

Smartphone Addiction and Insomnia in Young Adults during COVID-19 Pandemic

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ABSTRACT

Background: COVID 19 pandemic was associated with a significant rise in Smartphone usage globally especially used to impart online lessons to the students due to lack of other forms of recreation and communication during lockdown and other restrictions. This led to increased screen time and possible smart phone addiction with impaired sleep. This surge during the pandemic led us to study the prevalence of smartphone addiction. Aim of the study was to assess Smart phone addiction and Insomnia in young adults during COVID 19 pandemic. **Methods:** This cross-sectional study was undertaken at a tertiary care Hospital attached to a Medical College during June July 2021. The prevalence of smartphone addiction was assessed using the Smartphone Addiction Scale-Short Form. Sleep disturbance was assessed using the Athens insomnia scale. Data was collected from young adults in the age group of 18 years to 30 years by means of a google form. Data was analyzed using the SPSS-20. **Results:** The prevalence of smartphone addiction in young adults during the COVID-19 pandemic was 45%. Male participants showed more usage of smartphones for gaming. There was an association of smartphone addiction with insomnia. Smartphone addiction was predicted by insomnia score, minimum time, dating app usage, age of start. **Conclusion:** Young individuals were shown to have a significant prevalence of smartphone addiction, which was linked to poor sleep.

Key words: Smartphone addiction, sleep disturbance, COVID-19

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Introduction

Over 2.5 billion use smart phone and many of them struggle to put them down for any length of time. One may not be even aware of it; the smartphones are intentionally made to be engrossing or to merely entertain. Most of the time, when one receives a call, text, or message, it's because someone wants to talk. However, many modern apps mimic this experience of social connection in an effort to entice one to use their platform more frequently. These platforms are the social apps that get us hooked. They are effectively manipulating us to use the app more by taking advantage of our craving for social connections. However, we now receive notifications from all apps, whether they are social or not.

Therefore, each time we visit it, we receive a random assortment of notifications that may cause us to experience a wide range of emotions. These apps typically have the ability to update content continuously, but the pull operation gives the user an addictive sense of control over the process. It's the same logic behind slot machines. One always wants to go for round two, thinking one might win. Since the pandemic, the usage of smartphones and other devices have increased drastically because everything now is switched to online. May it be regular classes, meetings, grocery, shopping, and various other requirements for our daily routine. Everything is through a screen. This is the new normal. Another related topic to this is of insomnia. What disturbs one's sleep at night? Deep questions, unfinished tasks,

tension, excitement, tests, and worry, however for some people, these feelings pass quickly or they eventually fall asleep. The majority of the time, sleep deprivation is temporary, such as with jet lag, when it passes quickly. But what if worrying about not getting enough sleep was actually the thing that's keeping one up? The most prevalent sleeping disorder in the world, insomnia, is caused by this seemingly intractable loop. And as the number of restless nights increases, the bedroom may begin to conjure up negative memories. Most of the young generation is awake at night. Their minds naturally operate on later schedules; therefore, they aren't prepared for bed. The circadian cycle of the body is reset during adolescence, causing an individual to sleep late at night and get up late in the morning. It is believed that insomnia is a disease of hyper arousal that manifests itself throughout the entire day.

With the internet's widespread accessibility smartphone has become an integral part of our life due to its many applications. There are over 300 million smartphone users in India [1]. Technology has the potential to benefit humans as well as harm them. Despite the technological advantages smartphone use is troublesome and negatively impacts both physical and mental health especially leading behavioral addiction.

Smartphone addiction is defined using traditional criteria for behavioral addictions, which consists of: Withdrawal, tolerance, compulsive usage, feelings of anxiety or distress without the phones; impaired functioning, interference with other life activities, and face-to-face social relationships [2,3]. There is growing evidence that internet and smartphone addiction are significantly linked to many other negative consequences on mental health, including alcohol misuse, depression, and anxiety, as well as poor sleep and a reduced quality of life [4-6]. In light of COVID-19 pandemic, students' altered lifestyles—including taking online classes, being confined to their homes and using social media excessively, feeling lonely has rendered them more susceptible to developing smartphone addiction. The study was designed to determine the prevalence of addiction of smartphone use and its relationship with sleep disorders and self-esteem among medical students.

Material and Methods

This cross-sectional study was undertaken online, in a tertiary care hospital in western Maharashtra after obtaining Institutional Ethics Approval. The study was conducted within a period of two months.

Study Population

Young adults either working or studying

Sample Size

200

Selection Criteria

History of psychiatric disorders.

Inclusion Criteria

Individuals within the age limit of 18-30years with no family history of chronic mental illness.

Exclusion Criteria

Presence of medical illness or any psychiatric disease in an individual or if the individual is on antidepressants of any kind.

Confidentiality

Given data was collected by the psychiatrist's office and nominal data of the patient was not provided to the observer and the publisher, each subject is named alphanumerically and age and relevant history were mentioned alongside.

Tools Used

An online Google questionnaire containing questions about demographical data of the participants and the questions from the Smartphone addiction scale and Athens Insomnia scale.

“Smartphone Addiction Scale-Short Form” (SAS-SF):

It is a self-report measure used to assess the likelihood that teenagers may get addicted to their smartphones [3]. The responses to the 10 items on the 6-point Likert scale vary from “I strongly disagree” (1) to “I strongly agree” [6, 7].

“Athens Insomnia Scale”

The eight-item questionnaire gauges the onset of sleep, nighttime and early morning awakenings, the duration and the quality of sleep, the frequency and duration of complaints, the discomfort associated with experiencing insomnia, and the interference with daily functioning. A score of more than 6 shows insomnia [8].

Procedure

All eligible subjects willing to participate in the study for the study belonging to Rural and Urban areas were explained the aim of the study and an informed consent was taken maintaining complete confidentiality. All demographic details were recorded after which the scales were administered. The scales were scored as per the scale manuals and the data was entered in an excel spreadsheet.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS; IBM, Atlanta, USA) was used for the statistical analysis. The Chi-

square test was used to compare frequency data, the student's T-test to compare continuous data, and the Mann Whitney U test to compare ordinal data.

Results

Demographic characteristics and scores on smartphone addiction scale and Athens Insomnia questionnaire are given in Table 1 and 2 respectively.

Multiple regression analysis for predictors of smartphone addiction

Table 3 shows summary of multiple linear regression model and overall fit statistics. The value of *R*, the *multiple*

correlation coefficient is 0.595, and the adjusted R^2 (the coefficient of determination) of our model is 0.354 with the $R^2 = 0.340$. This indicates that 34% of the variance in the data is explained by the linear regression.

$F(4, 95) = 26.659, p < .0005$, the ANOVA table (Table 4) demonstrates that the independent variables statistically substantially predict the dependent variable suggesting the fitness of regression model. In this case, take into account how the score affects the insomnia score. The unstandardized coefficient, *B1*, for the sleeplessness score is equal to 0.623, which suggests that the score for smartphone addiction increases by 0.623 for every unit higher insomnia score. All independent variable coefficients in Table 5 are statistically

Table 1: Demographic characteristics of the sample

Characteristics		Total (N=200)	Male (N=91)	Female (N=109)	P value
Age	Mean:	22.5±4	21.73±2.06	21.45±2.32	0.361
Age of starting Use of Smartphones	Mean:		14.78±3.74	14.58±2.53	0.471
Marital Status	Single	134	30	36	0.992
	Married	66	61	73	
Gaming	Yes	66	46	20	<0.00001
	Sometimes	29	11	18	
	No	105	34	71	
Using App: Dating	Yes		12	23	0.230
	Sometimes		14	11	
	No		65	75	
Using Media Social	Instagram:	183	83	100	0.245
	Snapchat:	150	72	78	
	WhatsApp:	178	86	92	
	Twitter:	97	51	46	
	Facebook & Others	113	66	47	
Using Streaming Media	Netflix:	173	80	93	0.923
	Youtube:	177	88	89	
	Prime Video:	152	72	80	
	Hot-Star:	130	65	65	
	Other:	3	1	2	
Smartphone Addiction	Yes	84	41	43	0.424
	No	116	50	66	

Table 2: Scores obtained by male and female participants on Smartphone addiction scale and Athens insomnia questionnaire

	Score on smartphone addiction scale			Score on Athens Insomnia scale		
	Male	Female		Male	Female	
Mean±SD	30.912 1±9.33 5	31.266 1±7.88 76	Mann Whitney U test=4794.00 P=0.684	7.6703 ±4.853 5	8.5413 ±5.239	Mann Whitney U test=4510.500 P=0.270

Table 3: Multiple regression analysis for the predictors of Smartphone addiction: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	0.595 ^d	0.354	0.340	6.94975

^dPredictors: (Constant), Insomnia-score, Minimum time, Dating app, Age-start^eDependent Variable: Smartphone addiction score**Table 4: Multiple regression analysis for the predictors of Smartphone addiction: ANOVA^a**

	Model	Sum of Squares	Mean Square	p value
4	Regression	5150.490	1287.623	0.000 ^e
	Residual	9418.305	48.299	
	Total	14568.795		

^aDependent Variable: Smart-score^ePredictors: (Constant), Insomnia score, minimum time, dating app, Age-start**Table 5: Multiple regression analysis for the predictors of Smartphone addiction: Coefficients**

	Model	Unstandardised Coefficients		Standardized Coefficients	p value
		B	Std. Error	Beta	
4	(Constant)	27.129	2.737		0.000
	Insomnia-score	0.623	0.101	0.369	0.000
	Minimum-time	2.642	0.592	0.264	0.000
	Dating app	2.013	0.655	0.181	0.002
	Age-start	- 0.378	0.160	- 0.138	0.019

^a Dependent Variable: Smartphone addiction score

distinct from zero, as can be observed in the “Sig.” column (zero).ne addiction score from Insomnia score, minimum time with the phone, use of dating add and age of starting to use a smartphone. These variables statistically significantly predicted Smartphone addiction score, $F(4, 95) = 26.659, p < 0.0005, R^2 = 0.354$. All four factors considerably increased the prediction statistically ($p < 0.05$).

Discussion

Students being avid users' usage increased during and after the onset of COVID 19 pandemic. Education and classes started being online and the only source of entertainment during the lockdown seemed to be smartphones. However, it is possible that this usage escalated to harmful levels and

addiction among the vulnerable youth. Our study was thus aimed to assess this very addiction as well as the consequences of the same, keeping in mind the usage during the pandemic. Our study found a high prevalence of smartphone usage in the youth with 45% showing internet addiction. Similar studies have been conducted to assess the addiction to devices in form of smartphone addiction or internet addiction and the prevalence found has been 46.5% in one study which is close to ours [9]. Another Indian study found the prevalence to be somewhat less at 34.4% [10]. A study carried out in Italy during the pandemic showed that addiction was seen in 46.7% participants, again very close to the results of our study [11]. Without any face-to-face medium of communication there has been an increase in the

usage of smartphones during the Covid pandemic as most were at home. The study from Italy also shows that during the pandemic children as well as adolescents, i.e., youngsters had an increased daily usage of smart phones [11].

These findings are not astonishing considering the importance of smartphones in being source of communication, the information during pandemic as well as entertainment [12]. Apart from that, online learning due to shutting of educational institutions has contributed adversely. This indeed increased the children's access to screen time and their usage for internet gaming and social media [13]. Our study has found that the prevalence of gaming is greater in the male sample as compared to female sample.

With increased usage of smartphones other problems like changes in lifestyle and behaviour as well as disturbance in normal rhythms like sleep pattern emerged. Studies have shown that the sleep patterns, disturbance or ocular alterations have occurred more in this pandemic [14]. There are complaints of more musculoskeletal disorders as well owing to pain in neck, headache, fingers, wrist owing to over use of smartphones [14]. In our study, smartphone usage has been found to be associated with sleep disturbance or insomnia.

It has been observed that those who score high on smartphone addiction have a difficult time in controlling their smartphone usage even when they are in bed. A review of literature regarding sleep disturbances and smartphone usage has found that use of smartphone - be it problematic use or addiction has been associated with increase in poor sleep quality [15]. Even the background light of smartphones has been found to alter the sleep wake cycle and circadian rhythm of the body- this further leads to deleterious consequences for sleep architecture and can cause delayed initiation of sleep and then reduction of the total sleep time [16]. In a study conducted in university students in China, one third students had poor sleep quality including shorter duration leading to further physical and mental issues [17,18]. More studies have come up with similar conclusions regarding sleep quality and internet usage [19,20]. A systematic review of several studies also has shown that excessive electronic media use is associated with poor sleep outcomes - including duration as well as quality of sleep [20]. This study also found an association between early age of smartphone use with addiction to smartphone. Similar to our study, another study found that early age of smartphone usage is associated with addictive behaviors [21]. The study finds that smartphone addiction has various predictors, early age leads to smart phone addiction, minimum time commitments, dating apps and poor quality of sleep which are inversely correlated with age.

Limitations

The small sample size and a moderate population from one Centre are the study's limitations.

Conclusion

The prevalence of addiction of smartphone use among young adult Indian participants was found to be significant and was associated with irregular sleep patterns, minimum time commitments, dating apps, and is inversely correlated with age of onset.

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Ethics:	There is no ethical violation as it is based on voluntary anonymous interviews
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