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Research Article

EVALUATION OF MOBILE PHONE USAGE PATTERN, ADDICTION AND SELF PERCEIVED ACADEMIC PERFORMANCE AMONG DENTAL AND ENGINEERING STUDENTS- A COMPARATIVE STUDY

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ABSTRACT

Objective: Technologies like mobile phones may not always work positively but they may have unforeseen adverse effects. This study was conducted to assess the pattern of mobile phone usage pattern, level of addiction and to evaluate the self perceived academic performance among dental and engineering students.

Experimental Approach: The present cross-sectional study carried out at Dental and Engineering college of Bhilai, Chhattisgarh among 710 engineering and dental students by using a pre-tested questionnaire containing 32 questions. The data collected were analyzed using independent sample t-test at $p \leq 0.05$.

Findings and Discussion: Among dental students 288 were moderately addicted and among engineering students 317 were moderately addicted. Engineering students are more likely to be addicted to mobile phone than dental students.

Conclusion: Increased addiction towards mobile phone usage affects the academic performance, mental and physical health of students thus appropriate measures need to be planned to motivate and warn the youth against ill effects of mobile phone.

INTRODUCTION

The current trend of our society is to adopt the latest change in the field of technology[1] When this relates in context of communication technology, telecommunications has been considered generally as the most rapidly spreading media, thus encouraging a rise in "mobile culture" in all the generations, especially younger generation.[2,3] Mobile phone growth in India has been fast and it has reached all segments of society, especially the young. Since most of our work is now done through Mobile Phones, we can say that Mobile Phones are quickly replacing laptop as the preferred method of searching and navigating, when it comes to accessing Internet.[4,5,6] Mobile Internet usage is growing at the rate of nearly 85% per annum.[7] Sixty-seven percent of young adults between the age of 18 to 24 years, own a Smart Phone compared to 53 percent of all adults.[6] Thanks to features like video calls, YouTube, camera, navigation etc. smart phones have become an indispensable element of life and their usage has increased day by day.[8,9]

Addiction is considered by WHO (WHO Expert Committee – 1964) [6] a dependence, as the continuous use of something for the sake of relief, comfort, or stimulation, which often causes cravings when it is absent. An increase in using cell phones has converted a normal habit into addiction without giving proper warning. [10] Excessive use of mobile phone may lead to low academic performance, maladjustment of college life, sleeping disturbance, psychological distress, low concentration level, mental health problems and smart-phone addiction [12,13,15]

According to occupational categories, colleges students are considered in the high risk group to smart-phone addiction.[11] Mobile phone addiction is becoming a major non-drug addiction of current era. [16] Use of cell phone for more than half an hour per day is the symptom of being mobile phone addict. Many diseases like mobile phone dependence syndrome and Nomophobia are occurring due to Excessive or obsessive use of cell phone. [3,16] The ownership of a mobile phone among professional students (like dental and engineering etc) is not uncommon and has similar social, economic, psychological and educational ill effects which has an impact on their attitude and behavior towards academic activities. [2] On literature search on the effect of mobile phone usage there is substantial evidence

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supporting the effect of mobile phone use on medical care; its influence on dental and engineering students has still not been investigated.[14]

The dental and engineering students in Chhattisgarh are below the age of 25 year, who are found to use mobile phones quite frequently as most of them reside in hostels. There is no such study conducted among Dental and Engineering students in Chhattisgarh. Hence, this study was undertaken to understand the usage pattern of mobile phones, level of addiction and its effects oneself perceived academic performance among dental and engineering students in Bhilai, Chhattisgarh.

MATERIALS AND METHODS

A descriptive cross sectional comparative study was conducted among 740 students of dental and engineering college, Bhilai, Chhattisgarh, India. Undergraduate dental and engineering students aged >17 yrs using mobile phone for more than 1year duration for at least 1-2 hr per day participated in the study. The study protocol was explained in detail to the subjects and those who provided consent were included in the study. Permissions were obtained from the respective college authorities to collect the data from the participants.

A modified questionnaire was developed by MPAS (Mobile Phone addiction scale) scale.[17] The modifications were done with respect to the questions and answering options. The modified questionnaire was designed by the investigators and was subjected to content, construct validity by the subject experts. Cronbach's alpha was calculated to check the reliability of the questionnaire with test-retest analysis. Pilot study was done to pre test the questionnaire in a group of 10 students and modifications were made accordingly. Students who participated in the pilot study were not a part of the main study.

The modified questionnaire comprised of 3 sections. The first section included the demographic details (age, sex, education level, marital status, SES). The second section assessed the Mobile Usage Pattern which consists of 8 questions. The third section assessed the level of addiction of mobile phone based on mobile phone addiction scale. Scale consisted of 24 questions with options in 4-point likert scale (where 1-strongly disagree, 2- disagree, 3- agree, 4- strongly agree). The higher the score more negative the perception of items. For the reverse question option is from 4-1. Every question was mandatory to answer.

Study was conducted after getting ethical clearance from the institutional ethical committee. Students who did not filled the questionnaire completely and those not willing to participate were excluded from the study. The responses were then analyzed. Scoring was allotted representing maximum to minimum mobile phone addiction. The cutoff value of 24 and above was considered to be addicted to mobile phones. According to cutoff scores students were classified as slightly addicted (24-48), moderately addicted (48-72), severely addicted (>72).

Statistical analysis- All the obtained data were then compiled and tabulated in Microsoft Office Excel spreadsheet and subject to analyses by SPSS vs. 16 (IBM, Chicago). Descriptive statistics with mean and percentage were analyzed for the data.

RESULTS

The questionnaire based study was carried out among 740 students. Among 740, 710 students responded or completely filled the questionnaire, thus response rate was 96%. Out of 710 students 355 were dental and 355 were engineering students. Demographic variables included gender, age, socioeconomic status, marital status, education level. Among dental students 60(16.9%) were males and 295(83%) females and for engineering students 224 (63%) males and 131 (36.9%) females. Age of the subjects ranges from 17-25 yrs. (table-1)
Out of the entire study group of dental students, who had severely addicted were 19, moderately addicted were 288, slightly addicted were 48. Among the engineering students, severely addicted were 21, moderately addicted were 317, slightly addicted were 17. (figure-1)

Table 1 Demographic Variables of Dental and Engineering Students

S no.	Demographic Status	Groups	Dental		Engineering	
			Frequency	Percentage	Frequency	Percentage
1	Gender	Male	60	16.9%	224	63.1%
		Female	295	83.1%	131	36.9%
2	Age	17-20 years	93	26.2%	189	53.2%
		21-24 years	251	70.7%	159	44.8%
		>24 years	11	3.1%	7	2.0%
3	Education	1st year	80	22.5%	59	16.6%
		2nd year	78	22.0%	142	40.0%
		3rd year	66	18.6%	118	33.2%
		4th year	64	18.0%	36	10.1%
		intern	67	18.9%		
4	Socio-Economic Status	lower	3	0.8%	34	9.6%
		middle	276	77.7%	302	85.1%
		upper	76	21.4%	19	5.4%
5	Marital Status	Married	4	1.1%	6	1.6%
		Unmarried	351	98.5%	349	98.3%

Descriptive statistics with frequency and percentage for demographic details of study subjects

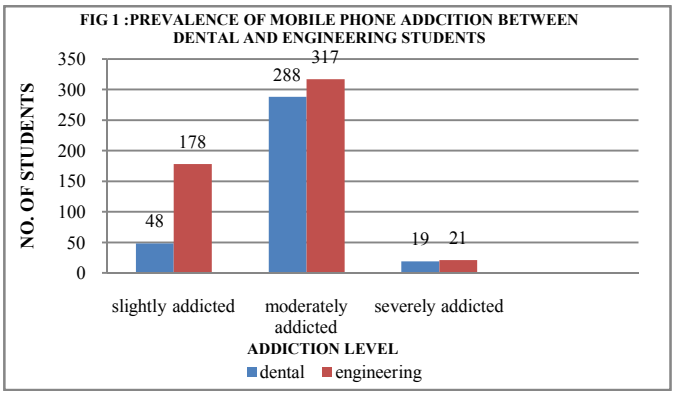

Fig 1 Prevalence of Mobile Phone Addiction between Dental and Engineering Students

Slightly Addicted: 24-48, Moderately Addicted: 48-72, Severely Addicted :> 72

(Figure-2) (Figure-3) shows the mobile phone usage pattern of dental and engineering students i.e. 294(82.8%) dental students and 145(40.8%) engineering students spend 3-4 hrs a day using their mobiles. 138(38.9%) engineering students and 158(44.5%) dental students use mobile for social networking site. 178(50.1%) engineering students and 196(55.2%) dental students "think that their mobile doesn't effect their academics". 174(49%) dental students keep their mobile phones next to pillow whereas 134(37.7%) engineering

students keep their mobile phones away from bed. 101(28.5%) dental students check their mobile during class for messages whereas 120(33.8%) engineering students never checked their mobiles during class. 223(62.8%) engineering students and 316(89%) dental students didn't wake up between their sleep to check mobiles.

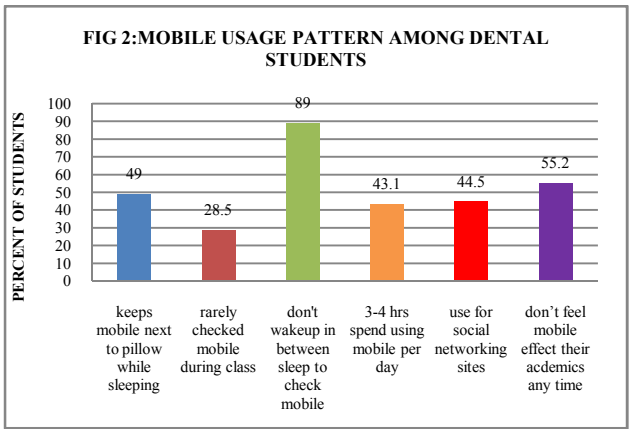

Fig 2 Mobile Usage Pattern among Dental Students

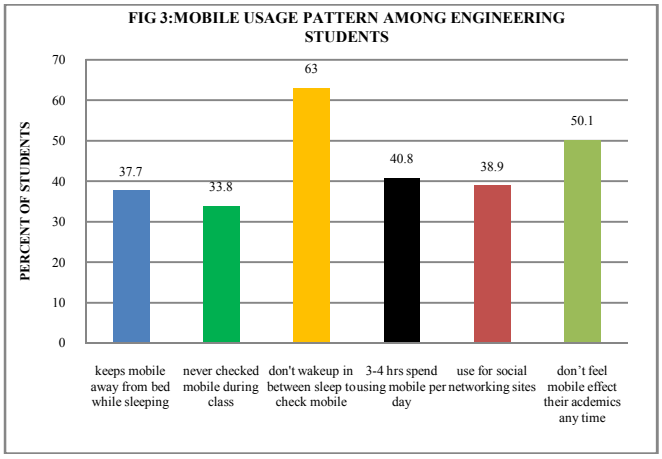

Fig 3 Mobile Usage Pattern among Engineering Students

(Figure- 4) (Figure- 5) shows level of mobile addiction. 185(52.1%) dental students and 172(48.5%) engineering students disagreed that their college grades dropped due to excessive mobile use.

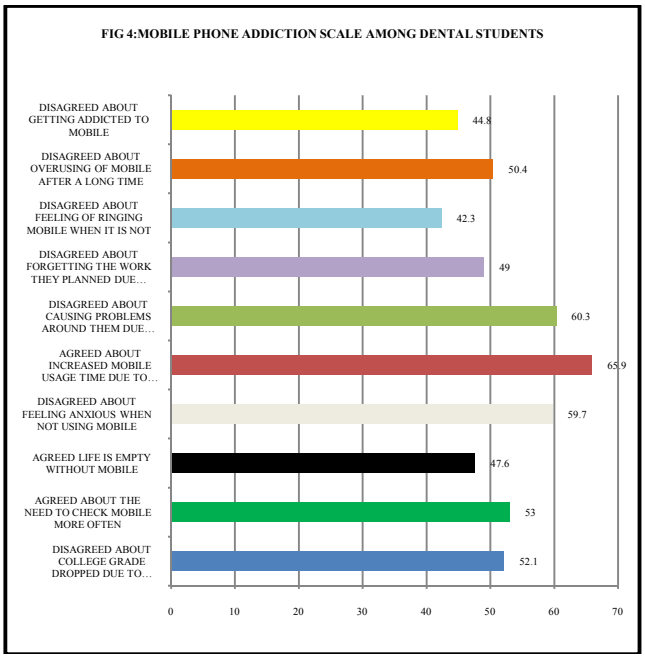

Fig 4 Mobile Phone Addiction Scale among Dental Students

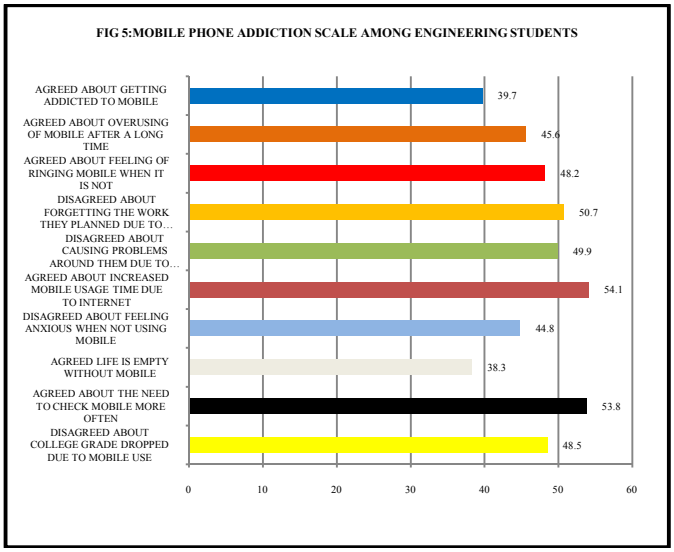

Fig 5 Mobile Phone Addiction Scale among Engineering Students

174(49%) dental students and 112(31.5%) engineering students disagreed that they forget the work they planned when using a mobile. 150(42.3%) dental students don't feel that their mobile is ringing or vibrating when it's not and 171(48.2%) engineering students feels that their mobile phone is ringing or vibrating when it is not. 188(53%) dental students and 191(53.8%) engineering students agreed that they feel the need to check mobile more often.

Table 2 Response of students regarding pattern of mobile usage its addiction and its influence on academic performance among dental and engineering students

S No	Question	Options	Dental	Engineering
			N (%)	N (%)
1.	No. of mobile phones	nil	1(.3%)	8 (2.3%)
		1	294 (82.8%)	300 (84.5%)
		2	55 (15.5%)	36 (10.1%)
		2 or More	5 (1.4%)	11(3.1%)
2.	No. of hours spent using mobile phone	1-2 hr.	100(28.2%)	112(31.5%)
		3-4 hr	153(43.1%)	145(40.8%)
		4-5 hr	62(17.5%)	60(16.9%)

		6 & above	40(11.3%)	38(10.7%)
	Purpose of using mobile	Social	58(44.5%)	138(38.9%)
		Academic	49(13.8%)	56(15.8%)
		Net surfing	82(23.1%)	62(17.5%)
		Games	66(18.7%)	99(27.9%)
3.	Has mobile affected your academics	Yes	159(44.8%)	177(49.9%)
		No	196(55.2%)	178(50.1%)
	If yes then How?	Scoring less marks	193(54.4%	163(45.9%)
		Lack of concentration	118(33.2%)	49(13.8%)
		Lack of time	44(12.3%)	143(40.2%)
4.	Place of your mobile while sleeping	Under pillow	15(4.2%)	35(9.8%)
		Next to bed	75(21.15%)	95(26.8%)
		Next to pillow	174(49%)	91(25.6%)
		Away from bed	91(25.6%)	134(37.7%)
5.	Sleep affected due to mobile phone	Yes	127(35.8%)	141(39.7%)
		No	228(64.8%)	213(60.0%)
6.	Checking phone during class for message	Always	15(4.2%)	46(13.0%)
		Usually	53(14.9%)	83(23.4%)
		Often	101(28.5%)	80(22.5%)
		Seldom	100(28.2%)	26(7.3%)
		Never	86 (24.2%)	120(33.8%)
7.	Checking mobile during sleep	Yes	39(11%)	131(36.9%)
		No	316(89%)	223(63.0%)
8.	College grade dropped due to mobile phone	Strongly disagree	72(20.3%)	48(13.5%)
		Disagree	185(52.1%)	172(48.5%)
		Agree	92(25.9%)	114(32.1%)
		Strongly agree	6(1.7%)	21(5.9%)
9.	Mobile does not distract me from studies	Strongly disagree	36(10.1%)	28(7.9%)
		Disagree	168(47.3%)	154(43.4%)
		Agree	131(36.9%)	136(38.3%)
		Strongly agree	20(5.6%)	37(10.4%)
10.	Forgetting work I plan while using mobile	Strongly disagree	66(18.6%)	47(13.2%)
		Disagree	174(49%)	180(50.7%)
		Agree	106(29.9%)	112(31.5%)
		Strongly agree	9(2.5%)	16(4.5%)
11.	Had problems at work due to mobile use	Strongly disagree	88(24.8%)	58(16.3%)
		Disagree	195(54.9%)	160(45.1%)
		Agree	63(17.7)	125(35.2%)
		Strongly agree	9(2.5%)	12(3.4%)
12.	When I'm not using mobile I think about what I used to do before being on the phone	Strongly disagree	59(16.6%)	41(11.5%)
		Disagree	155(43.7%)	120(33.8%)
		Agree	126(35.5%)	172(48.5%)
		Strongly agree	15(4.2%)	22(6.2%)
13.	I often think or feel my mobile is ringing/vibrating when it is not	Strongly disagree	79(22.3%)	43(12.1%)
		Disagree	150(42.3%)	120(33.8%)
		Agree	102(28.7%)	171(48.2%)
		Strongly agree	24(6.8%)	21(5.9%)
14.	I have a difficulty doing what I have planned due to mobile	Strongly disagree	63(17.7%)	42(11.8%)
		Disagree	185(52.1%)	143(40.3%)
		Agree	90(25.4%)	147(41.4%)
		Strongly agree	70(4.8%)	23(6.5%)
15.	As time goes by, I feel the need to check mobile more often	Strongly disagree	29(8.2%)	25(7.0%)
		Disagree	118(33.2%)	113(31.8%)
		Agree	188(53%)	191(53.8%)
		Strongly agree	20(5.6%)	26(7.3%)
16.	I feel I need to recheck soon after using the mobile	Strongly disagree	44(12.4%)	34(9.6%)
		Disagree	183(51.5%)	138(38.9%)
		Agree	113(31.8%)	160(45.1%)
		Strongly agree	15(4.2%)	23(6.5%)
17.	I use my mobile for longer than I had planned	Strongly disagree	18(5.1%)	28(7.9%)
		Disagree	104(29.3%)	123(34.6%)
		Agree	204(57.5%)	171(48.2%)
		Strongly agree	29(8.2%)	33(9.3%)
18.	Life is empty without my mobile phone	Strongly disagree	51(14.4%)	38(10.7%)
		Disagree	79(22.3%0	135(38.0%)
		Agree	169(47.6%)	136(38.3%)
		Strongly agree	56(15.8%)	46(13.0%)
19.	I feel grumpy and nervous when I cannot use mobile	Strongly disagree	65(18.3%)	50(14.1%)
		Disagree	212(59.7%)	159(44.8%)
		Agree	64(18.0%)	114(32.1%)
		Strongly agree	40(3.9%)	32(9.0%)
20.	I see mobile as the cause of my wrist, neck ache and headache	Strongly disagree	73(20.6%)	46(13.0%)
		Disagree	203(57.2%)	159(44.8%)
		Agree	70(19.7%)	128(36.1%)
		Strongly agree	9(2.5%)	22(6.2%)
21.	I use programs on my mobile that requires internet	Strongly disagree	7(2.0%)	17(4.8%)
		Disagree	31(8.7%)	48(13.5%)
		Agree	239(67.3%)	233(65.6%)
		Strongly agree	78(22%)	57(16.1%)
22.	I consider a non-internet mobile to be meaningless	Strongly disagree	19(5.4%)	37(10.4%)
		Disagree	82(23.1)	138(38.9%)
		Agree	177(49.9%)	129(36.3%)
		Strongly agree	77(21.7%)	51(14.4%)
23.	The internet has increased the amount of time I spend on mobile	Strongly disagree	10(2.8%)	15(4.2%)
		Disagree	38(10.7%)	80(22.5%)
		Agree	234(65.9%)	192(54.1%)
		Strongly agree	73(20.6%)	68(19.2%)
24.	When I hold my mobile, I immediately check internet connection	Strongly disagree	17(4.8%)	26(7.3%)
		Disagree	77(21.7%)	99(27.9%)
		Agree	204(57.5%)	177(49.9%)
		Strongly agree	57(16.1%)	53(14.9%)
25.	Due to overusing my mobile, I cause problems for those around me	Strongly disagree	83(23.4%)	37(10.4%)
		Disagree	214(60.3%)	177(49.9%)
		Agree	50(14.1%)	121(34.1%)
		Strongly agree	8(2.3%)	20(5.6%)
26.	I reduce my mobile usage, but it increases again	Strongly disagree	42(11.8%)	37(10.4%)
		Disagree	161(45.4%)	124(34.9%)
		Agree	135(38%)	168(47.3%)
		Strongly agree	17(4.8%)	26(7.3%)
27.	Even if I have finished what I was doing on my mobile, I find myself "let's take a look"	Strongly disagree	24(6.8%)	28(7.9%)
		Disagree	118(33.2%)	117(33.0%)
		Agree	185(52.1%)	173(48.7%)
		Strongly agree	28(7.9%)	37(10.4%)
28.	I am trying to stop using mobile	Strongly disagree	37(10.4%)	29(8.2%)
		Disagree	156(43.9%)	131(36.9%)
		Agree	136(38.3%)	159(44.8%)
		Strongly agree	26(7.3%)	36(10.1%)
29.	Even if do not use a mobile for a long time, my overuse continues when I start again	Strongly disagree	35(9.9%)	32(9.0%)
		Disagree	179(50.4%)	139(39.2%)
		Agree	121(34.1%)	162(45.6%)
		Strongly agree	20(5.6%)	22(6.2%)
30.	I think I' am addicted to my	Strongly disagree	49(13.8%)	43(12.1%)

mobile	Disagree	159(44.8%)	122(34.4%)
	Agree	121(34.1%)	141(39.7%)
	Strongly agree	26(7.3%)	49(13.8%)

169(47.6%) dental students and 136(38.3%) engineering students feels empty without mobile phones. 212(59.7%) dental students and 159(44.8%) engineering students don't feel grumpy and nervous when cannot use mobile. 234(65.9%) dental students and 192(54.1%) engineering students agreed that internet has increased amount of time spend on mobile. 214(60.3%) dental students and 177(49.9%) engineering students disagreed that overusing mobile phone can cause problem for those around them. 179(50.4%) dental students disagreed that even if they don't use mobile for a long time their overuse continues when start again whereas 132(45.6%) engineering students agreed for the same. 159(44.8%) dental students thinks that they are not addicted to mobile 141(39.7%) engineering students agreed that they are addicted to mobile.

DISCUSSION

Mobile phone users have increased globally due to the development of technology. Students use their mobiles more often due to various applications available on it. It can lead to mobile addiction. Therefore, this study was conducted among dental and engineering students of Bhilai, Chhattisgarh.

The current study revealed that 288 dental students and 317 engineering students are moderately addicted to mobile. Usman N H found that 69.2% undergraduate students are moderately addicted. [19] In our study 60% admitted to addiction to mobile phones and get anxious when they lose sight of device.

Dasgupta P. et al said that 77% engineering students and 73.3% medical students, check their mobile quite often. [20] In current study, 53% dental and 53.8% engineering students check their mobile more often.

Ranganatha S C found that 46.4% [21] medical students use social networking sites mostly and 45.5% [21] were internet addicted on mobile. In our study 44.5% dental and 38.9% engineering students use social media and 65.9% dental and 54.1% engineering students felt internet has increased their time of mobile phone usage.

Sethia S et al found that 48.9% [21] medical students use mobile for 2-4 hrs per day whereas Acharya J P et al found that 88.2% [22] students use mobile for more than half hour per day. Researchers at Baylor University found that college students spend 8-10 hours per day using mobile phone. [23] In current study 30.8% engineering and 43.1% dental students used mobile for 3-4 hours per day. According to a study 63% students reported 7 hours of daily mobile usage.[24]

B Joseph found 119 medical students keep mobile silent during classes. [7] In contrast Prasad M found that 24.7% agreed and 6.9% [2] strongly agreed to it. In current study 28.5% dental students rarely check their mobile while 83.8% engineering students never checked their mobile during class.

When it comes to the effect of mobiles in their studies and academics result was different according to different researchers. Study conducted by Ganesh A & Acharya JP found that 95.10% students and 47.4% students lacked concentration due to mobile phone and 34.7% felt mobile affected their academic performance and in another study conducted by Prasad M found that 39.5% of students admitted the same finding of affected academic performance due to mobile phone. [25, 26] In our study 47.6% dental students and 38.3% engineering felt empty without mobile but for Ganesh A it was whopping 91.10%. [2, 25]

This present study observed that there was a significant difference in mobile phone addiction between dental and engineering students. In study conducted by B Yodita, Dixit S and Kumar, there is no statically significant association with respect to gender and academic years and courses.[27,] The data are limited to one dental and engineering institution of India which does not reflect the worldwide scenario and its collected self report of students and hence can be systematically biased.

CONCLUSION

As the functioning of cell phone develops which may likely lead to addiction and these addiction vary across gender and academic years. The mobile allow us to collect information and socialize but at the same time it leads to addiction and limitation.

The present study finds that college students spent 3-4 hrs daily on their mobiles. Engineering students are more likely to be addicted than dental students. The study as well as concludes that both male and female dental and engineering students were suffering from moderately addiction. Data is indicative of addiction which is the emerging problem of present era. Multiple studies are required to evaluate the problem and to take the significant steps to handle the issue.

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