

Phone Addiction Among Dental Students - a cross-sectional study

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Abstract- Objective: No one in this generation could survive without a cell phone. It is now essential to human survival. Some people use it wisely, while others use it excessively to the point where they develop an addiction that alters their behaviour and negatively impacts their health. An internet addiction situation or misuse problem is frequently the cause of phone addiction, also known as "nomophobia" (the fear of not having a cell phone). Teenagers all throughout the world are heavily dependent on their phones. Therefore, the current study was conducted with the primary goal of assessing smartphone addiction among undergraduate dental students.

Materials And Methods: 330 undergraduate dental students at a well-known dental institution in Melmaruvathur, Chengalpattu, participated in a cross-sectional study. Data was gathered using a self-administered, pretested version of the mobile phone addiction scale. An Excel file was created when all of the replies were gathered.

Results: A comparative analysis across BDS years revealed significant variations in smartphone usage and academic distraction. Academic pressure and smartphone dependency increased with seniority; Interns reported the highest daily usage (hours: 10.6%) and clinical skill interference (11.8%), whereas first-year students showed the highest prevalence of low usage (hours: 8.8%) and minimal distraction. Senior students (IV years and Interns) exhibited higher levels of anxiety upon device separation and a greater failure rate in reducing screen time, despite showing significantly higher receptivity toward screen time management interventions compared to junior students.

Conclusion: The present study shows a moderate frequency of smartphone addiction and its related behaviours among dental students. Students are sensitive to problematic usage habits of Smartphone use but at the same time, there are few students who tend to reduce their mobile phone usage habit.

Keywords: Adolescents, Questionnaire study, Mobile phone addiction, Nomophobia, Undergraduate dental student

I.INTRODUCTION

Mobile phones have changed significantly over the last ten years, moving from being mostly used for one-on-one communication to being necessary tools for facilitating group communication. With the introduction of cellphones, this change has sped even more. As mobile phone technology has advanced from basic phones to feature phones and ultimately smartphones, it has become widely used by people of all ages, genders, and geographical locations (1). As science and technology have progressed, mobile phones have become an indispensable part of our everyday lives. However, a developing condition known as mobile phone dependency has resulted from the increasing prevalence of mobile phone usage. Dry eyes, computer vision syndrome, thumb and wrist weakness, neck pain and rigidity, an increase in De Quervain's tenosynovitis, tactile hallucinations, nomophobia, insecurity, delusions, auditory sleep disturbances, insomnia, hallucinations, lower self-confidence, and mobile phone addiction disorders are all consequences of the growing number of people who find it difficult to function without their devices (2). Reactive oxygen species, which are crucial in the development of metabolic and neurological disorders, may be elevated by mobile phone radiation.

The development of metabolic and neurological illnesses is significantly influenced by reactive oxygen species, which may be elevated by mobile phone radiation. Due to its mix of low-cost smartphone prices and easy access to reasonably priced data, which has greatly increased demand for smartphone upgrades among young people, India has emerged as one of the world's top smartphone markets. When compared to offline activities, the average Indian smartphone user spends four times as much time online (3). The difficult use of mobile Information and

communication technologies (ICTs) That once led to significant and tenacious functional Impairments and distress may also constitute behavioural Addiction (4). A related symptom is nomophobia, which is defined as feeling uncomfortable, uneasy, anxious, apprehensive, and somewhat distressed when not using a phone or other connected technologies. It has been observed that individuals with nomophobia consistently use their phones and experience anxiety or depression when they are not using them. When there is no mobile coverage, they are quite anxious. Additional symptoms include constantly checking phones for notifications, leaving phones on the bed while you sleep, and preferring to communicate over the phone rather than in person (5). People are suffering from nomophobia, which has an adverse effect on their emotional and physical well-being as well as their academic achievement (6). In their study of medical students, Bartwal and Nath noted that an increase in smartphone use also raises the level of nomophobia(7). The Indian government launched the “Digital India” program, which aims to provide all Indian citizens with electronic access to government services via smartphones and the internet. All people now have more access to smartphones and internet services thanks to this program, which has also successfully decreased their cost (8).

In light of this, our research will examine how smartphones affect undergraduate dental students. It is also stated that smartphone addiction and usage among dentistry students are crucial factors in evaluating their daily lives and the curriculum (9). By reviewing the previous studies, it was noted that research on smartphone addiction was rare among the dental undergraduate students (10). Hence, on the basis of above mentioned facts, this questionnaire-based survey was planned with an aim of analysing smartphone addiction among dental students in Adhiparasakthi dental college and hospital, Melmaruvathur, Chengalpattu.

II.MATERIALS AND METHODS

STUDY DESIGN:

It was a questionnaire study.

STUDY POPULATION:

The target population comprises students from first years to internship at adhiparasakthi dental college and hospital, Melmaruvathur, Chengalpattu district.

ADDITION CRITERIA:

Undergraduate and interns at Adhiparasakthi Dental College and Hospital, located in Melmaruvathur, Chengalpattu."

REJECTION CRITERIA:

Students are under undergraduate are selected and post graduation are not included in this study

STUDY PROCEDURE:

This survey was conducted among undergraduate and interns through mobile phone as a questionnaire survey which comprises of 20 questions and which can be completed within 15 minutes and the survey was assessed through continuous monitoring the response.

STATISTICAL ANALYSIS

Validated survey data were collected through Google Forms and processed using SPSS version 23.0. "To analyze the data, we summarized the categories and used Chi-square tests to see how different factors related to each other. Our results were held to a 5% margin of error ($p < 0.05$)."

III.RESULT

A total of 330 dental students participated in the study. The demographic analysis revealed that the majority of respondents were aged 21–25 years ($n=239$, 72.4%), followed by those under 20 years ($n=85$, 25.8%), while only 1.8% ($n=6$) were older than 25. Female students constituted the largest portion of the sample ($n=300$, 63.6%) compared to males ($n=118$, 35.8%).

Regarding the academic distribution, the highest participation was observed among IV-year students ($n=82$, 24.8%) and I-year students ($n=73$, 22.1%), with interns (21.2%), III-year (17.0%), and II-year students (14.8%) making up the remainder. In terms of living arrangements, a significant majority of the participants resided in hostels ($n=213$, 64.5%), while 35.5% ($n=117$) lived at home. Table 1

Academic and Device Profile

Analysis of academic schedules showed that more than half of the students (53.0%, $n=175$) spent more than 6 hours daily in clinical classes or postings.

Smartphone ownership was nearly universal among the cohort, with 89.7% (n=296) of participants owning a device. Regarding daily screen time, the largest group reported spending 2–4 hours on their phones (35.8%), while roughly one-fifth of the students (19.1%) reported excessive usage exceeding 6 hours per day.

Patterns of Use and Academic Distraction

Smartphone activity peaked during the evening hours (61.8%, n=204), followed by late-night usage (17.6%). When examining the impact on academic environments:

Clinical/Lecture Usage: Only 36.7% of students reported "never" using their phones during lectures or clinical postings; the remainder admitted to occasional (30.9%), frequent (22.4%), or constant (10.0%) use.

Concentration and Distraction: While 55.1% felt phone use did not distract them during lectures, a majority (57.3%, n=189) acknowledged that smartphone usage had reduced their overall concentration.

Clinical Impact: Approximately 30.0% of students felt that excessive usage had negatively affected their clinical skills or patient attention, while 18.8% remained unsure of the impact.

Procrastination: Half of the respondents (50.6%, n=167) admitted to delaying assignments or studying due to smartphone use.

Behavioral and Psychological Impact

The study assessed behavioral indicators often associated with problematic smartphone use:

Dependency: When asked about the difficulty of reducing screen time, 29.7% (combined "Agree" and "Strongly Agree") found it difficult to cut back. Similarly, 24.2% reported feeling anxious or restless when their phone was not with them.

Irritability and Sleep: Over 23% of students expressed irritation when interrupted during phone use, and 23.9% admitted to staying up late specifically due to smartphone activity. **Coping Mechanisms:** A positive finding was that 76.1% of students had attempted to reduce their usage, with a 48.8% success rate. However, 27.3% reported failed attempts at self-

regulation. **Future Interventions** The demand for behavioral support was evident, as 52.7% (n=174) of participants expressed a desire to receive formal guidance on managing their screen time effectively. table 2

Significant variations in smartphone usage and academic distraction were observed across the different years of the Bachelor of Dental Surgery (BDS) program ($p < 0.05$).

Academic Pressure and Usage Patterns

Academic workload significantly intensified in the later years, with Interns (15.5%) and IV-year students (14.2%) reporting the highest frequency of daily academic hours exceeding 6 hours. Correspondingly, smartphone dependency increased with seniority. Interns reported the highest excessive screen time, with 10.6% using their phones for >6 hours daily, whereas I-year students demonstrated the highest prevalence of low usage (<2 hours; 8.8%)

Classroom and Clinical Distraction

The impact of smartphone use on academic focus showed a clear upward trend from the first year to internship:

Lecture Distraction: A striking disparity was noted in lecture distraction; while 18.8% of I-year students felt no distraction, 14.2% of Interns and 10.0% of III-year students admitted that phone use interfered with their learning. **Clinical Skills:** Only 1.2% of I-year students felt their clinical skills were affected, compared to 11.8% of Interns.

Academic Procrastination: Interns (14.2%) and IV-year students (11.5%) were the most likely to delay assignments due to phone use, whereas I-year students were the least affected (5.1%).

Behavioral and Psychological Impact

Psychological indicators of dependency were significantly more pronounced in senior years. **Anxiety and Restlessness:** Senior students reported higher levels of anxiety when separated from their devices. Conversely, I-year students showed the highest rates of disagreement (9.7%) with this feeling of restlessness. the failure to successfully reduce usage was more common among IV-year students (8.5%)

and Interns (6.1%) compared to I-year students (0.3%).

significantly higher among IV-year students (14.2%) and Interns (12.7%), while I-year students were the most likely to decline such assistance (15.8%) Table 3

Intervention Receptivity: Interest in receiving guidance for screen time management was

Table 1

Question's	Response	Number	Percentage
Age groups	<20 years	85	25.8
	21-25 years	239	72.4
	>25 years	6	1.8
Gender	Female	300	63.6
	Male	118	35.8
Years of students (BDS)	I year	73	22.1
	II year	49	14.8
	III year	56	17.0
	IV year	82	24.8
	Internship	70	21.2
Type of residence	Home	117	35.5
	Hostel	213	64.5

Table:2

Questions	Response	Number	Percentage
Average daily academic hours (clinical hours and clinical classes)	<4 hours	43	12.7
	>6 hours	175	53.0
	4-6hours	113	34.2
Do you own a smartphone	No	34	10.3
	Yes	296	89.7
Average daily screen time	<2 hours	68	20.6
	>6 hours	63	19.1
	2-4 hours	118	35.8
	4-6hours	81	24.5
At what time do you use your phone the most ?	During college hours	39	11.8
	Early morning	29	8.8
	Evening	204	61.8
	Late night	58	17.6
Do you use your phone during clinical posting or lectures?	Always	33	10.0
	Frequently	74	22.4
	Never	121	36.7
	Occasionally	102	30.9
Has phone use distracted you during lectures?	No	182	55.1
	Yes	148	44.8
Do you feel phone use has reduced your concentration?	No	141	42.7
	Yes	189	57.3
Has excessive usage affected your clinical skills or patient attention?	No	169	51.2
	Not sure	62	18.8
	Yes	99	30.0
Do you delay assignments or studying due to phone usage?	No	163	49.4
	Yes	167	50.6
I feel anxious or restless when my phone is not with me	Agree	77	23.3
	Disagree	76	23
	Neutral	104	31.5
	Strongly agree	3	0.9
I find it difficult to reduce the amount of time I spend on my phone.	Agree	90	27.3
	Disagree	71	21.5
	Neutral	103	31.5
	Strongly agree	8	2.4
	Strongly disagree	58	17.6

I feel irritated when someone interrupts my phone use	Agree	73	22.1
	Disagree	84	25.5
	Neutral	93	28.2
	Strongly agree	5	1.5
	Strongly disagree	75	22.7
I stay up late at night because of smartphone use	Agree	74	22.4
	Disagree	84	25.5
	Neutral	97	29.4
	Strongly agree	5	1.5
	Strongly disagree	70	21.2
Have you attempted to reduce your phone usage?	No	79	23.9
	Yes, successfully	161	48.8
	Yes, but failed	90	27.3
Would you like to receive guidance on managing screen time?	No	156	47.1
	Yes	174	52.7

Table 3

Questions	Response	Year of students (BDS)					P-value
		I year (n%)	II Year (n%)	III Year (n%)	IV Year (n%)	Internship (n%)	
Average daily academic hours (clinical hours and clinical classes)	<4 hours	8(2.4%)	9(2.7%)	5(1.5%)	14(4.2%)	6(1.8)	0.00*
	>6 hours	42(%)	17(5.2%)	18(5.5%)	47(14.2%)	51(15.5%)	
	4-6 hours	24(7.3%)	22(6.7%)	33(10.0%)	21(6.4%)	13(3.9%)	
Do you own a smartphone?	No	3(0.9%)	9(2.7%)	10(3.0%)	8(2.4%)	4(1.2%)	0.036*
	Yes	71(21.5%)	39(11.8%)	46(13.9%)	74(22.4%)	66(20.0%)	
Average daily screen time	<2 hours	29(8.8%)	8(2.4%)	4(1.2%)	23(7.0%)	4(1.2%)	0.00*
	>6 hours	4(1.2%)	3(0.9%)	11(3.3%)	10(3.0%)	35(10.6%)	
	2-4 hours	34(10.3%)	25(7.6%)	19(5.8%)	31(9.4%)	9(2.7%)	
	4-6 hours	7(2.1%)	12(3.6%)	22(6.7%)	18(5.5%)	22(6.7%)	
At what time do you use your phone the most ?	During college hours	6(0.3%)	11(3.3%)	13(3.9%)	6(1.8%)	3(0.9%)	
	Early morning	1(0.3%)	4(1.2%)	0(0.0%)	4(1.2%)	20(6.1%)	
	Evening	63(19.1%)	25(7.6%)	28(8.5%)	55(16.7%)	33(10.0%)	
	Late night	4(2.2%)	8(2.4%)	15(4.5%)	17(5.2%)	14(4.2%)	
Do you use your phone during clinical posting or lectures?	Always	2(0.6%)	4(1.2%)	6(1.8%)	4(1.2%)	17(5.2%)	
	Frequently	5(1.5%)	18(5.5%)	21(6.4%)	9(2.7%)	21(6.4%)	
	Never	59(17.9%)	15(4.5%)	12(3.6%)	30(9.1%)	5(1.5%)	
	Occasionally	8(2.4%)	11(3.3%)	17(5.2%)	39(11.8%)	27(8.2%)	
Has phone use distracted you during lectures?	No	62(18.8%)	19(5.8%)	23(7.0%)	55(16.7%)	23(7.0%)	
	Yes	12(3.6%)	29(8.8%)	33(10.0%)	27(8.2%)	47(14.2%)	
Do you feel phone use has reduced your concentration ?	No	45(13.6%)	16(4.8%)	12(3.6%)	43(13.0%)	25(7.6%)	
	Yes	29(8.8%)	32(9.7%)	44(13.3%)	39(11.8%)	45(13.6%)	
Has excessive phone usage affected your clinical skills or patient attention?	No	60(18.2%)	23(7.0%)	23(7.0%)	45(13.6%)	18(5.5%)	
	Not sure	10(3.0%)	12(3.6%)	13(3.9%)	14(4.2%)	13(3.9%)	
	Yes	4(1.2%)	13(3.9%)	20(6.1%)	23(7.0%)	39(11.8%)	
Do you delay assignments or studying due to phone usage ?	No	57(17.3%)	18(5.5%)	21(6.4%)	44(13.3%)	23(7.0%)	
	Yes	17(5.1%)	30(9.1%)	35(10.6%)	38(11.5%)	47(14.2%)	
I feel anxious or restless when my phone is not with me	Agree	7(2.1%)	16(4.8%)	17(5.2%)	18(5.5%)	19(5.8%)	0.002*
	Disagree	32(9.7%)	8(2.4%)	7(2.1%)	20(6.1%)	9(2.7%)	
	Neutral	22(6.7%)	12(3.6%)	24(7.3%)	26(7.9%)	20(6.1%)	
	Strongly agree	1(0.3%)	1(0.3%)	0(0.0%)	1(0.3%)	0(0.0%)	
	Strongly disagree	12(3.6%)	11(3.3%)	8(2.4%)	17(5.2%)	22(6.7%)	
I find it difficult to reduce the amount of time I spend on my phone	Agree	19(5.7%)	18(5.5%)	17(5.1%)	19(5.8%)	17(5.1%)	
	Disagree	28(8.5%)	6(1.8%)	13(3.9%)	16(4.8%)	8(2.4%)	
	Neutral	14(4.2%)	16(4.8%)	20(6.1%)	32(9.7%)	21(6.4%)	
	Strongly agree	2(0.6%)	1(0.3%)	2(0.6%)	3(0.9%)	0(0.0%)	
	Strongly disagree	11(3.3%)	7(2.1%)	4(1.2%)	12(3.6%)	24(7.3%)	

I feel irritated when someone interrupts my phone use	Agree	11(3.3%)	15(4.5%)	18(5.5%)	18(5.5%)	11(3.3%)	0.00*
	Disagree	32(9.7%)	13(3.9%)	12(3.6%)	19(5.8%)	8(2.4%)	
	Neutral	14(4.2%)	11(3.3%)	19(5.8%)	29(8.8%)	20(6.1%)	
	Strongly agree	1(0.3%)	2(0.6%)	1(0.3%)	0(0.0%)	1(0.3%)	
	Strongly disagree	16(4.8%)	7(2.1%)	6(1.8%)	16(4.8%)	30(9.1%)	
I stay up late at night because of smartphone use	Agree	7(2.1%)	16(4.8%)	18(5.5%)	18(5.5%)	15(4.5%)	0.523
	Disagree	29(8.8%)	14(4.2%)	10(3.0%)	24(7.3%)	7(2.1%)	
	Neutral	14(4.2%)	9(2.7%)	25(7.6%)	25(7.6%)	23(7.0%)	
	Strongly agree	2(0.6%)	0(0.0%)	0(0.0%)	1(0.3%)	2(0.6%)	
	Strongly disagree	21(6.4%)	9(2.7%)	3(0.9%)	14(4.2%)	23(7.0%)	
Have you attempted to reduce your phone usage?	No	18(5.5%)	14(4.2%)	16(4.8%)	14(4.2%)	17(5.1%)	0.002*
	Yes, successfully	43(13.0%)	20(6.1%)	25(7.6%)	40(12.1%)	33(10.0%)	
	Yes, but failed	1(0.3%)	14(4.2%)	15(4.5%)	28(8.5%)	20(6.1%)	
Would you like to receive guidance on managing screen time?	No	52(15.8%)	15(4.5%)	26(7.9%)	35(10.6%)	28(8.5%)	0.002*
	Yes	22(6.7%)	33(10.0%)	30(9.1%)	47(14.2%)	42(12.7%)	

*Statistically significant at $p < 0.05$, Chi-square test

IV.DISCUSSION

Smartphone technology has become a key part of modern life, especially for young adults and university students. This study looked at how common smartphone addiction is among undergraduate dental students and noted its possible effects on academics and mental health. The results showed a moderate level of smartphone addiction, with many students showing signs of problematic use. This is consistent with earlier research indicating that healthcare students are increasingly dependent on smartphones due to academic pressure, social connections, and easy access to digital resources.

In this study, most participants were in the 21 to 25 age group, which is typical for undergraduate dental programs. This age group tends to engage heavily with digital devices and frequently uses smartphones for schoolwork and leisure activities. Similar patterns were found by Gangadharan et al., who noted that teenagers and young adults are the most at risk for smartphone addiction because of their continuous exposure to social media and online platforms[11]. Increased internet access and affordable data services in India have also contributed to students' reliance on smartphones[13].

The results showed that nearly all participants owned smartphones, and many reported using them for 2 to 4 hours daily, with a significant number exceeding 6 hours each day. Previous studies have widely documented excessive screen time among students.

Karishma et al. found that long smartphone use among dental students was linked to lower academic performance and reduced cognitive and motor skills[14]. Similarly, David et al. identified a high rate of problematic smartphone use among healthcare students in India, noting that students often turn to smartphones not just for communication, but also for academic support, entertainment, and social networking[18]

Another key finding of this study was the effect of smartphone use on academic focus and productivity. More than half of the participants noted that their concentration decreased because of using smartphones, and about half admitted they procrastinated on assignments or studying due to their phones. These findings support earlier research that shows smartphone addiction can lead to procrastination and a shorter attention span. Studies have indicated that frequently checking notifications and switching between schoolwork and smartphone activities can disrupt cognitive focus and learning effectiveness[14].

The study found that smartphone use creates distractions in both classroom and clinical settings. Many students admitted to using their smartphones during lectures or clinical postings. This behavior can interfere with learning and developing clinical skills. Dental education requires focus, manual skills, and interaction with patients. As a result, too much smartphone use may harm students' clinical abilities.

Saheer et al. Also noted that dental students often used smartphones during classes, which led to less engagement and attention [19].

The study highlighted the behavioral and psychological effects of smartphone dependency. Many participants struggled to cut back on screen time, felt anxious when away from their phones, and became irritated if interrupted while using them. These signs are typical of nomophobia, which is the fear or anxiety experienced when people cannot access their mobile phones. Bragazzi and Puente suggested including nomophobia in the list of behavioral disorders because of its rising occurrence and psychological effects [15]. Similarly, Prasad et al. Found that dental students who used smartphones a lot faced anxiety, restlessness, and the urge to check their phones constantly [16].

The study also uncovered sleep disturbances. About one-fourth of students admitted to staying up late because of smartphone use. Excessive use at night is linked to poor sleep quality, insomnia, and fatigue, which can affect both academic performance and mental health. Earlier research indicated that exposure to blue light from smartphone screens and ongoing social media engagement can disrupt sleep rhythms and delay falling asleep [12].

Interestingly, the study showed differences in smartphone usage across different academic years. Senior students, especially interns and fourth-year students, showed more smartphone dependency than first-year students. This pattern may result from increased academic pressure, clinical workload, and stress in the later years of dental education. Bartwal and Nath also found that higher academic demands among medical students correlated with increased levels of nomophobia and smartphone dependency [17]. Senior students might also depend more on smartphones for academic resources, managing patients, and communicating with peers or faculty.

Despite the widespread use of smartphones, the study found some positive trends in behavior. Many students reported trying to cut down on their smartphone use, and many wanted help managing their screen time. This shows that students recognize the possible negative effects of too much smartphone use and might be open to educational support. Awareness

programs, workshops on digital wellbeing, and guidelines for responsible smartphone use could help students build healthier habits.

The study reveals that smartphones play a dual role in dental education. They are useful for accessing academic resources, online learning materials, and communication tools. However, using them too much can cause dependency, lower academic performance, and mental distress. Therefore, schools should promote balanced smartphone use by encouraging digital discipline and including structured learning technologies in the curriculum.

However, the study has its limitations. It used a self-reported questionnaire, which can lead to biased responses. Also, it took place in just one dental school, limiting how broadly the findings can be applied to other groups. Future research with multiple institutions and larger samples could provide better insights into smartphone addiction among dental students. Long-term studies might also shed light on the lasting academic and psychological impacts of excessive smartphone use.

V.CONCLUSION

This research shows a medium level of smartphone addiction/contact with smartphones in dental students; this means that they are an essential part of daily academic life and social communication for these students. While smartphones are extremely advantageous tools for communicating and educational use, excessive amounts of time spent with smartphones has resulted in decreased attention span during class, academic procrastination, sleeping disturbances and behaviourally dependent. Older dental students are experiencing higher levels of smartphone dependency possibly as a result of increased levels of academic stress and more clinical hours/experience than the younger dental students. This supports the concept of creating education awareness sessions and providing/guiding students to use their smartphones more responsibly. Encouraging balanced use of their smartphone(s) may assist in improving academics, psychological wellbeing, and overall professional capabilities throughout their dental schooling.

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