ($p<0.05$).

[Table/Fig-3] shows the response of students towards the attitude and associated anxiety with mobile phone in terms of mean scores based on their gender. It was found that there was statistically significant difference among males and females in questions related to worry when running out of battery and if they could not stay up to date with social media, women have more sleep loss when using phone at night as compared to males, also females hardly use mobile phone to download educational material and used their phone mostly not to feel lonely in public places as compared to males ($p<0.05$).

[Table/Fig-4,5] shows the prevalence of nomophobia and risk of nomophobia among respondents. It was seen that prevalence of nomophobia (score ≥ 40) were 32.6% among preclinical followed by 24.4% among interns; 20.9% among postgraduates and 18.6% among clinicals whereas at risk of being nomophobes (score-34 to 39) were 52.6% among clinical, 41.8% among postgraduates, 37.3% among preclinical and 32.2% among interns.

Among total students, the students who were Nomophobic (score≥ 40) was 24.12% and at risk of being nomophobes were 40.97% (score- 34 to 39).

[Table/Fig-6] represents the prevalence of nomophobia (score≥ 40) and risk of nomophobia (score-34 to 39) based on gender. It was seen that among 261 males 54 (20.68%) were nomophobic and 118 (45.21%) were at risk of being nomophobes. Among 293 females 84 (28.66%) were nomophobic and 116 (39.59%) were at risk of being nomophobes.

Questions	Groups	Strongly Disagree n (%)	Disagree n (%)	Neither Agree Nor Disagree n (%)	Agree n (%)	Strongly Agree n (%)	Mean Score (Mean±SD)	p-value
I frequently SMS or use social networking while studying or doing clinical work.	Total	116(20.9)	255(46.0)	29(5.2)	138 (24.9)	16(2.9)	2.43±1.15	<0.001*
	Preclinical	46(24.2)	103(54.2)	10(5.3)	26(13.7)	5(2.6)	2.16±1.02	
	Clinical	36(19.1)	93(49.5)	13(6.9)	46(24.5)	0(0)	2.37±1.05	
	Interns	16(17.8)	28(31.1)	2(2.2)	43(47.8)	1(1.1)	2.83±1.23	
	Postgraduates	18(20.9)	31(36.1)	4(4.7)	23(26.7)	10(11.6)	2.72±1.36	
I frequently check my cell phone while the classes are going on or while doing clinical	Total	155(28.0)	183(33.0)	41 (7.4)	137 (24.7)	38 (6.9)	2.49±1.31	<0.001*
	Preclinical	106(55.8)	44 (23.2)	9 (4.7)	22 (11.6)	9(4.7)	1.86±1.21	
	Clinical	25(13.3)	67(35.6)	27(14.4)	62(33.0)	7(3.7)	2.78±1.15	
	Interns	10(11.1)	32(35.6)	3(3.3)	31(34.4)	14(15.6)	3.07±1.33	
	Postgraduates	14(16.3)	40(46.5)	2(2.3)	22(25.6)	8(9.3)	2.65±1.28	
I feel nervous if I fail to receive timely response	Total	64(11.6)	167(30.1)	79(14.2)	227 (41.0)	17(3.1)	2.94±1.13	0.03*
	Preclinical	18(9.5)	50(26.3)	42(22.1)	75(39.5)	5(2.6)	2.99±1.07	
	Clinical	9(4.8)	72(38.3)	10(5.3)	95(50.5)	2(1.1)	3.05±1.06	
	Interns	24(26.7)	23(25.6)	10(11.1)	29(32.2)	4(4.4)	2.62±1.30	
	Postgraduates	13(15.1)	22(25.6)	17(19.7)	28(32.6)	6(7.0)	2.90±1.21	
It will scare/worry me if I am running out of my battery or out of signal in phone	Total	79(14.3)	96(17.3)	39(7.0)	263 (47.5)	77(13.9)	3.29±1.30	0.01*
	Preclinical	33(17.4)	21(11.1)	18(9.5)	105 (55.2)	13(6.8)	3.23±1.25	
	Clinical	17(9.1)	40(21.3)	4(2.1)	86(45.7)	41(21.8)	3.50±1.29	
	Interns	18(20.0)	16(17.8)	7(7.8)	40(44.4)	9(10.0)	3.06±1.35	
	Postgraduates	11(12.8)	19(22.1)	10(11.6)	32(37.2)	14(16.3)	3.22±1.31	
I would be annoyed if I could not use my phone and/or its capabilities when I wanted to do so	Total	6(1.1)	30(5.4)	50(9.0)	364 (65.7)	104(18.8)	3.96±0.76	0.02*
	Preclinical	2(1.1)	12(6.3)	26(13.7)	112 (58.9)	38(20.0)	3.90±0.82	
	Clinical	4(2.1)	14(7.4)	18(9.6)	115 (61.2)	37(19.7)	3.89±0.88	
	Interns	0 (0)	0(0)	4(4.4)	81(90.0)	5(5.6)	4.01±0.31	
	Postgraduates	0(0)	4(4.7)	2(2.3)	56(65.1)	24(27.9)	4.16±0.68	
I would be uncomfortable because I could not stay upto date with social media and online networks.	Total	58(10.4)	146(26.4)	43(7.8)	240 (43.3)	67(12.1)	3.20±1.24	<0.001*
	Preclinical	20(10.5)	26(13.7)	20(10.5)	85(44.7)	39(20.6)	3.51±1.25	
	Clinical	17(9.1)	76(40.4)	3(1.6)	91(48.4)	1(0.5)	2.91±1.12	
	Interns	6(6.7)	18(20.0)	16(17.8)	29(32.2)	21(23.3)	3.45±1.23	
	Postgraduates	15(17.4)	26(30.2)	4(4.7)	35(40.7)	6(7.0)	2.89±1.30	
I keep my phone with me at all the times.	Total	7 (1.3)	120(21.7)	52(9.4)	224 (40.3)	151(27.3)	3.71±1.12	<0.001*
	Preclinical	2(1.1)	46(24.2)	32(16.8)	65(34.2)	45(23.7)	3.55±1.12	
	Clinical	0(0)	36(19.1)	5(2.7)	80(42.6)	67(35.6)	3.95±1.07	
	Interns	3(3.3)	22(24.4)	6(6.8)	38(42.2)	21(23.3)	3.57±1.18	
	Postgraduates	2(2.3)	16(18.6)	9(10.5)	41(47.7)	18(20.9)	3.66±1.08	
If I were to run out of credits or hit my monthly data limit, I would panic	Total	43(7.8)	160(28.9)	18(3.2)	248 (44.8)	85(15.3)	3.31±1.25	<0.001*
	Preclinical	7(3.7)	43(22.6)	1(0.5)	71(37.4)	68(35.8)	3.78±1.25	
	Clinical	9(4.8)	68(36.2)	3(1.6)	107 (56.9)	1(0.5)	3.12±1.06	
	Interns	25(27.8)	16(17.8)	2(2.2)	36(40.0)	11(12.2)	2.91±1.48	
	Postgraduates	2(2.3)	33(38.4)	12(14.0)	34(39.5)	5(5.8)	3.08±1.05	
I answer immediately when my phone rings at inappropriate time	Total	25(4.5)	443(80.0)	8(1.4)	42(7.6)	36(6.5)	2.32±0.92	<0.001*
	Preclinical	8(4.2)	124(65.3)	4(2.1)	26(13.7)	28(14.7)	2.69±1.20	
	Clinical	1(0.5)	186(99.0)	1(0.5)	0(0)	0(0)	2.0±0.10	
	Interns	16(17.8)	55(61.1)	1(1.1)	10(11.1)	8(8.9)	2.32±1.16	
	Postgraduates	0 (0)	78(90.7)	2(2.3)	6(7.0)	0(0)	2.16±0.52	
I would be in stress if I could not use my phone for a week	Total	10(1.8)	58(10.5)	10(1.8)	348 (62.8)	128(23.1)	3.95±0.91	<0.001*
	Preclinical	1(0.5)	31(16.3)	0(0)	86(45.3)	72(37.9)	4.03±1.04	
	Clinical	0 (0)	7 (3.7)	0(0)	149 (79.3)	32(17.0)	4.10±0.55	
	Interns	9(10.0)	16(17.8)	10(11.1)	51(56.7)	4(4.4)	3.27±1.12	
	Postgraduates	0 (0)	4 (4.6)	0(0)	62(72.1)	20(23.3)	4.14±0.63	
I spend more than three hours for phone calls per day	Total	26(4.7)	259(46.7)	22(4.0)	174 (31.4)	73(13.2)	3.02±1.22	<0.001*
	Preclinical	9(4.7)	60(31.6)	2(1.1)	77(40.5)	42(22.1)	3.43±1.26	
	Clinical	1(0.5)	98(52.1)	16(8.5)	58(30.9)	15(8.0)	2.94±1.08	
	Interns	16(17.8)	61(67.8)	2(2.2)	10(11.1)	1(1.1)	2.10±0.86	
	Postgraduates	0 (0)	40(46.5)	2(2.3)	29(33.7)	15(17.5)	3.22±1.21	

I score low marks in my professional exams if I spend more time on phone.	Total	87 (15.7)	88(15.9)	95 (17.1)	219 (39.5)	65(11.8)	3.16±1.27	<0.001*
	Preclinical	37(19.5)	48(25.3)	37(19.5)	63(33.2)	5 (2.5)	2.72±1.18	
	Clinical	24(12.8)	25(13.3)	31(16.5)	85(45.2)	23(12.2)	3.31±1.22	
	Interns	12(13.3)	8(8.9)	10(11.1)	46(51.1)	14(15.6)	3.47±1.24	
	Postgraduates	14(16.3)	7(8.1)	17(19.8)	25(29.1)	23(26.7)	3.41±1.39	
I have sleep loss due to use of cell phone in nights.	Total	33(6.0)	64(11.6)	37(6.7)	298 (53.7)	122(22.0)	3.74±1.10	0.98
	Preclinical	10 (5.3)	20 (10.5)	15 (7.9)	104 (54.7)	41(21.6)	3.76±1.06	
	Clinical	13 (6.9)	24(12.8)	10(5.3)	98(52.1)	43(22.9)	3.71±1.15	
	Interns	5(5.6)	8(8.9)	9(10.0)	47(52.2)	21(23.3)	3.79±1.07	
	Postgraduates	5(5.8)	12 (14.0)	3 (3.5)	49(57.0)	17(19.8)	3.70±1.11	
I take phone calls while studying or doing clinical work.	Total	82 (14.8)	142(25.6)	57 (10.3)	220 (39.7)	53(9.6)	3.04±1.27	0.34
	Preclinical	29(15.3)	50(26.3)	19(10.0)	72(37.9)	20(10.5)	3.02±1.29	
	Clinical	27(14.4)	48(25.5)	20(10.6)	77(41.0)	16(8.5)	3.04±1.26	
	Interns	14(15.6)	26(28.9)	12(13.3)	32(35.6)	6(6.7)	2.88±1.24	
	Postgraduates	12(14.0)	18(20.9)	6(7.0)	39(45.3)	11(12.8)	3.22±1.30	
I use cell phone as study or clinical work aides (ex: Listening to music while studying an exam).	Total	20(3.6)	110(19.9)	55(9.9)	237 (42.8)	132(23.8)	3.63±1.15	0.50
	Preclinical	6(3.2)	40(21.1)	21(11.6)	77(40.5)	46(24.2)	3.61±1.15	
	Clinical	10(5.3)	33(17.6)	20(10.6)	84(44.7)	41(21.8)	3.60±1.16	
	Interns	3(3.3)	13(14.4)	8(8.9)	41(45.6)	25(27.8)	3.80±1.10	
	Postgraduates	1(1.1)	24(27.9)	6(7.0)	35(40.7)	20(23.3)	3.57±1.16	
I hardly use mobile phones to download or view educational materials	Total	120(21.7)	126(22.7)	52(9.4)	197 (35.6)	59(10.6)	2.91±1.36	<0.001*
	Preclinical	37(19.4)	27(14.2)	19(10.0)	82(43.2)	25(13.2)	3.16±1.36	
	Clinical	32(17.0)	38(20.2)	26(13.8)	71(37.8)	21(11.2)	3.06±1.30	
	Interns	18(20)	36(40)	4(4.5)	28(31.1)	4(4.4)	2.60±1.24	
	Postgraduates	33(38.4)	25(29.0)	3(3.5)	16(18.6)	9(10.5)	2.33±1.42	
I feel distracted by my mobile phone during examination	Total	42(7.6)	93(16.8)	84(15.2)	259 (46.7)	76(13.7)	3.42±1.14	0.97
	Preclinical	14(7.4)	32(16.8)	27(14.2)	91(47.9)	26(13.7)	3.43±1.14	
	Clinical	15(8.0)	31(16.5)	30(16.0)	86(45.7)	26(13.8)	3.41±1.15	
	Interns	4(4.4)	20(22.2)	10(11.2)	48(53.3)	8(8.9)	3.40±1.06	
	Postgraduates	9(10.5)	10(11.6)	17(19.8)	34(39.5)	16(18.6)	3.44±1.22	
Examination fraud becomes more rampant with the use of mobile phone by students	Total	27(4.9)	66(11.9)	86(15.5)	239 (43.2)	136(24.5)	3.71±1.11	<0.001*
	Preclinical	9(4.7)	13(6.9)	33(17.4)	88(46.3)	47(24.7)	3.79±1.04	
	Clinical	11(5.9)	43(22.9)	36(19.1)	56(29.8)	42(22.3)	3.40±1.22	
	Interns	4(4.5)	2(2.2)	6(6.7)	48(53.3)	30(33.3)	4.08±0.94	
	Postgraduates	3(3.5)	8(9.3)	11(12.7)	47(54.7)	17(19.8)	3.78±0.98	
I use my phone to not to feel lonely in a public place	Total	27(4.9)	82(14.8)	53(9.6)	261 (47.1)	131(23.6)	3.70±1.12	0.80
	Preclinical	10(5.2)	28(14.7)	18(9.5)	90(47.4)	44(23.2)	3.68±1.13	
	Clinical	11(5.9)	28(14.9)	19(10.1)	86(45.7)	44(23.4)	3.16±1.16	
	Interns	3(3.3)	13(14.4)	8(8.9)	41(45.6)	25(27.8)	3.80±1.10	
	Postgraduates	3(3.5)	13(15.1)	8(9.3)	44(51.2)	18(20.9)	3.71±1.07	

[Table/Fig-2]: Reponse of students regarding the pattern of usage of mobile phones based on academic year.
*- Significant; [Kruskal walis test]; n - No of dental students

DISCUSSION

It is certain that technology can convey information to human beings without any difficulty. It also renders people with a luxurious life and convenient connection. Still, excessive use (i.e., texting in the classroom, frequently checking the cell phone) of cell phones among dental students leads to several problems (i.e., concentration difficulties which results in negative academic impacts).

Our study revealed 24.12% of prevalence of nomophobia and 40.97% of prevalence of having risk of being nomophobes and majority of nomophobes were from preclinical (32.6%) and least were from clinical (18.6%) whereas, risk of nomophobes was highest among clinical (52.6%) and least among interns (32.2%). This could be due to being away from the family and becoming homesick thus making them more dependent on the mobile phone. A study conducted by Dixit S et al., in 2010 revealed that 18.5% of students were nomophobic as well as highest number of students being nomophobic were from 3rd professional part-I (7%) and least number of students were from internship (1%) [18]. Another study conducted by Ramadu RV et al., in 2015 revealed that 22.3% of total population were nomophobic. The students having nomophobia were maximum from interns (34.28%) and minimum for 2nd year (14%) and risk of nomophobia is higher for 2nd year (51.2%) and least for final year part-II(31.2%) [6].

The prevalence of nomophobia were higher among females (28.66%) when compared to males (20.68%) whereas, the risk of nomophobia were more in males (45.21%) as compared to females (39.59%). A statistically significant difference on usage of mobile phones between females and males was found.

The study revealed that about 85.9% of total dental students can't stay without their phone for more than a week. The findings are in accordance to the study conducted by Akanferi AA et al., in 2014 where 88% of all respondents disagreed that they can stay without using mobile phones [4]. Also, 46.2% of the total students hardly use their phone to download or view educational material

Questions	Gender	Mean Score (Mean±SD)	p-value
I frequently SMS or use social networking while studying or doing clinical work.	Male	2.34±1.09	NS
	Female	2.50±1.20	
I frequently check my cell phone while the classes are going on or while doing clinical	Male	2.40±1.31	NS
	Female	2.57±1.30	
I feel nervous if I fail to receive timely response	Male	2.91±1.13	NS
	Female	2.96±1.14	
It will scare/worry me if I am running out of my battery or out of signal in phone	Male	3.10±1.34	S
	Female	3.46±1.23	
I would be annoyed if I could not use my phone and/or its capabilities when I wanted to do so	Male	3.96±0.73	NS
	Female	3.95±0.80	
I would be uncomfortable because I could not stay upto date with social media and online networks.	Male	3.33±1.25	S
	Female	3.08±1.23	
I keep my phone with me at all the times	Male	3.70±1.08	NS
	Female	3.71±1.15	
If I were to run out of credits or hit my monthly data limit, I would panic	Male	3.29±1.27	NS
	Female	3.32±1.23	
I answer immediately when my phone rings at inappropriate time	Male	2.36±0.96	NS
	Female	2.27±0.88	
I would be in stress if I could not use my phone for a week	Male	3.88±0.97	NS
	Female	4.01±0.84	
I spend more than three hours for phone calls per day	Male	3.00±1.23	NS
	Female	3.03±1.21	
I score low marks in my professional exams if I spend more time on phone.	Male	3.06±1.33	NS
	Female	3.24±1.21	
I have sleep loss due to use of cell phone in nights.	Male	3.78±1.15	S
	Female	3.61±1.11	
I take phone calls while studying or doing clinical work.	Male	2.98±1.32	NS
	Female	3.08±1.22	
I use cell phone as study or clinical work aides (ex: Listening to music while studying an exam).	Male	2.80±1.41	NS
	Female	2.58±1.31	
I hardly use mobile phones to download or view educational materials	Male	3.05±1.37	S
	Female	2.77±1.34	
I feel distracted by my mobile phone during examination	Male	3.24±1.32	NS
	Female	3.19±1.11	
Examination fraud becomes more rampant with the use of mobile phone by students	Male	3.63±1.19	NS
	Female	3.76±1.02	
I use my phone to not to feel lonely in a public place	Male	3.49±1.16	S
	Female	3.94±0.95	

[Table/Fig-3]: Mean scores of students regarding the pattern of use of mobile phones based on gender.
S-significant (p<0.05); NS-non-significant(p≥0.05) [Mann-Whitney U test applied]

implying the usage of mobile phone for recreational purpose also. Undoubtedly, mobile phone and its functions such as listening to music and messaging with Whatsapp, facebook have become addiction to young adults.

The present study showed that 39.5% of students perceived their academic performance to be poorer due to spending of more time on phone and the association was statistically significant (p<0.05). The present findings are in agreement to the study conducted by Baghianimoghadam MH et al., in 2013, Krithika M et al., in 2013, Aman T et al., in 2015 and Chen YF in 2006 in Taiwan which shows that mobile phone have severe adverse effects on their study and academic achievement [19-22]. These findings are in contrast to study conducted by Ezemenaka E in 2013 which found that there is no significant relationship affecting the academic performance of students in using internet enabled phones [2]. The present study shows that 24.7% agreed and 6.9% strongly agreed to use their cell

Group	Nomophobes n (%)
Preclinicals	62(32.6)
Interns	23(24.4)
Postgraduates	18(20.9)
Clinicals	35(18.6)

[Table/Fig-4]: Prevalence of nomophobia and risk of nomophobia among the respondents.

Risk of Nomophobia	n (%)
Clinicals	99(52.6)
Postgraduates	36(41.8)
Preclinicals	71(37.3)
Interns	28(32.2)

[Table/Fig-5]: Prevalence of risk of nomophobia among the respondents.

Gender	n (%)	Nomophobia n (%)	Risk of Nomophobia n (%)	p-value
Males	261(47.1)	54(20.68)	118(45.21)	0.09(NS)
Females	293(52.9)	84(28.66)	116(39.59)	

[Table/Fig-6]: Prevalence of nomophobia and risk of nomophobia based on gender.
NS- Non significant (p≥0.05) Chi-square test applied

phones while their classes are going on. In a study conducted by Li M et al., it was seen that about 69% use their cell phones in class [23]. This shows that the students have cell phone obsessesion which is destructive for their academic purpose.

Our study shows that 47.5% of students agreed and 13.9% of students strongly agreed that they will go anxious while running out of battery or out of signal in phone. A study from United Kingdom by Katherin B in 2008 on 2163 people revealed that 53% of the subjects tend to be anxious when they lose their mobile phone, run out of battery or credit or have no network coverage [5]. This shows that the young adults has become reliant on mobile phone which has affected their social behaviour as well as their mental health.

The study revealed 31.4% students agreed and 13.2% students strongly agreed that they spend more than three hours for phone calls per day which is similar to the finding of Li M et al., which shows that 50.8% students spent their time about more than four hours on cell phone usage [23].

Mobile phones use if not correctly controlled may become a very critical problem in our society and the dental students who are future dentists should be careful about the excessive phone use while providing service to the society.

RECOMMENDATION

1. Institutions must enforce the students to refrain from using mobile phones in classes or preclinical or clinical work.
2. Dental students need to be re-orientated to set their priorities which should be guided by the institution as well as with the parents/guardians of the students.
3. It is also recommended that students should dedicate much of their mobile phone usage time to research and academic activities rather engaging in social networking and pinging.

LIMITATION

1. The study evaluated the students of one particular college, therefore further studies involving larger sample over a wide geographic area can be carried out to facilitate generalisability of the findings.
2. The results also rely upon the presumption that the students gave real responses to the self administered questionnaire.
3. Academic performance was assessed based on the self perception of the study participants. Thus, further studies

with objective assessement of academic performance should therefore be carried out.

Thus, the finding from the study proves significantly that the mobile phones has a great impact on the social life and academics of students. Also despite student's understanding about the negative effects of mobile phone on their academics, they still continue to use cell phones. Thus, the students must be encouraged to use their mobile phones judiciously.

CONCLUSION

The pattern of usage of mobile phone showed self perceived poor academic performance among the study population and majority of the students having the risk of being nomophobes. Thus, the students must be made aware of the positive and negative effects of excessive usage of mobile phones. Further studies are required to analyse the existing problem to facilitate the steps to be taken to handle the emerging problem of nomophobia.

REFERENCES

[1] Castells M, Fernandez Ardevol M, Qiu J, Sey A. "Mobile Communication and society: A global perspective." 2007.Cambridge, MA: MIT press. Available from: https://mitpress.mit.edu/books/mobile-communication-and-society [Accessed on 28 March 2016].

[2] Ezemenaka E. The usage and impact of Internet enabled phones on academic concentration among students of tertiary institutions: A study at the University of Ibadan, Nigeria. Int J Educ Dev Using Inf Commun Technol. 2013;9(3):162-73.

[3] Walsh SP, White KM, Ross MY. Over-connected? A qualitative exploration of the relationship between Australian youth and their mobile phones. J Adolesc. 2008;31:77-92.

[4] Akanferri AA, Aziale LK, Asampana I. An empirical study on mobile phone usage among young adults in Ghana: From the viewpoint of university students. Int J Comput Appl. 2014;98(5):15-21

[5] Katharine B. Phone reliant Britons in the grip of nomo phobia, The independent. March 31, 2008. Available from: http://www.independent.co.uk/news/uk//life-style/gadgets-and-tech/news/survey-suggests-half-of-britons-fear-being-without-their-mobile-8784706.html [last accessed on 2016 March 28].

[6] Ramudu RV, Raj R, Purushothaman M, Reddy KG, Ramana PV. A study of assessment of mobile phone dependence among medical students in tertiary care teaching hospital. Indo-Am J Pharm Res. 2015;5(8):2583-87.

[7] Telecom Regulatory Authority of India (2016). Retrieved from http://www.trai.gov.in/WriteReadData/WhatsNew/Documents/PR-No=47.pdf [last accessed on 2016 March 28].

[8] Lenhart A, Ling R, Campbell S, Purcell K. Teens and mobile phones: Text messaging explodes as teens embrace it as the centerpiece of their communication strategies with friends. 2010. Available from https://pewinternet.org/reports/2010/ teens-and-mobile-phones.aspx [last accessed on 2016 March 30].

[9] Macro-market analysis and consumer research organization, A report on study of mobile phone usage among the teenagers and youth in Mumbai, April-May-2004. Available from: http://www.itu.int/osg/spu/ni/futuremobile/socialaspects/IndiaMacroMobileYouthStudy 04.pdf [last accessed on 2016 March 28].

[10] Kuss DJ, Griffiths MD. Online social networking and addiction – A review of the psychological literature. Int J Environ Res Public Health. 2011;8(9):3528–52.

[11] Pavithra MB, Madhukumar S, Murthy MTS. A study on nomophobia - mobile phone dependence, among students of a medical college in Bangalore. Natl J Community Med. 2015;6(2):340-44.

[12] Soderqvist F, Carlberg M, Hardell L. Use of wireless telephone and self-reported health symptoms: a population-based study among Swedish adolescents aged 15–19 years. Environ Health. 2008;7:18.

[13] Khan MM. Adverse effects of excessive mobile phone use. Int J Occup Med Environ Health. 2008;21:289–93.

[14] Ikeda K, Nakamura K. Association between mobile phone use and depressed mood in Japanese adolescents: A cross-sectional study. Environ Health Prev Med. 2014;19:187–93.

[15] Ling RS. Mobile connection: The cell phone's impact on society. San Francisco: Morgan Kaufmann Publisher; 2004 [cited 2016 Feb 11] Available from: Ebook Library [last accessed on 2016 March 30] .

[16] McCarty E. Mobile phone usage among nigerian university students and its impact on teaching and learning. Glob J of Arts Humanit and Soc Sci. 2015;3(1):29-38

[17] Yildrim C, Correia AP. Exploring the dimensions of nomophobia: Development and validation of a self-reported questionnaire Comput Human Behav. 2015;49:130-37.

[18] Dixit S, Shukla H, Bhagwat A, Bindal A, Goyal A, Zaidi AK, et al. A study to evaluate mobile phone de-pendence among students of a medical college and associ-ated hospital of central India. Indian J Community Med. 2010;35(2):339–41.

[19] Baghianimoghadam MH, Shahbazi H, Boroojeni DM, Moghadam BB. Attitude and usage of mobile phone among students in Yazd University of Medical Science. Iran Red Crescent Med J. 2013;15(8):752–54.

[20] Krithika M, Vasantha S. The mobile phone usage among teens and young adults impact of invading technology. Int J Innov Res Sci Eng Technol. 2013;2(12):7259-65.

[21] Aman T, Shah N, Hussain A, Khan A, Asif S, Qazi A. Effects of mobile phone use on the social and academic performance of students of a public sector medical college in khyber pakhtunkhwa pakistan. Khyber J Med Sci. 2015;8(1):99-103.

[22] Chen YF. Social Phenomena of Mobile Phone Use: An Exploratory Study in Taiwanese College Students. 2006; available at http://society.nhu.edu.tw/jccic/11/fu/11-06.pdf [Last accessed on 2016 February 11].

[23] Li M, Kang HS, Huang CY, Alaboud A, Tsai HH. Cell phone obsession: Impact on students learning and social behaviour [Internet]. Available at http://edujoacom.ipage.com/uploads/3/3/5/9/3359689/etec543-_research_project_11-26_submitted_should_eb_final_one.pdf. [Last accessed on 2016 Feb 12].

PARTICULARS OF CONTRIBUTORS:

1. Tutor, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.
2. Professor and Head, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.
3. Reader, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.
4. Senior Lecturer, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.
5. Professor and Head, Department of Preventive and Community Dentistry, Sardar Patel Institute of Dental and Medical Sciences, Lucknow, Uttar Pradesh, India.
6. Tutor, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.
7. Tutor, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.
8. Tutor, Department of Public Health Dentistry, D.J. College of Dental Sciences and Research, Modinagar, Ghaziabad, Uttar Pradesh, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Monika Prasad,
Tutor, Department of Public Health Dentistry, D.J. College of Dental Sciences & Research,
Ajit Mahal, Niwari Road, Modinagar, Ghaziabad-201204, Uttar Pradesh, India.
E-mail: monika31p@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Apr 21, 2016**
Date of Peer Review: **Jun 08, 2016**
Date of Acceptance: **Aug 20, 2016**
Date of Publishing: **Feb 01, 2017**