Comparative Study on Smart Mobile Phone Usage Pattern, and It's Dependence among Medical and Engineering Students at ANES Campus, Visakhapatnam, India

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Abstract Modern days mobile phones have become an indispensable tool for communication. Recent literature shows the existence of co-morbidity between the use of smartphone, internet addiction, and psychiatric disorders. A study was conducted on the usage pattern and dependence on mobile phones among the students of professional colleges. A cross-sectional study among 100 medical & 100 engineering students, was conducted at Anil Neerukonda Educational Society (**ANES**), Visakhapatnam, India. Data were collected using a pre-designed & pre-tested questionnaire from October to November 2018. SAS-SV Scale was used to assess the mobile phone dependence. Collation of data was done using inferential statistical methods. Majority of respondents were females (52.5%) and in the age group of 19 years. Medical group included 32% males & 68% females and engineering group included 63% males & 37% females. 75% of students in both the groups were using mobile phone for a duration of 1-6 hours a day. While 32% students had addiction scale of more than 31 another 33% students were in the addiction scale range of between 22 and 30. An increased dependence of mobile phone usage among medical & engineering students had a negative effect on physical and mental health resulting in poor academic performance.

Keywords: smart mobile phone usage, dependence, professional colleges

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1. Introduction

Today, communication, plays a key role in all the aspects of life. Mobile phones have become an indispensable tool for communication, as they are equipped with features other than voice call, that allows further communication and entertainment, such as, Short Message Service (SMS), video calls, MP3 player, games, internet, videos and movies, which attracted people across all walks of life and consequently led to the increase in the number of mobile phone users across the world [1].

In India, there have been increasing usage of the mobile phones, rather than the landline telephones. As on May 2019, as per Telecom Regulatory Authority of India (TRAI), wireless subscribers are about 1161.86 million and wire line subscribers are only 21.29 million [2]. Indian market has emerged as the second-largest market for mobile phone handsets next to China.

New operating systems like android and the applications relevant to studies in professional courses are

helpful, but on the flip side, mobile phones pose a threat in terms of psychological dependence [3]. Recent literature showed the existence of co-morbidity between the use of smartphone, internet addiction, and psychiatric disorders [4]. Smartphone Addiction Scale (SAS) is designed to identify the level of the smartphone addiction risk and to distinguish the high-risk group [5]. Lopez-Fernandez, 2015, scale is useful for detecting the degree of smartphone addiction in adolescents as prolonged use of the smartphone may have negative effects on different mental and physical health indicators [6].

Adverse results caused by the overuse of smartphones can be easily seen in today's society [7]. It was decided to conduct a study on the usage pattern and the dependence of mobile phones among professional students of the Anil Neerukonda Educational Society.

2. Aims and Objectives

To assess the usage pattern and to evaluate the dependence on mobile phones among medical &

engineering students of the Anil Neerukonda Educational Society.

3. Material and Methods

This was a cross- sectional comparative study among medical & engineering students from NRI Institute of Medical Sciences (NRIIMS) and Anil Neerukonda Institute of Technology and Sciences (ANITS) at Anil Neerukonda Educational Society, Sangivalasa, Visakhapatnam, conducted during October to November 2018.

100 medical and 100 engineering, total 200 students were selected for the study by random sampling.

Ethical clearance was obtained prior to the study from the institutional ethical committee.

Data was collected with the help of a predesigned pretested questionnaire. SAS-SV scale was used to assess the mobile phone dependence. Collation of DATA was done using inferential statistics.

4. Results

Majority of study participants were females (52.5%) and were in the age group of 19 years. Among those, study participants, Medical group included 32% males & 68% females and engineering group included 63% males & 37% females.

Table 1. Distribution of Respondents According to Age of Initiation of Mobile Phone Usage

Age of Initiation	Medical (n₁=100)	Engineering (n₂=100)	Total (n= 200)
<15 yrs	14	9	23 (11.5)
>15 yrs	86	91	177 (88.5)
Total	100	100	200 (100)

$X^2 =1.1126$, P= 0.774; df =1; Within parenthesis are percentages.

While assessing mobile phone usage pattern, it was found that, about 88.5% of the participants initiated the mobile phone usage at the age of above 15 years.

About 75% of medical students and 81% of engineering students were found using mobile phones for duration of about 1 to 6 hours.

Table 2. Distribution of Mobile Phone Usage for Various Functions Among Respondents

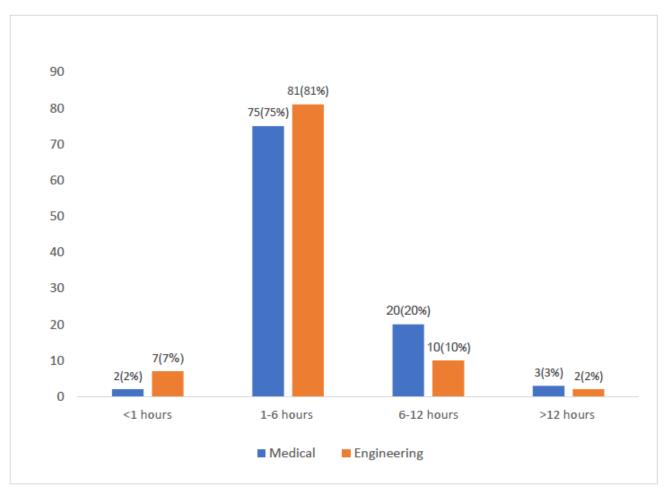| Various functions	Medical (n₁ =100) Percentage	Engineering (n₂ =100) Percentage	P value
SMS	23	24	P>0.05
Games	20	29	P>0.05
Internet	13	43	P<0.01
Call	33	36	P>0.05
Taking selfie	9	14	P>0.05
WhatsApp	18	18	P>0.05
Checking mails	02	33	P<0.0001

Figure 1. Distribution of Respondents According to Duration of Mobile Phone Use

Significant differences were found between the engineering and medical students, in mobile phone usage in checking mails 33% & 2%, internet browsing 43% & 13% respectively.

Table 3. Distribution of Respondents According to Addiction Scale

SAS-SV	Medical (n_1 =100)	Engineering (n_2 =100)	Total (n_1+n_2=200)
Normal < 21	31	39	70 (35)
At risk 22-30	33	33	66 (33)
Addicted >31	36	28	64 (32)
Total	100	100	200 (100)

P > 0.05; Within parenthesis are percentages.

The level of smartphone addiction with addiction scale > 31, was found among 32% of the respondents, of which, 36% were medical students. 33% were found to be at risk, with addiction scale ranging between 22-30, with no significant difference between the two groups.

Table 4. Distribution of Respondents as How They Attend A Call While Driving

Category	If yes, stop vehicle & attend the call	Continue conversation while driving	Total
Medicos	14 (28.6)	05 (10.2)	19 (38.8)
Engineering	24 (49.0)	06 (12.2)	30 (61.2)
Total	38 (77.6)	11 (22.4)	49 (100.0)

P > 0.05 (Not significant). Within parenthesis are percentages.

19 medical students and 30 engineering students were found attending the call during driving, among which 10.2% medical and 12.2% engineering students continued the conversation while driving. A good proportion of them who used to attend the call while driving told that they had problems like accidents or lack of concentration at the time of driving, which showed no significant difference (p=<0.05) between the two groups.

Table 5. Distribution of Respondents according to the purpose of looking into the phone Immediately after waking Up

Options	Medicos	Engineering	Total
Missed calls	14 (10.7)	26 (19.8)	40 (30.5)
SMS	09 (6.9)	14 (10.7)	23 (17.6)
Notifications	46 (35.1)	22 (16.8)	68 (51.9)
Total	69 (52.7)	62 (47.3)	131 (100.0)

X^2 = 12.820; df = 1; p=0.00164, Within parenthesis is percentage.

131 students often woke up from their sleep to check their mobile phones for notification or a missed call or SMS, and it was found that, there was statistically significant difference between the two groups (p=<0.001).

Table 6. Distribution of Respondents According to false perception of phone ringing all the time

Category	Medicos	Engineering	Total
Yes	13	15	28 (14.0)
No	87	85	172 (86.00)
Total	100	100	200 (100.0)

Within parenthesis is percentage

False perception of mobile phone ringing was present among 13% of medical and 15% of engineering students, but it was not statistically significant (p>0.05).

5. Discussions

Mobile phones have become an indispensable part of modern human life. Apart from being a communication tool, it also plays a key role as a source of entertainment, information, calculation and many others. Because of these features the number of mobile phone users have increased tremendously all over the world [8,9,10].

In the present study, everybody had smartphone and majority with the latest model smartphones. The results revealed that around 32% were addicted to smartphones, 33% were at risk of addiction soon, and 35% were normal. The present study showed a significant association between gender and addiction scale. Similar results were found in the studies conducted by Nehra et al. and Aggarwal et al. with 33.5% and 39.6% participants respectively with mobile phone dependence [11].

The mobile phones are nowadays becoming the important part of life, and it is difficult for the most of the users to stay some time without a mobile phone. Majority of students had started, using mobile at the age >15 years. The study showed that the respondents used mobile phones for a duration of about 1-6 hours a day. Majority of students of both the groups used the mobile phones at home and campus 62% & 66% for medical & engineering groups respectively. Mobile phones were used mainly for communication in both the groups. The other uses were texting SMS, playing games and checking emails. Majority of engineering students used mobile phones for internet & checking mails compared to the medical students & the difference was found to be statistically significant. Similar findings were found in other studies on mobile phone usage [12,13,14]. In the study conducted by Market Analysis and Consumer Research Organization (MACRO) in Mumbai, India, it was found that about 58% of the respondents could not manage without a mobile phone even for a day [15].

SAS-SV scale was used to assess the addiction levels, where 36% medical & 28% engineering students had a score of 31, and 33% of both groups were at risk of becoming addicted soon with a score ranging between 22 and 30. SAS-SV scale depends on four factors, i.e. daily life disturbance, withdrawal, cyber space-oriented and over use. Among these factors, over use was found statistically significant between the two groups.

These days' road traffic accidents are increasing because people attend the call on mobile phone while driving. In this study 32% of engineering students attended call while driving. Out of them, 26% of engineering students continued conversation while driving.

Out of 200 study subjects, 65% of them were checking their mobile phone immediately after waking up from sleep. 41% of engineering students were looking for missed calls & 66% of medical students were looking for notifications. 13% of medical students & 15% of

engineering students had a false perception of phone ringing (ring anxiety).

The present observations in this study are from a small group of students only, which may not reflect the scenario in broader aspect elsewhere. Millions of cellular mobile subscribers are added every month and there is a possibility that addiction level may reach to an epidemic proportion in the near future. In reality these results give an alarming indication that as the days go by, the youths are getting more and more dependent on smart mobile phones, which may lead to serious psychiatric and psychological problems among the users [16].

6. Conclusion

The present study showed that there was increased usage of mobile phones among medical and engineering students. Ring anxiety and frequent checking of mobile phones immediately after waking up from sleep indicated that students are developing dependence on mobile phone which has a negative impact on their physical and mental health resulting in poor academic performance. Unnecessary over use of mobile phone may lead to a public health problem.

7. Recommendation

Health education strategies can be initiated targeting the young people and to make them aware about limiting the use of mobile phones and to enlighten them with the possibilities of mobile learning (M-learning) for educational purposes.

Declaration of Conflicting Interests

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