

## Digital detox, the need of the hour: a cross-sectional study on psychometric evaluation of college students using smart phones

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**Abstract:** *Aim:* The aim of the study was to analyse the pattern of mobile usage and its impact on behaviour among college students. *Methods:* A cross-sectional, semi-structured questionnaire based study was conducted among 275 students of various colleges of Tamil Nadu after obtaining IEC clearance. Quantitative data is expressed as mean  $\pm$  standard deviation and compared by independent sample t test or ANOVA. Qualitative data is expressed in percentages. *Results:* Out of the 275 study participants, 140 were from medical college and 135 were from non- medical colleges. Around 42.8% participants were using mobile phones for 3-6 hours per day and 58% were using social media more frequently in a day. The estimated mean of the behavioural analysis score with the social media usage and mobile phone usage revealed that the mean score increased if the usage of social media or mobile increased ( $p < 0.001$ ). *Conclusion:* The pattern of mobile phone use among the college students reported in this study appears to have some behavioural influence on them. This has to be recognized at an earlier stage and measures must be taken to reduce it.

**Keywords:** Mobile phones, College students, Usage pattern, Behavioural impact.

### Introduction

Mobile phones are electronic telecommunication devices that provide voice communications, Short Message Service, and Internet services. Once considered a luxury of the rich, mobile phones are now ubiquitous gadget for people across the globe. A famous Indian daily quotes Indians have 1.2 billion mobile phone subscriptions and 97 percent of users use mobile phones as one of the devices to access internet [1]. Studies have shown that smart phone usage among students has become excessive during covid-19 lockdown [2].

Mobile phone usage started as early as the 1940's. Dr Martin Cooper made the first public mobile phone call on a device that weighed 1.1Kg in 1973. The world's first ever SMS message reading "Merry Christmas" was sent to Richard Jarvis from Neil Papworth, a developer on contract for developing a messaging service. In the past two decades, mobile phone technology

has grown tremendously with the provision of internet services to the users at an affordable cost and an enormous number of downloadable applications. The metamorphosis of mobile phones from an immature zero generation form to the current 5<sup>th</sup> generation mobile phones have paved a way to feel that life without mobile phones is impossible [3]. A smart phone being a phone with highly advanced features, has a high-resolution touch screen display, Wi-Fi connectivity, web browsing capabilities, and the ability to accept sophisticated applications. Smart phones have entered in the Diagnostic and Statistical Manual of Mental Disorders (DSM) 5th edition due to their undeniably addictive quality [4].

A review article, describes mobile phone and technology addiction may manifest in one or more of the following ways: choosing to use the device even in "dangerous or prohibited

contexts", losing interest in other activities, feeling irritable or uneasy if separated from your phone, or feeling anxiety or loneliness when the user is unable to send or receive an immediate message [4-5]. Compulsive web surfing, checking news feeds, over-active participation in social media, playing games or watching videos, can lower the productivity at work or school and isolate the user for hours at a time. Compulsive use of the social networking, texting, and messaging can extend to the point where virtual friends become more important than real-life relationships and can cause the users to neglect other aspects of their life from real-world relationships to hobbies and social pursuits. More recently, researchers have found that excessive or “maladaptive” use of mobile phones may lead to greater incidences of depression, anxiety and other behavioural disturbances in users, the adolescents and women being more susceptible [4].

Today almost everyone owns a mobile phone and internet access is possible virtually everywhere which can influence the pattern of its use. Usage of mobile phone is increasing in our population and the younger generation is more likely to become dependent on mobile phones. This has sparked an interest to study the pattern of use of mobile phones along with the psychometric evaluation to assess the behavioural changes in college students.

*Aim and objective:* To study the pattern of mobile phone usage and its impact on behaviour among college students.

**Material and Methods**

This study was conducted as a Cross-sectional, semi-structured questionnaire based study among students studying in medical, engineering and arts & science colleges in South Tamil Nadu during October and November 2019. The sample size was 275 and the sampling procedure used was Convenient Sampling. The Questionnaire towards mobile phone usage was generated from literature and adaptations from previous studies. The questionnaire consisted of questions regarding knowledge of harmful effects of excessive mobile use, attitude towards mobile use, pattern of mobile use and impact of mobile usage. A pilot study was conducted among 20 students to validate the questionnaire.

*Data collection and Analysis:* The study was conducted after obtaining the Institutional Ethics Committee approval and permission from the authorities of the institutions where the study was conducted. The students of the colleges were approached individually and briefed about the purpose of the study. Those who were willing to participate in this study were enrolled and written informed consent was obtained. They were provided with the questionnaire which was approved by IEC. Any clarification needed in the understanding of questionnaire was provided. The completed questionnaires were collected back from the students. Student identity was kept confidential.

The data collected were entered and the following parameters were assessed at the end of the study - Basic demographic details, knowledge, attitude & practice of mobile usage and the behaviour of the students using SPSS software version 23. Subgroup analysis of the mean score of behavioural analysis was done using independent sample T test. ANOVA was used to compare the mean of behavioural analysis score with time spent in mobile and social media usage. P value of <0.05 was considered to be statistically significant.

**Results**

*Basic Demographic profile:* The mean age of the 275 participants was found to be 19.34 years with standard deviation 1.192. Basic demographic profile of the participants is mentioned in Table 1.

<b>Table-1: Basic demographic profile of the study participants</b>		
<b>Parameters</b>		<b>N=275 (%)</b>
College	Medical college	140 (50.9%)
	Non-medical college	135 (49.1%)
Sex	Male	103 (37.5%)
	Female	172 (62.5%)
Owns a Mobile phone	Yes	270 (98.2%)
	No	5 (1.8%)
Owns a Smart phone	Yes	254 (92.4%)
	No	21 (7.6%)
Uses Social media	Yes	260 (94.5%)
	No	15 (5.5%)

*Knowledge about excessive mobile usage:* Regarding the knowledge about the physical and psychological impacts of excessive mobile phone usage, the participants were aware about the visual impairments (60.7%), auditory impairment (2.2%), pain (50.5%), physical inactivity (24.4%), tiredness (22.2%), radiation hazard (2.2%), mood disturbances (56%), behavioural changes (27.3%), inattention (23.3%) and sleep disturbances (12%). A small proportion of participants were unaware about physical (9.8%) and psychological (16%) impacts.

*Attitude towards mobile use:* With respect to the attitude based questions, 164 (59.6%) participants felt that mobile use affects their interpersonal

relationship, 125 (45.5%) participants agreed that they need digital detox and 101 (36.7%) participants felt that mobile use should be prohibited in college campus. Concerning a question of gifting a mobile to their child in future, 8% (22) said that they will gift by 10-15 years of age, 72% (198) by >15 years of age and 20% (58) said that they won't gift a mobile at all.

*Mobile usage – Pattern:* The participants' response with respect to the purpose of using mobile phones, time spent in a day for mobile phone usage and frequency of social media usage are represented in Table 2.

Table-2: Mobile phone utilization pattern		
Parameter		N=275 (%)
Purpose of using mobile phones	Chatting with friends	215 (78.2%)
	Communicating with parents	156 (56.7%)
	Internet surfing	114 (41.5%)
	Social media	260 (94.5%)
	Educational purpose	239 (86.9%)
	Watching movies	173 (62.9%)
	Taking photos	139 (50.5%)
	Online shopping	158 (57.5%)
	Gaming	57 (20.7%)
Time spent in using mobile phones (in hours)	< 3	145 (52.7%)
	3-6	115 (41.8%)
	>6	15 (5.5%)
Frequency of social media usage	More often a day	160 (58.2%)
	Once daily	76 (27.6%)
	Less often a week	24 (8.7%)
	Not applicable	15 (5.5%)

*Impact of mobile usage on college students:* Regarding the impact of mobile usage, 24 (8.7%) participants have done risky things for taking a selfie, 29 (10.5%) were using mobile phones during class hours, 166 (60.4%) participants had loss of memory power, 67 (24.4%) were unaware of the time spent in using mobile phones, 151 (54.9%) had the habit of keeping mobile phones

near while sleeping and 48 (17.5%) checks mobile in between sleep. Tables 3 and 4 depict the students' response to the questions regarding psychometric evaluation of behaviour and subgroup analysis of the mean score calculated from the 14 questions respectively.

**Table-3: Students’ response to behavioural analysis questions**

	Parameter	Students N=275	
		Yes (Number)	(%)
1	Failure to resist impulse to use mobile phone	140	50.9%
2	Anxious if don’t check mobile	91	33.1%
3	Usage for a period longer than intended	165	60%
4	Unsuccessful attempts to reduce mobile usage	130	47.3%
5	Still using in spite of knowing harmful effects	165	60%
6	Can’t survive a single day without mobile	67	24.4%
7	Missed pre-planned work because of mobile phone use	135	49.1%
8	Thinking of mobile during class	55	20%
9	Frequent fight with parents	75	27.3%
10	Mobile use while driving or crossing roads	20	7.3%
11	Impaired academic performance	127	46.2%
12	Never quit even if day to day activities are affected	65	23.6%
13	Discomfort when battery is running low	113	41.1%
14	Ringxiety	101	36.7%

**Table-4: Impact of mobile usage on behaviour – A sub-group analysis**

Subgroup Analysis		Number	Score		
			Mean	Standard Deviation	Independent sample t test
Gender	Male	103	5.74	2.818	P = 0.045*
	Female	172	4.99	3.074	
Smart phone owner	Yes	254	5.50	2.909	P <0.001*
	No	20	2.50	2.667	
Social Media Use	Yes	260	5.45	2.897	P <0.001*
	No	15	2.13	3.067	
Native place	Urban	187	5.42	2.886	P = 0.217
	Rural	88	4.94	3.214	
Residence	Hostel	165	5.58	3.083	P = 0.037*
	Day scholars	110	4.81	2.817	

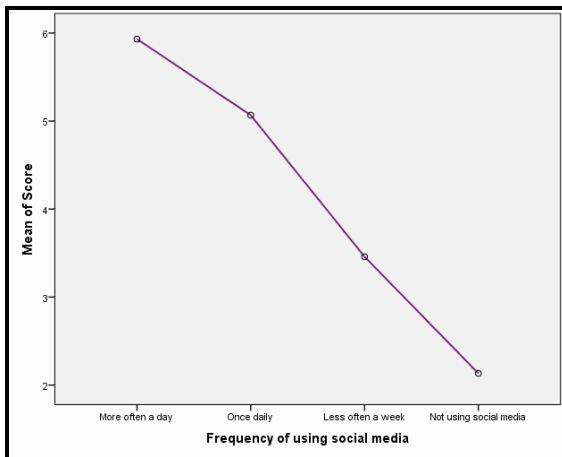
\*p <0.05 – statistically significant.

A statistically significant difference was observed between male and female (P = 0.045), Smart phone owners and non-owners (P <0.001) users and non-users of social media (P <0.001) and Hostellers and Day scholars (P = 0.037).

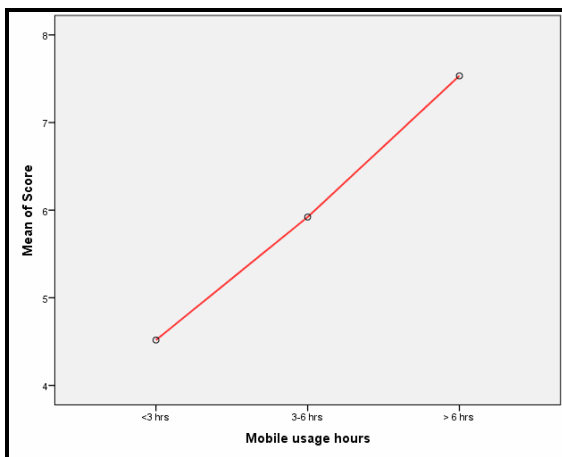
*Comparison of the mean of behavioural analysis score using ANOVA:* On comparing the frequency of social media usage with the mean of

score represented in figure 1, it was observed that the mean of the score fell as the frequency of using social media reduced. On comparing the hours of mobile usage with the mean of score as in figure 2, it was observed that the mean of the score increases with the hours of usage. Both the findings were found to be statistically significant by ANOVA with p value <0.001 and p value <0.001 respectively.

**Fig-1:** Estimated mean of behavioural analysis score with the frequency of social media usage



**Fig-2:** Estimated mean of behavioural analysis score with the hours of mobile usage.



**Discussion**

In this current era of digital revolution, mobile phones are considered to be an important part of one’s lifestyle. This fascinating fact is again proved in this study where all the participants had an access to the mobile phones and only 5(1.8%) didn’t own a mobile phone but were using their parents’ mobile phones. Out of the 275 participants, 260(94.5%) were using social media. A similar study done in Kanchipuram district in 2016, revealed 60.7% of the participants were using social media.

Global digital report 2019 quotes that number of social media users worldwide in 2019 was 3.484 billion, and the rate of increase was up 9% year-on-year. The rapid increase in social media usage might be due to that attitude of the

individual to stay in touch with friends or make new friends, to stay up-to-date with news and currents events, to fill up spare time and to share their opinion, photos and videos [6-7].

Regarding the knowledge about the physical and psychological impacts of excessive mobile phone usage, a comparatively higher percentage of students (16%) were lacking knowledge about the psychological impacts. This was similar to a study done in Maharashtra where the participants had poor knowledge about the psychological hazards of mobile use [8]. A considerable proportion of students have agreed that mobile use has cut down their interpersonal relationship and they are in need of a digital detox. About 36.7% of students have agreed that mobile use should be prohibited in the college campus. This reflects a positive attitude that could limit the distractions and push them towards good inter-personal relationship and academic excellence.

Concerning the attitude of the participants towards gifting a mobile to their children in future, 72% said that they would gift a mobile to their child after the 15<sup>th</sup> birthday and 20% said that they won’t gift a mobile phone at all. This might be attributed either to the awareness of hazards of handing over a mobile to children or lesson learnt through personal experience. Majority of the students (52.7%) were found to use the mobile phone for less than three hours in a day. The overall percentage of students using mobile for 3-6 hours a day was 41.8% which was similar to the results of a study done in Pune [9].

Regarding the purpose for using the mobile phone, 94.5% were using it for accessing social media, ranking the top followed by educational purpose (86.9%) and 20.7% were using it for gaming purposes, ranking the bottom. The increasing trend of using mobile applications for learning purposes among the college students could be one of the reasons for increased mobile usage. About 56.7% of the students used mobile to communicate with their parents which was in accordance with the study done in Kerala (51%) [10].

Even though mobile phones have revolutionized communications over the past few decades, there are certain disadvantages in spite of the advantages. One such thing is the behavioural change, which is more commonly observed in young and adolescent people. When asked, 8.7% of the students said that they had done risky things to take a selfie and post in social media. Clicking selfies and sharing them on social media has become a mode of self-expression. People sometimes portray themselves amidst dangerous settings so as to gain attention on social media sites. In some cases, this has ended in fatal consequences. Even though the selfies are themselves not harmful, the human behaviour that accompanies selfies is dangerous. So the individuals need to be educated regarding certain risky behaviours and risky places where selfies are to be avoided [11].

Nearly 54.9% of the students have the habit of keeping the mobile phones near them while sleeping and 17.45 % of students tend to wake up from the sleep to check mobile notifications. This was much lower when compared to the studies done among Kerala students (49.5% wake up from sleep) and Malaysian citizens (36.7%). Poor sleep hygiene can increase the stress levels which can lead to behavioural changes [8, 12].

Regarding the questions used to analyze the behavioural changes in students, about 60% of the students agreed that they were using the mobile phone for a period longer than intended and continuing to use it excessively in spite of knowing the harmful effects. This was less when compared to the study done in Malaysia where 70.4% of the participants were using mobile phones for a period longer than intended. In a study done in Taiwan, 28.1% of the participants were using mobile phones in physically hazardous situations like while driving or crossing roads in contrast to the results observed in this study which was only 7.3% .

Ringxiety is a term used to describe the false sensation of having received a call that leads to constantly checking the device. The proportion of the students who had “ringxiety” was 36.7%. This was comparable to the study done in medical college students in Mangalore (34.6%). Ringxiety is considered to be one of the behavioural problems arising due to maladaptive use of

Mobile phone. Other new pathologies of maladaptive use of mobile are “FOMO” (Fear Of Missing Out – the fear of being with-out a cell phone, disconnected or off the Internet), “Nomophobia”(No-Mobile-Phobia), “Textaphrenia” (the false sensation of having received a text message) and “Textiety” (the anxiety of receiving and responding immediately to text messages) [4].

Behavioural analysis of smart phone usage was done with the help of a score calculated from the above 14 questions and the mean of the score was found to be 5.27 with standard deviation 2.998. Increasing values of the score indicate behavioural change in the students. Sub-group analysis revealed that the mean score was high in male students, smart phone owners, social media users and students residing at hostels. This implies that smart phone owners are more prone for behavioural changes due to its highly advanced features, web browsing capabilities and applications including social media platforms. Similarly students residing at hostels are vulnerable for smart phone related behavioural changes owing to loneliness and lack of parental supervision and control.

Means plot and ANOVA revealed that the mean of the score increases with increasing frequency of social media usage and time spent in mobile usage. This result was in accordance with the studies done in California and Malaysia which found that use of Social Networking mobile application is a significant predictor of behavioural changes associated with excessive mobile use [12]. This could be overcome by reducing the number of your “friends” and uploading less content, developing and exercising self control and developing and maintaining strong real world relationships.

Literature review revealed that most of the similar studies were done among the students of either medical or non-medical colleges. This study was the first one being conducted in a heterogeneous population in our area as it included participants from both medical and non-medical colleges. The limitations of this study were limited sample size and the sampling technique used.

## Conclusion

This study concludes that enabling the young birds caught in the net to fly free is the need of the hour. Since this study observed a positive relationship between usage of social media and mobile phones with that of behavioural impact, it recommends the parents to be vigilant on their children's activity in social media and mobile usage, to create 'mobile-free zones' at their home and encourage other hobbies and activities.

This is of utmost importance especially in the current scenario when the younger generation is engaged with online classes and activities. Apart from this the authorities of the teaching institutions shall encourage the younger generation to develop the habit of playing outdoor

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games, reading books and to maintain a good real-life relationship instead of a reel-one. Last but not the least, self control measures like taking a mobile phone holiday challenge, turning off the notifications, deleting the distracting applications and kicking off the mobile phones out of bed could help the students to reduce mobile usage.

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