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Research Article

IMPACT OF INTERNET ON THE MENTAL HEALTH OF YOUNG ADULTS IN VISAKHAPATNAM

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ABSTRACT

Objective: The extreme and constant use of internet use has been reported to be associated with depression and other adverse physical health conditions. The purpose of this research is to investigate the relationship between the frequency of internet usage among the university students of Visakhapatnam, India, and their health problems and depression levels.

Methods: The study sample consists of 100 university students studying at a university in Visakhapatnam, India. Distribution of the sample by gender was 43 males and 50 females. Questionnaires were administered to students in groups, in a class environment, by the author. Participation was voluntary. In total, 100 students participated in this study. Seven of them had to be excluded for not responding properly to all questionnaires, so the final sample consisted of 93 participants.

Results: The results indicate a significant association between depression and the intense internet usage (>5–7 h/daily), with Chi-square value 23.80 and $p<0.01$. Furthermore, as the internet usage increases, there is a significant rise in systolic blood pressure with $F=3.74$ and $p<0.05$.

Conclusion: This study indicates that intense internet usage is definitely leading to mental health problems like depression and also other physical health issues like increased blood pressure.

Keywords: Internet, Mental health, Young adults, Physical health.

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INTRODUCTION

Because of rapid information technology development, high-speed wire connections, easy accessibility, and rising affordability, the internet has become pervasive in the lives of young adults in recent years. The internet is used by a large portion of the Indian people. India had 331.77 million internet users in 2017. As a result, the amount of time spent on the internet has expanded dramatically in recent years, accompanied by growing worries about excessive internet usage, which has significant health repercussions [1]. With the increasing use of the internet, the detrimental effects of internet use on both mental and physical well-being have gotten a lot of attention. Studies on the negative effect on mental or psychological health have a very early start, and most of them focused on the internet addiction or internet addiction disorder (IAD) [2-7].

Internet addiction resembles an impulse control disease, according to investigations conducted by Young *et al.* [2-7]. They identified eight frequent indicators of internet addiction, mostly based on pathological gambling criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Pre-occupation with the target activity, tolerance and withdrawal symptoms, a compulsive drive to engage in activity or a sensation of loss of control, failed attempts to stop or cut down, and neglect of social, academic, and occupational commitments with functional impairment are all common hallmarks. Persons with IAD and problematic gambling patients have working memory, executive dysfunction, and impulsivity deficits, according to Zhou *et al.* [8], and individuals with IAD are more impulsive than pathological gambling patients. The term "problematic Internet use" was used to describe Internet use that causes problems in a person's mentality, with an emphasis on a significant condition linked to distress, functional impairment, and psychiatric diseases [9]. Problematic internet use is defined as an inability to control one's internet use, which leads to negative implications in daily life and is inversely proportional to the amount of time spent online [10]. Kwiatkowska *et al.* [11] discovered that people who use the internet for more than 5 h/day risk becoming addicted and having negative effects on their human relationships. This study solely looked at the social repercussions of long-term internet use. Yildiz and Yildirim [12] investigated the impact of problematic and unhealthy internet use, rather than addiction, on healthy lifestyle behaviors in Turkey, such as stress management, diet, and exercise, and found that internet usage greater than 5 h/day was problematic. Furthermore, smartphones as a mode of internet access have a significant impact on our health, which has already piqued the interest of academics both at home and abroad. Katerina *et al.* [13] evaluated the changes and impact of mobile access on excessive internet use in European individuals. Two surveys on adolescents conducted in 2010 and 2013 in seven European countries using identical methodology. They found that excessive online gaming is more likely to develop into a problematic behavioral pattern, but without specific results. Harwood *et al.* [14] looked at the link between smart device use, smart device involvement, and mental health, and found that smart device involvement, but not use, was associated with depression and stress.

Having in mind the observations and opinions of other studies, the authors conducted this study because of its scientific importance to investigate the relationship between internet usage and depression indicators in the young population in Visakhapatnam, India.

METHODS

An observational, cross-sectional, population-based study was conducted during 2018 on the young adult population of Visakhapatnam,

India. A total of 100 young adults were randomly selected and surveyed about their internet usage habits and mental health using an anonymous, structured questionnaire, and the Beck Depression Inventory scale. Internet usage was assessed by self-reported total number of hours per day spent on social networking. Moreover, depression was assessed using the Beck Depression Inventory scale. BDI is a 21-question multiple-choice self-report inventory, in which each answer is given a score between 0 and 3. After the test is finished, the total score is interpreted as the following: 0–9 minimal depression, 10–18 mild depression, 19–29 moderate depression, and 30–63 severe depression. All subjects have been informed about the objective of the study. Statistical analysis was done using SPSS software version 20.0.

Recruitments

This study was conducted on the university campus with the students enrolled in undergraduate courses. Volunteers were recruited on a random basis.

Inclusion criteria

- The volunteers were of age group between 17 and 22 years.
- Students spending at least a minimum of an hour on the internet.
- Students using the internet for more than 2 years.

Exclusion criteria

- Diabetes mellitus and hypertension.

Data collection

This study comprised a sample of 100 young adults in Visakhapatnam, India. A cross-sectional research design was used to examine the impact of excessive internet usage on physical and psychological well-being. Data were gathered based on three questionnaires, the first one regarding health problems and second on Beck's depression scale questionnaire which is based on self-assessment. Internet usage: Students were asked about their daily frequency of internet use. All data were collected at a convenient time. Students were instructed not to eat or drink caffeinated beverages within 2 h of data collection. Height (to the nearest 0.5 cm) and weight (to the nearest 0.2 kg) were measured (in light clothing and without shoes) to derive the body mass index (BMI) (kilograms per meter squared). The BMI was calculated using Omron digital scale.

Research limitations/implications

The present study lends interesting insight into assessing the limited body of knowledge on internet addiction for young adults in India. Like other empirical researches, this study is not without its limitations. The data for this study are collected by self-administered questionnaires, a method with well-known shortcomings. Second, the sample size itself is relatively small. This study can be strengthened by increasing the sample size and including participants in other geographical areas in India. Our sample consists of students from one university in India. Hence, the sample is small in number. The study can be strengthened by increasing the sample size and including participants from other working adults from different parts in India. Longitudinal studies that use both quantitative and qualitative techniques are required to understand the changes that the internet addiction behavior has on health. Finally, it is expected from other researchers to do surveys on different age groups to contribute to this area of research.

RESULTS

Table 1 shows the time period of spending on internet by the study population with the relation to its degree of depression. Our study shows that out of 83 students, 50% were normal, 40.47% were having mild depression, 10.84% with borderline depression, 12.04% with moderate, 3% with severe, and 2% with extreme depression. The 45 students using internet for 1–3 h showed varied degrees of depression with 11 showing mild depression, five borderline depression, and four with severe depression. In the next group of 27 students with higher internet usage duration of 3–5 h, five students were mildly depressed, three borderline depressed, and five moderately depressed; one student was mildly depressed, one was borderline depressed, one moderately depressed, two with severe depression, and two with extreme depression (Fig. 1). This was a highly significant correlation of $p \leq 0.01$. Male students were significantly spending more time using the internet. Furthermore, as the internet usage increases, there is a significant rise in systolic blood pressure with $F=3.74$ and $p<0.05$. There was significantly higher systolic blood pressure recorded as the number of hours spent on the internet was increased. This also indicates that as the number of hours and frequency of internet usage increase, the health promoting habits such as exercise and healthy eating habits were reduced. It was also observed that the BMI of these students was increased in proportion to their hours of internet usage (Tables 2 and 3). However, the other health problems such as anxiety, headache, finger numbness, sleep quality, fatigue, vision problems, wrist pains, and quantity changes were assessed using a health-based questionnaire but no significant correlation was found (Table 4).

DISCUSSION

Our study was conducted as an initial pilot study with a small study sample to get a preliminary idea regarding the trends of internet usage among the youth nowadays and correlating accompanying subset of problems associated with them. Our findings reflected that compared to the starting of this decade, there has been an exponential increase in both access and usage of the Internet and the accompanying subset of problems. Using a definition of ">5 hours a day" of average use as "excessive" internet use, we found that in the group of 11 students showing the highest frequency of internet usage of 5–7 h, all of the students are suffering from mental depression ranging from mild to extreme form of the mental depression with p value being highly significant <0.01. There are deleterious effects on physical health such as a significant increase in systolic blood pressure as the number of hours spent on the internet increases $p \leq 0.05$. There was no significant correlation found between other physical ailments such as headache, neck pain, back pain, wrist pain, and fatigue, vision and sleep quality with prolonged internet usage. This study has made a definitive correlation between prolonged and intensive usage of the internet with mental depression. The unrestrained use of the Internet may be detrimental to their health [15]. Numerous studies concluded that excessive internet use might cause psychiatric problems such as depression, anxiety, and low self-esteem.

The findings of Kausar and Zobia [16] show a link between time spent on the internet and physical symptoms, implying that excessive internet use can lead to a variety of educational, medical, psychological, and interpersonal issues, which are consistent with our findings. Furthermore, our findings support Kumar *et al*. [17] who claim that

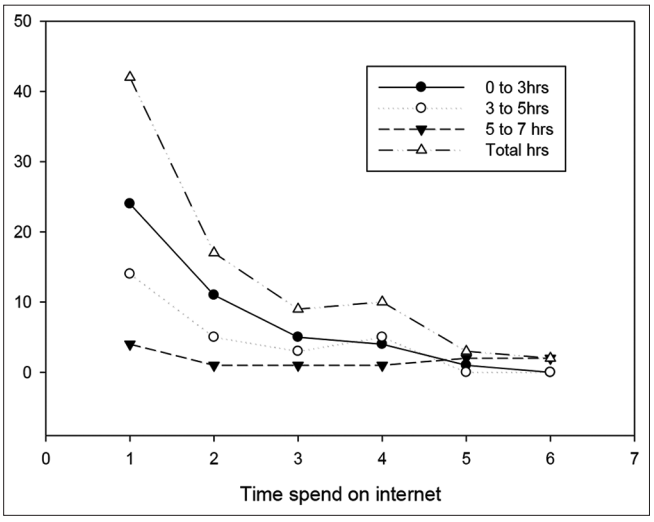

Fig. 1: Representation of time spend by study population with the degree of depression

Table 1: Representation of time spend by study population with the degree of depression

Score	Time spend on net						Total	
	1–3 h		3–5 h		5–7 h			
	Count	%	Count	%	Count	%	Count	%
Normal	24	57.1	14	33.3	4	9.5	42	100.0
Mild	11	64.7	5	29.4	1	5.9	17	100.0
Borderline	5	55.6	3	33.3	1	11.1	9	100.0
Moderate	4	40.0	5	50.0	1	10.0	10	100.0
Severe	1	33.3	0	0.0	2	66.7	3	100.0
Extreme	0	0.0	0	0.0	2	100.0	2	100.0
Total	45	54.2	27	32.5	11	13.3	83	100.0

Chi-square value=23.80. Df=10. p≤0.01

Table 2: Determination of fat, BMI, waist–hip ratio (W/H), and systolic and diastolic blood pressure (SBP and DBP) in study population with relation to time spend on internet

Parameter	Time spend on internet	n	Minimum	Maximum	Mean	SD
FAT	1–3 h	46	13	40	27.70	6.94
	3–5 h	30	13	40	27.12	7.60
	5–7 h	15	20	35	26.33	4.57
BMI	1–3 h	46	16	33	23.75	4.24
	3–5 h	31	18	32	25.49	4.03
	5–7 h	15	21	40	26.93	5.48
W/H ratio	1–3 h	45	0.13	5.62	0.66	1.51
	3–5 h	31	0.17	5.84	0.90	1.86
	5–7 h	16	0.18	5.35	1.26	1.99
SBP	1–3 h	46	94	126	107.17	8.70
	3–5 h	31	98	132	111.16	8.00
	5–7 h	14	100	130	113.43	9.43
DBP	1–3 h	46	58	80	66.96	6.32
	3–5 h	31	60	90	70.58	8.43
	5–7 h	14	60	80	69.57	6.28

BMI: Body mass index

Table 3: Statistics of study parameters

Parameter	Time spend on internet	Mean	SD	F-value	p-value
FAT	1–3 h	27.70	6.94	0.24	0.79 NS
	3–5 h	27.12	7.60		
	5–7 h	26.33	4.57		
BMI	1–3 h	23.75	4.24	3.55	<0.05 S
	3–5 h	25.49	4.03		
	5–7 h	26.93	5.48		
W/H ratio	1–3 h	0.66	1.51	0.72	0.49 NS
	3–5 h	0.90	1.86		
	5–7 h	1.26	1.99		
SBP	1–3 h	107.17	8.70	3.74	<0.05 S
	3–5 h	111.16	8.00		
	5–7 h	113.43	9.43		
DBP	1–3 h	66.96	6.32	2.57	0.08 NS
	3–5 h	70.58	8.43		
	5–7 h	69.57	6.28		

BMI: Body mass index

excessive internet use leads to deviant behaviors that have detrimental repercussions for users. However, it has to be examined whether this uncontrolled internet use can be classified as an addiction or a behavioral problem. A study conducted in 2016 by Hokby *et al*. [18] also stated that the magnitude of internet use is negatively associated with mental health in, however, the study also states that the consequences of internet use such as sleep loss and withdrawal from society seem to predict mental health in the long term.

Problematic internet use has been linked to subjective distress, functional impairment, and Axis I mental illnesses, according to Dang *et al*. [19]. According to Tang *et al*. [20], there is a link between the degrees of internet addiction and negative psychological states such loneliness, despair, and compulsive behavior. Internet addiction was found to be substantially related with depressed and obsessive-compulsive symptoms by Hemmingsson and Ekelund [21]. After 6 months, Eijnden *et al*. [22] found that using instant messaging and conversing in chat rooms were positively connected to compulsive internet use.

Internet addiction was linked to signs of attention deficit and hyperactivity disorder (ADHD) and depressive disorders, according to Yen *et al*. [23]. However, only greater levels of ADHD and depressive symptoms were linked to internet addiction in male students, and only higher levels of hostility were linked to internet addiction in female students. Both men and women were shown to have a link between Internet addiction and depression. Other research has found a link between excessive internet use and unpleasant feelings such as worry, despair, and weariness.

According to a recent study by Ko *et al*. [24], functional impairments such as poor academic performance and difficulties interacting with family and peers should be included in the diagnosis of Internet addiction, in addition to symptoms of pre-occupation, tolerance, withdrawal, and impairment of control. According to Ching and Tung [25], there is a link between the amount of hours spent online per week and internet addiction. The average number of hours spent online by addicted people per week was 21.2 h in this study. Adolescents who were excessive users in our study were spending an average of 35 h/week surfing the internet.

Table 4: Representation of health problems in study population with relation to time spend on internet

Parameters	Time spend on internet						Chi-square	P-value
	1–3 h		3–5 h		5–7 h			
	Frequency	%	Frequency	%	Frequency	%		
Headache							0.31	0.86 NS
Yes	17	37.0	10	32.3	6	40.0		
No	29	63.0	21	67.7	9	60.0		
Anxiety							0.88	0.64 NS
Yes	10	21.7	7	22.6	5	33.3		
No	36	78.3	24	77.4	10	66.7		
Neck pain							5.19	0.07 NS
Yes	0	0.0	0	0.0	1	6.7		
No	46	100.0	31	100.0	14	93.3		
Back pain							2.39	0.3 NS
Yes	5	10.9	6	19.4	4	26.7		
No	41	89.1	25	80.6	11	73.3		
Appetite							0.99	0.61 NS
Yes	10	21.7	9	29.0	5	33.3		
No	36	78.3	22	71.0	10	66.7		
Wrist pain							1.02	0.6 NS
Yes	9	19.6	9	29.0	3	20.0		
No	37	80.4	22	71.0	12	80.0		
Finger numbness							0.28	0.87 NS
Yes	4	8.7	3	9.7	2	13.3		
No	42	91.3	28	90.3	13	86.7		
Fatigue							1.96	0.38 NS
Yes	10	21.7	3	9.7	3	20.0		
No	36	78.3	28	90.3	12	80.0		
Vision							0.59	0.75 NS
Yes	23	50.0	16	51.6	6	40.0		
No	23	50.0	15	48.4	9	60.0		
Sleep quality							4.06	0.39 NS
N	31	67.4	17	54.8	7	46.7		
DEC	13	28.3	12	38.7	8	53.3		
Y	2	4.3	2	6.5	0	0.0		
Gender							13.35	<0.01 HS
Female	32	69.6	14	45.2	3	18.8		
Male	14	30.4	17	54.8	13	81.3		

Furthermore, it was interesting that the male students were spending 5–7 h/day on the internet when compared to their female counterparts with a highly significant p≤0.01. In spite of these findings, some studies found no relationships between gender and internet addiction, but Young found a higher number of females to be dependent on the internet. These differences in findings might be the result of cultural differences in use of the internet [26-28].

Excessive internet use among young adults should be considered a severe concern in Indian society. It has resulted in an increased risk of depression, which is incredibly concerning given that these young individuals are our future workforce and leaders. Excessive internet use among young people is a concern, and it appears that excessive internet use among young adults is harmful to their mental health. Excessive internet usage was linked to a greater incidence of depression, subjective tension, and a low sense of happiness. Boys require extra vigilance, as their risk of internet addiction rises substantially faster than that of girls with increased internet usage time. As a result, initiatives for preventing and managing problems related with excessive internet usage should be adopted and assessed. Health promotion strategies, such as a multimedia campaign advocating responsible internet usage, as well as treatment and rehabilitation programs, such as camps or therapeutic schools for adolescents with problems related to excessive internet usage, are examples of strategies that need to be developed. Future research should focus on developing and implementing rehabilitation programs for teenagers with difficulties connected to excessive internet usage, such as camps or therapeutic schools, as well as verifying the effectiveness of such programs. Professional monitoring, in partnership with community-based mental health centers, youth counseling centers, and other similar institutions, is also required to offer impacted adolescents with solution-oriented professional help. Future study is needed to confirm the present evidence and the link between excessive, uncontrolled internet usage and depression.

CONCLUSION

This study indicates that intense internet usage is definitely leading to mental health problems like depression and also other physical health issues like increased blood pressure.

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AUTHORS' CONTRIBUTIONS

The main author of the study SS had performed the work, wrote the first draft of the manuscript. Authors VP and RHD collected the literature. Author VG corrected the first draft of the manuscript.

CONFLICTS OF INTEREST

The authors declared no conflicts of interest.

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ETHICS CLEARANCE

A proposal regarding the study's aims and objectives was submitted to the institutional ethics committee, GITAM Deemed to be University,

Visakhapatnam, and permission was obtained from the Institutional Ethics Committee regarding data collection from the university students.

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