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ASSESSMENT OF MOBILE PHONE USE IN COLLEGE STUDENTS AND ITS ADVERSE EFFECT ON HEALTH.

Physiology

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ABSTRACT

Worldwide 2.5 billion people are users of smart phone. While in India there are 730 million users as of 2019 statistics and is predicted to increase in the years to come (Statista 2019)[1]. An average Indian spends roughly 3 hours a day using the smart phone (The Economic Times 2019)[2]. People have become so addicted to their phones that they are almost dependent on them (The New york Times 2017) [5]. Today , mobile phone addiction has become one of the main cause for physical and mental health problems. This study was conducted to spread awareness as there are a very few studies done on mobile phone addiction and its adverse outcome which will help in preventing morbidity by the same This cross-sectional study was conducted in a Tertiary health care Hospital in the department of Physiology, Trichy SRM Medical college Hospital and Research after getting IEC approval center for a period of 1 year.

Among 500 college students from medical (250) and engineering (250). A standardized questionnaire was used to find the Problematic Use of Mobile Phone (PUMP) and health was assessed by General health Questionnaire, Beck Anxiety Inventory and Beck Depression Inventory. Data was entered in Excel and analyzed by SPSS software. Statistical test like Pearson correlation, t-test and Annova were used. Our study revealed that Problematic use of mobile phone (PUMP) was more in males compare to females. And students aged 20 years belonging to the 3rd year were the once who had the highest PUMP score, lowest PUMP score was seen in the students in 4th year. Mobile phone use habits like mobile phone screen time ≥ 3 hours and whats app and Youtube users had the highest significant score of problematic mobile phone usage. The study also shows that Problematic mobile phone usage has an association with adverse effect on Physical and Mental health, Depression and Anxiety. So, we conclude that awareness should be spread about Problematic mobile phone usage so that its adverse effects on Physical and mental health can be prevented.

KEYWORDS

Adverse effect on Health, College students, Mobile Phone use

INTRODUCTION

Worldwide 2.5 billion people are users of smart phone. While in India there are 730 million users as of 2019 statistics and is predicted to increase in the years to come (Statista 2019)[1]. An average Indian spends roughly 3 hours a day using the smart phone (The Economic Times 2019)[2]. The constant checking of mobile phones is explained by the theory of reward learning and the fear of missing out (Baral et.al 2017)[3]. Smart phones have replaced PCs as a means to access to the internet (Rishaba et.al 2017)[4]. Smartphone addiction is closely related to Internet addiction, which is considered an impulse-control addiction. Cell phone usage is so strongly integrated into young people's behavior that symptoms of behavioral addiction, such as cell phone usage interrupting their day –to-day activities despite of the positive benefits like using cell phone to connect/call family (Rishaba et.al 2017)[4]. "Problematic mobile phone use" is defined as any pattern of mobile phone use resulting in subjective distress or impairment in important areas of functioning (Rishaba et.al 2017)[4]. Our addiction to technology has deterred neurological and relationship development because tech is being introduced to people at a very young age. People have become so addicted to their phones that they are almost dependent on them (The New York 2017)[5]. People addicted to cell phones are said to develop Physical and mental health hazards such as Insomnia (Janssen. D et.al).[6] due to decreased secretion of melatonin, early Macular degeneration (BBC News 2014)[7] due to exposure to blue light from the phone, hearing loss and microwave auditory effects(Frey AH et.al 1962)[8] due to increased hours of conversation on phone, using earphones for long hours and exposure to radio frequencies respectively, even Gliomas (WHO 2011) [9] are associated with increased smart phone usage and due to the transfer of the cell phones from one place to another it is likely to be contaminate and spread bacteria like E.coli and cause diarrhea and vomiting (Britt et.al 2013)[10]. Mental health is also affected and Problematic smart phone use and increased screen time is associated with Anxiety, depression and unhappiness (Twenge et.al 2017)[11]. Increased Car accidents (Fedral communications 2014)[12] and Social dysfunction (Jenaro et.al 2007)[13] are also attributed to Problematic mobile phone usage. Cell phones are undoubtedly a boon but its problematic usage makes it a bane. This study was conducted to spread awareness as there are a very few studies done on mobile phone addiction and its adverse outcome.

AIMS AND OBJECTIVES

- To Assess the Mobile phone use in College students.
- To find the association between mobile phone use and its adverse effect on physical and mental health.

MATERIAL & METHODS

This cross-sectional study was conducted in a Tertiary health care Hospital in the department of Physiology, Trichy SRM Medical college Hospital and Research center for a period of 1 year. Study was started after getting IEC approval. Among 500 college students from medical (250) and engineering (250). Including both Girls and Boys who had a personal Smart phone with internet after getting written informed consent.

Students not willing to participate were excluded.

Data collection tool and procedure

A structured Proforma was used to collect sociodemographic details like age, Subject of Study, year of study, gender and residence. A standardized and validated Questionnaire[15] was administered among the study population in order to asses Problematic Use of Mobile Phone (PUMP 2013). Containing 20 questions. Each question was answered on Likert scale from strongly disagree, somewhat agree, neither agree not disagree, somewhat agree and strongly agree, hence scoring was done as 1-5 respectively. So total score ranged from 20-100. Higher scores indicate more usage of mobile phone and more problematic use. The health was assessed by using the General Health Questionnaire (1988)[16] with 28 questions under 4 sub headings of Somatic symptoms, Insomnia/Anxiety, Social dysfunction, Depression containing 7 sub questions each. The questions were answered on the traditional scoring method of better than usual, same as usual, worse than usual, much worse than usual with scoring 0,0,1,1 respectively. A score more than 5 under each subheading indicated morbidity in that domain. The Beck Anxiety Inventory and Beck Depression Inventory were also used to find out the Anxiety and Depression among the students respectively. Which were scored by

Likert scale from 1-5 and analyzed. Data was entered into Microsoft Excel spread sheet. Statistical analysis was performed by SPSS software version 21. Pearson's Correlation, t test and Annova were used for statistical analysis.

Result:

Our study was conducted among 500 college students. And 100% students owned their own smart phone with internet. The Mean Problematic Use of Mobile Phone (PUMP) score was **54.98±24.37** with a minimum score of **20** and maximum score of **94.** Males were having a statistically higher Mean value for Problematic Mobile Phone Usage 76.39±15.37 when compare to Females 35.83±11.68 **(**p=0.003). A significant difference was found in problematic mobile phone usage regards to age, Year of study, with the highest PUMP score in students who were 20 years old belonging to the 3rd year (67.47±22.97 p=0.001). While no significant difference was found with Residence, Hosteller/Day Scholar and Subject of study. (Table 1)

Table No 1: Problematic mobile phone usage score in college students and its association with baseline characteristics:

Sl. no	Variable	Response	Frequency	%	Mean PUMP score	Sig
1	Age	18 years	229	45.8	49.95±22.893	0.001*
		19 years	190	38	57.72±24.797	
		20 years	53	10.6	67.47±22.97	
		21 years	28	5.6	53.86±25.64	
2	Gender	Female	264	52.8	35.83±11.68	0.003*
		Male	236	47.2	76.39±15.37	
3	Subject of study	Medicine	250	50	49.08±22.99	0.06
		Engineering	250	50	60.87±24.32	
4	Year of Study	1st year	229	45.8	49.95±22.893	0.001*
		2nd year	190	38	57.72±24.797	
		3rd year	53	10.6	67.47±22.97	
		4th year	28	5.6	53.86±25.64	
5	Residence	Urban	421	84.2	53.98±24.31	0.99
		Rural	79	15.8	60.23±24.16	
6	Hosteller/ day	Hosteller	282	56.4	53.59±24.17	0.45
		Day Scholar	218	43.6	56.77±24.56	

Students using mobile phone for more than 3 hours including the time in lecture classes were the ones who had a higher PUMPS score (60.08±24.54) than compare to those who used mobile for a lesser time (49.45±22.96) which showed a statistical significance of p=0.03. Students who were whats app users (68.42±22.75) were the ones who had the highest PUMPS mean score followed by students who watched YouTube videos (51.61±24.06) , calling (45.10±20.11) and Lowest PUMP score was seen in students using internet for educational surfing (35.23±10.21) with a significant p=0.002. (Table 2) No significant association was found between problematic mobile phone usage and leaving the phone beside during sleep and parents knowledge of unlock code.

Table No 2: Problematic mobile phone usage score in college students and its association with mobile phone usage habits:

Sl. no	Variable	Response	N	%	Mean PUMP score	Sig
1	Duration of Screen Time	<3hrs	240	48	49.45±22.96	0.03*
		≥ 3hrs	260	52	60.08±24.54	
2	Leave beside during sleep	Yes	306	61.2	41.62±18.56	0.128
		No	194	38.8	76.04±16.19	
3	Parents know unlock Code	Yes	42	8.4	57.72±24.49	0.44
		No	458	91.6	54.72±24.49	
4	Reason for maximum Usage.	Whats app	177	35.4	68.42±22.75	0.002*
		YouTube	144	28.8	51.61±24.06	
		Calling	165	33	45.10±20.11	
		Education	14	2.8	35.23±10.21	

Association of Mobile phone use and Physical health: Out of 500 students 156 (31.2%) were having a significant deteriorating general health score ≥18. A significant positive correlation (p=0.002, r= .881) was found between General health questionnaire and Problematic mobile phone use. The subdomains score ≥5 in the General health questionnaire- Somatic complains(n= 142, %,p=0.002, r = 2 8 . 4 .881), Insomnia/Anxiety(n=174, 34.8 % ,p=0.002, r= .881), Social Dysfunction(n=160 ,32 % ,p=0.002, r= .881), Depression (n=152 ,30.4 % ,p=0.002, r= .881)showed a significant positive correlation with Problematic mobile phone use. Table 3, Figure 1

Figure 1: Association of Mobile phone use and Physical health:

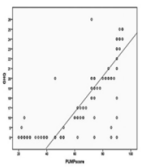


Figure 2: Association of Mobile phone use with BAI (Mental health):

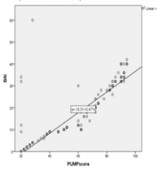
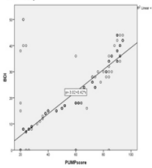


Figure 3: Association of Mobile phone use with BDI (Mental health):



Association of Mobile phone use and mental health: 282(56.42%) students were found to have clinical anxiety who had BAI Score of ≥10. A significant positive correlation (p=0.002, r= .944) was found between Anxiety and Problematic mobile phone use. Figure 2, Table 3.While 220 (44%) students were found to have clinical depression who had BDI Score of≥18. A significant positive correlation (p=0.003, r= .893) was found between Depression and Problematic mobile phone use. Figure 3, Table 3.

Table: 3 Association Of Mobile Phone Use With Health:

Sl.	Variable	Sub domain	r		Sig	
1	General Health	Somatic	.870	.88	0.005*	0.002*
		Insomnia	.866		0.004*	
		Social	.853		0.001*	
		Depression	.884		0.003*	
2	Mental Health	BAI	.944		0.002*	
		BDI	.893		0.003*	

DISCUSSION

Pathological use of Technology is called Techo dependence (2017)[4]. Internet and mobile addiction is seen to be growing among the youth today. This is seen more in students as there is unlimited, free access and flexible time schedule. Students have a special vulnerability to internet and mobile addiction because of the feeling of loneliness and lack of social support (2017)[12].

Our study was conducted among 500 college students. The mother study by Rishaba Sri et.al (2017)[4] with the PUMP scale had a mean score of 48.96 and the score ranged from 20 to 87 whereas the present study comparatively has a significantly higher mean of 54.98 with score ranging from 20 to 94 which show the increased prevalence of problematic mobile usage in the present study population. Males were having a statistically significant higher Mean value for Problematic Mobile Phone Usage when compare to Females.

Similar results were found in a study by Rishaba Sri et.al (2017)[4]. But contradictory to the study by Siddiqi N et.al.(2017)[18] We found a significant difference in problematic mobile phone usage with regards to age and Year of study. With the highest PUMP score in students who were 20 years old belonging to the 3rd year. While the PUMP score was lowest for the students belonging to 4th year. No significant difference in problematic mobile phone usage was found in regards to Residence, that is between Hosteller/Day Scholar. Also, no significant difference in PUMP score was found between medical students and engineering students. No Significant difference was found in the PUMP score between students who do and do not leave their phone beside them

during sleep. While a study by Jenaro et.al (2007)[13] and Rishaba Sri et. al (2017)[4] revealed that Problematic mobile phone usage was shown to be higher in those who left their phones beside during sleep as mobile phones were used till the students fell asleep after staying up late night exchanging messages and leading to emotional dependence which was reflected in the thought that users could not live without their cell phone. The app maximum used by the students that had the highest PUMPS mean score was WhatsApp followed by YouTube video having the highest pump score when compare to calling and surfing net for educational purpose which had the lowest PUMP score. This was also found in a study by Siddiqi N et.al (2017)[18], with whats app as the most used app (2017)[18]. Students using mobile phone for more than 3 hours were the ones who had a higher PUMP score which included the time in lecture classes than compare to those who used mobile for a lesser time. This is in accordance to the study Siddiqi N et.al (2017)[18] .

A significant association was found between Problematic mobile phone use with Somatic complaints and Insomnia also seen in a study by Munezawa T et.al (2011)[17]. In our study Social Dysfunction and depression had a statistically significant correlation with Problematic mobile phone usage which was also seen in the study by Kamibeppu et.al (2005)[19] and Caplan et.al (2005)[20] These are the 4 subdomains of the general health questionnaire. Furthermore our study revealed that deteriorating general health of the students has an association with Problematic mobile phone usage. This was also found in the study by Jenaro et.al (2007)[13].

A positive correlation was found between Anxiety and Problematic mobile phone use. This was also found in the study by Jenaro et.al (2007)[13] and Caplan (2005)[20]. A positive correlation was found between depression and Problematic mobile phone use. This is contradictory to the study by Jenaro et.al (2007)[13]. But in accordance with the study by Caplan et.al.(2005)[20]

CONCLUSION

The study has helped to find out the mobile phone usage in college students. The study reveals an association between mobile phone use and its adverse effect on physical and mental health. And has shown that problematic mobile phone usage has a strong association with deteriorating general health, anxiety and depression therefore this study will spread awareness to limit mobile phone use and help to improve health.

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