A cross-sectional comparative study of problematic internet use and associated depression in private and Government school students in rural and urban areas of Telangana

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Abstract

Background: The Internet has become an essential part of our day to day life, especially among adolescents. It can be used for education, entertainment, and communication & sharing of information. If it is used excessively beyond a limit, it becomes an addiction and is becoming a significant concern. This study was carried out to estimate the prevalence of internet addiction among rural, urban, Government, and private school-going adolescents and its association with socio-demographic factors, internet-related variables, and comorbid depression.

Materials and Methods: A cross-sectional and comparative study was conducted in government and private schools in urban and rural areas of Telangana for three months. By using a simple random sampling method, 400 students of 10-13 years age group, studying in private, government schools of rural and urban areas were taken for the study. The study was conducted after obtaining approval from the institutional ethics committee. Students who had a history of internet use for the past one year were taken into study. Confidentiality was assured, and the voluntary nature of the study was explained. Semi structure intake proforma was used to collect age, gender, place of internet access, money spent on the Internet, duration of access, any quarrels happened among parents in the family, parental education, the purpose of internet use. Data was entered on Young's internet addiction questionnaire and depression self-rating scale for children by Birleson.

Results: Prevalence of internet addiction was estimated in rural, urban, and government and private schools. Correlates for internet addiction is different in rural and urban samples. Prevalence of internet addiction was found to be 4% mild and 4% moderate among rural government sample.10% mild, 3% moderate among rural private adolescents. 18% mild, 10% moderate among urban Government schools. 35% mild, 22% moderate among the private urban sample. The highest prevalence of internet addiction among urban adolescents in private schools. Risk factors for internet addiction among the rural sample were found to be "purpose of use of internet" that is social networking. Students studying in private school among urban sample having the Internet at home, quarrels of parents at home, parental income (6000 to 15000), access of Internet on weekends at home were found to be predictors of internet addiction.

Conclusion: Internet addiction is widely prevalent among school-going adolescents' needs attention.

Keywords: Internet addiction, Adolescents, Problematic internet use, Depression.

Our earth has become a global village with the advent of the Internet. Over the last 15 years, internet addiction has snowballed. Dramatic changes are happening in the psychological states of the population and society at large because of computers and the Internet. The Internet became an essential tool in most of our life activities like education, entertainment, communication, and sharing the information. According to one study, almost 40% of the current world population is using the Internet.[1] An increase in popularity and frequency of use has led to the emergence of clinical cases presenting with abuse symptoms. As children tend to explore new things, the Internet became an easy tool for them to explore the world, and due to its easy accessibility, the Internet makes them prone to addiction.

Prevalence studies have reported large variations due to (0.7-27.7%) difference in study design, age group, assessing methods, sampling techniques, different cutoff values, and geographical areas studied.[2-4] In several studies, it was noted that the children who are dependent on the Internet also showed a significant correlation with depression, anxiety, and suicidal behavior at times.[2,5] Internet addiction also resulted in low academic performance, strained relationships with family members, and difficulty in the regulation of emotions in adolescents.

There has been enormous concern about the excessive use of the Internet across all countries in the world, including India. Internet addiction has not been formally occupied as a disorder yet, but the literature review is showing internet use related problematic behaviors causing significant psychosocial impairment. Internet addiction is defined as an uncontrollable desire to use the Internet, the devaluation of time spent without connecting to the Internet, intense nervousness and aggression in the event of deprivation and progressive deterioration of social and family life. This needs attention because children and adolescents are more likely to indulge most of their time in internet games and social networking so much so that they neglect school work and sports. Complications like depression, sleep disorders, low academic achievements secondary to internet use have necessitated the need for further research. So, this study has been taken to assess the prevalence of internet addiction in school children of Telangana state. In this study, we have used internet addiction and problematic internet use as a synonym.

Aims

This study was carried out to assess and compare the prevalence of internet addiction among adolescents studying

in government and private schools of rural and urban areas of Telangana.

Objectives

To study the prevalence of depression among the study sample

To examine the association of socio-demographic factors with internet addiction.

Materials and Methods

A cross-sectional and comparative study was conducted in government and private schools in urban and rural areas of Telangana for three months. By using a simple random sampling method, 400 students of 10 -13 years of age group, studying in private, government schools of rural and urban areas were taken for the study. The study was conducted after obtaining approval from the institutional ethics committee. Written permission was obtained from respective school authorities before completing the survey. All the teachers and parents of children were explained the purpose of the study and assured that the information would not be used for any other purpose. Students who had a history of internet use for the past one year were taken into study. Confidentiality was assured, and the voluntary nature of the study was explained. Students gave their verbal assent for participation in the study. Information was taken from students batch by batch on a prefixed date.

Semi structure intake proforma was used to collect age, gender, place of internet access, money spent on Internet, duration of access, any quarrels happened regarding internet use in the family, parental education, the purpose of internet use. Students were asked to fill Young's internet addiction questionnaire, consisting of 20 questions to be answered on a 5 point Likert scale. Comorbid psychiatric illnesses are assessed using Birleson depression self -rating scale for children (DSRS-C).

1. Internet Addiction Test (IAT) by Dr. Kimberly Young.[6] Internet Addiction Test (IAT) is a reliable and valid measure of addictive use of the Internet, developed by Dr. Kimberly Young. It consists of 20 items that measure mild, moderate, and severe levels of Internet Addiction.
2. Depression Self-Rating Scale for Children by Birleson (1978).[7] This self-rating scale was developed for children between the ages of 8 and 14 years of age. The test-retest reliability of the scale on an independent sample showed good stability (0.80). Individual items had a reliability coefficient of 0.65-0.95. The scale's corrected split-half reliability was 0.86 showing good internal consistency
3. Modified Kuppuswamy scale,[8] was used to assess socioeconomic status. It is measured by a composite score of education, occupation of the head of the family, and monthly income of the family yields a score of 3-29. It was updated in 2017 by Singh T.
4. Semi-structured intake Pro-forma: student-related factors, including socio-demographic characteristics, were collected.

Statistical analysis

Data were analyzed using statistical package for social sciences (SPSS) for Windows, version 22. P-value was set at 0.05. Demographic variables were described using frequencies and percentages. A Chi-Square association test was done between demographic variables and internet addiction. Kruskal Wallis H test of difference was done for the severity of Internet Addiction between Independent Samples. Kendall's Tau-b test of correlation was done between demographic variables, depression, and Internet addiction.

Results

Four hundred consenting individuals were taken into the study. Demographic data was collected with the use of semi intake proforma, and they were assessed for depression and internet addiction. The sample consisted of 200 individuals, each from rural and urban domiciles. Within the group of a domicile, 100 individuals belonged to Government and private institutions, respectively. Table 1 demonstrates the distribution of the sample concerning variables. The majority of the sample (45.8%) were from the middle-income group (6001-14999). 54.3% of the people reported using the Internet for 2-5hrs on weekends, while 47.8% reported using the Internet <2hrs on weekdays. 52% reported using the Internet for multiple purposes, with 80.8% using the Internet at home. 73% reported affecting academics though 63.7% reported no quarrels at home. 90.2% were exposed to the Internet for the first time after 10yrs of age, with 82% reporting spending more than Rs.500 for internet purposes. 34% of the sample suffered from some form of internet addiction, with 29% also reporting depression.

A Chi-Square test was done to assess an association between the demographic variables and Internet addiction in the rural domicile. Table 2 shows the results of the chi-square test between demographic variables and internet addiction. The test was found to be showing statistically significant association for Purpose of Use of Internet (χ_2 = 21.617, p = .001), Institution (χ_2 = 10.02, p = 0.007).

A Chi Square test was done to assess association between the demographic variables and Internet addiction in the urban domicile. Table 3 shows the results of the chi square test between demographic variables and internet addiction. The test was found to be showing statistically significant association for Income (χ_2 = 152.09, p = <.001), average Duration of access in weekends (χ_2 = 185.10, p = <.001), average Duration of access in weekdays (χ_2 = 152.34, p = <.001), effect on academic (χ_2 = 7.24, p = .027), Quarrels at home (χ_2 = 21.54, p = <.001), Place of internet use (χ_2 = 22.82, p = .001), Internet at home (χ_2 = 63.42, p = <.001), Money spent (χ_2 = 12.39, p = .002), Age at onset (χ_2 = 7.858, p = .020), Institution (χ_2 = 31.29, p = <.001), Depression(χ_2 = 26.09, p = <.001).

Kruskal Wallis H test was run to determine if there were differences in the severity of Internet addiction between rural and urban domiciles. The differences of

severity in internet addiction between the domicile groups were not found to be statistically significant (χ^2 = 2.632, df = 1, p = .105). Kruskal Wallis H test was run to determine if there were differences in the severity of Internet addiction between Government and Private institutions. The differences of severity in internet addiction between the Institution groups was found to be statistically significant (χ^2 = 6.154, df = 1, p = .013)

Kendall's Tau b correlation test was done between the demographic variables, depression, internet addiction to identify the nature and strength of association. Table 4 shows the Kendall's Tau b correlation test. The following had a statistically significant positive correlation with depression; Avg Duration of access in weekends (T_b = .157, p = .001), Internet at home (T_b = .124, p = .013), Institution (T_b = .209, p = <.001). The following had a statistically

significant negative correlation with depression; Domicile (T_b = -231, p = <.001), Income (T_b = -222, p = <.001), Avg Duration of access in weekdays (T_b = -202, p = <.001), Purpose (T_b = -.355, p = <.001), Age at onset (T_b = -.161, p = .001), Internet Addiction (T_b = -160, p = .001). The following had a statistically significant positive correlation with internet addiction; Income (T_b = .292, p = <.001), Avg Duration of access in weekdays (T_b = .444, p = <.001), effect on academics (T_b = .114, p = .020), Institution (T_b = .121, p = .013). The following had a statistically significant negative correlation with internet addiction; Avg Duration of access in weekends (T_b = -.157, p =.001), Internet at home (T_b = -.146, p = .003).

Internet addiction was found to be negatively correlated with depression (T_b = -160), and this was statistically significant (p = .001)

Table 1: Sample distribution percentages

Variable	Frequency (N)	Percentage
Income <6000	115	28.7
6001-14999	183	45.8
>15000	102	25.5
Avg Duration of access(weekends) <2hrs	118	29.5
2-5hrs	217	54.3
>5hrs	65	16.3
Avg Duration of access(weekdays) <2hrs	191	47.8
2-5hrs	184	46.0
>5hrs	25	6.3
Purpose Education	78	19.5
Social Media	91	22.8
Others	23	5.8
Multiple	208	52.0
Effect on academics No	108	27.0
Yes	292	73.0
Quarrels at home No	255	63.7
Yes	145	36.3
Place of internet use Home	323	80.8
School	11	2.8
Others	43	10.8
Multiple	23	5.8
Internet at home No	293	73.3
Yes	107	26.8
Money spent <500	328	82.0
>500	72	18.0
Age at onset <10yrs	39	9.8
>10yrs	361	90.2
Internet Addiction Normal	264	66.0
Mild	114	28.5
Moderate	22	5.5
Depression No	284	71.0
Yes	116	29.0

Table 2: Chi Square test (rural) - Demographic variables & Internet Addiction

Variable	Internet Addiction			Chi-Square	p-Value
	Normal (n = 137)	Mild (n =61)	Moderate (n=2)		
Income <6000	58	23	1	2.979	.561
6001-14999	52	30	1		
>15000	27	8	0		
Avg Duration of access(weekends) <2hrs	39	11	0	3.597	.463
2-5hrs	88	46	2		
>5hrs	10	4	0		
Avg Duration of access(weekdays) <2hrs	62	22	0	3.020	.555
2-5hrs	73	38	2		
>5hrs	2	1	0		
Purpose Education	45	9	0	21.617	.001
Social Media	31	33	1		
Others	12	2	0		
Multiple	49	17	1		
Effect on academics No	36	9	0	3.801	.150
Yes	101	52	2		
Quarrels at home No	114	52	2	.515	.773
Yes	23	9	0		
Place of internet use Home	126	55	2	2.284	.892
School	2	0	0		
Others	3	1	0		
Multiple	6	5	0		
Internet at home No	121	59	2	3.836	.147
Yes	16	2	0		
Money spent <500	107	56	2	5.916	.052
>500	30	5	0		
Age at onset <10yrs	2	0	0	.929	.628
>10yrs	135	61	2		
Institution Government	60	40	0	10.028	.007
Private	77	21	2		
Depression No	84	37	0	3.102	.212
Yes	53	24	2		

Table 3: Chi Square test (Urban) - Demographic variables & Internet Addiction

Variable	Internet Addiction			Chi-Square	p-Value
	Normal (n=127)	Mild (n=53)	Moderate (n=20)		
Income <6000	33	0	0	152.09	<.001
6001-14999	85	0	15		
>15000	9	53	5		
Avg Duration of access(weekends) <2hrs	13	53	2	185.10	<.001
2-5hrs	81	0	0		
>5hrs	33	0	18		
Avg Duration of access(weekdays) <2hrs	107	0	0	152.34	<.001
2-5hrs	16	35	20		
>5hrs	4	18	0		
Purpose Education	14	9	1	12.37	.054
Social Media	17	9	0		
Others	9	0	0		

Multiple	87	35	19		
Effect on academics No	44	18	1	7.24	.027
Yes	83	35	19		
Quarrels at home No	55	32	0	21.54	<.001
Yes	72	21	20		
Place of internet use Home	86	35	19	22.82	.001
School	9	0	0		
Others	20	18	1		
Multiple	12	0	0		
Internet at home No	55	53	3	63.42	<.001
Yes	72	0	17		
Money spent <500	109	35	19	12.39	.002
>500	18	18	1		
Age at onset <10yrs	20	16	1	7.858	.020
>10yrs	107	37	19		
Institution Government	81	18	1	31.29	<.001
Private	46	35	19		
Depression No	90	53	20	26.09	<.001
Yes	37	0	0		

Table 4: Kendall's tau b Correlation

Correlations				
			Depression	**Internet Addiction**
Kendall's tau_b	Domicile	Correlation Coefficient	-.231**	.079
		Sig. (2-tailed)	.000	.105
	Income	Correlation Coefficient	-.222**	.292**
		Sig. (2-tailed)	.000	.000
	Avg Duration of access(weekends)	Correlation Coefficient	.157**	-.157**
		Sig. (2-tailed)	.001	.001
	Avg Duration of access(weekdays)	Correlation Coefficient	-.202**	.444**
		Sig. (2-tailed)	.000	.000
	Purpose	Correlation Coefficient	-.355**	.049
		Sig. (2-tailed)	.000	.288
	Effect on academics	Correlation Coefficient	-.033	.114*
		Sig. (2-tailed)	.506	.020
	Quarrels at home	Correlation Coefficient	-.058	.050
		Sig. (2-tailed)	.248	.303
	Place of internet use	Correlation Coefficient	.021	-.027
		Sig. (2-tailed)	.672	.572
	Internet at home	Correlation Coefficient	.124*	-.146**
		Sig. (2-tailed)	.013	.003
	Money spent	Correlation Coefficient	.030	-.019
		Sig. (2-tailed)	.544	.692
	Age at onset	Correlation Coefficient	-.161**	-.054
		Sig. (2-tailed)	.001	.269
	Institution	Correlation Coefficient	.209**	.121*
		Sig. (2-tailed)	.000	.013
	Depression	Correlation Coefficient		-.160**
		Sig. (2-tailed)		.001
	Internet Addiction	Correlation Coefficient	-.160**	
		Sig. (2-tailed)	.001	
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

Discussion

Our study is the first cross-sectional study done on private and Government school-going children in rural and urban areas in Telangana. In our survey of 400 students, 136 met the criteria of internet addiction as per the internet addiction test. Among students studying in a government school in the rural area, the prevalence was found to be 4% for Mild internet addiction only whereas, in private schools in a rural area, 21% showed mild internet addiction 2% showed moderate internet addiction. In urban areas, students studying in government school showed 18% Mild Internet Addiction, 1% moderate internet addiction. Private schools in the urban area showed the highest prevalence of 35% mild, 19% moderate internet addiction. No cases of Severe Internet Addiction were reported. The probable reason could be an underscoring bias due to the nature of the questionnaire. The reason for the highest prevalence of internet addiction among private schools in urban areas might presumably be easy accessibility of internet and computer availability in private schools. Children studying in a private school may be coming from affluent families and thus increased prevalence. Our study prevalence in urban private schools is in line with the study by Sakthivel et al[9], who did a survey on English medium private schools in Aligarh district that found a prevalence of 35.6 percent. Another comparative study on the prevalence of internet addiction on polish adolescence in urban and rural area[10] showed 0.45% in urban areas 2.9% in rural areas. Another comparable study at Mangalore[11] showed among Urban and rural school-going children (in Indian setting) a very high prevalence of 83.33% among Urban and 78% among rural, in essence, the prevalence was found to be higher among urban than rural.

This type of wide variation in the prevalence of internet addiction among school-going students across Indian and western countries might be attributed to several factors like socio-cultural criteria, rating scales used for the study, study methodology, etc. This infers the urgent need to develop standardized criteria for estimating internet addiction.

Our second objective was to study the correlation between internet addiction and socio-demographic, Internet-related variables across study subjects. In the rural sample, internet addiction was found to be associated with the purpose of the use of the Internet. Internet use for social media was significantly correlated with Internet addiction. Our study is in line with the polish study [10], which is also found in adolescents living in rural areas use the Internet to a great extent for social networking, playing games, and pornography. Adolescence from rural areas showing internet addiction may have the problem of disclosing their personal data to strangers. They may have harmful consequences, especially in rural areas where parental supervision is relatively less given the ignorance of parents. High usage of social media on the Internet among rural school children might presumably be due to ignorance, illiteracy, and inadequate parental supervision in rural areas.

The study found 6-7 factors significantly associated with Internet addiction among the urban sample. In urban areas, adolescent internet use was related to parental income, duration of access to the Internet on weekends or weekdays, the purpose of the use of the Internet. Other predictors of internet addiction among urban adolescents were having Internet at home, quarrels among parents at home, money spent on the Internet, age at onset of internet use. The use of the Internet affected the academic performance of adolescents adversely. Our study is in line with the study by Shaktivel et al.,[9] who also found having internet facility at home, time spent online, and use of social networking sites were the most significant predictors of internet addiction. Adolescents pass through a phase of hormonal disturbances, which makes them try to experiment and explore new things. In doing so, having easy access to the Internet and spending a long time may place them at a greater risk for internet addiction. Having parents who quarrel at home repeatedly also found to be associated with internet addiction. Among our urban study population, it may be presumed that children are finding a convenient alternative to cope with stress by resorting to internet usage, or they may be going into depression becoming withdrawn and resorting to excessive internet usage. The use of the Internet has affected academics to a consistent extent among the urban study sample. This may be explained as children might giving more priority time for Internet-related issues instead of academics.

Early age of onset (>10 years) of use of the Internet is also related to Internet addiction. Earlier the age, more are the chances of developing an addiction. This is not in line with Shaktivel et al.,[9] study, which found internet addiction highly prevalent among the age group of 17 to 19 years. If children start using the Internet at an early age, the chances are that they may get addicted soon. Our study found a positive correlation between internet addiction and the availability of the Internet at home and access to the Internet on weekends.

Overall, 22.5% of the regular internet users reported depression, thus pointing out the possibility of external factors. Among rural government students, 26% have depressive cognition, and in rural private students, 53% have depression. This result is statistically significant. Whereas in the urban government school, 13% have depressive cognition, and in urban private, 24% have depressive cognition. In the whole sample, it was seen that depression was higher in rural (39.5%) as compared to urban (18.5). This could be because of the flawed support system and unmonitored use. Internet addiction was found to be marginally higher in urban (36.5%) compared to rural (31.5%). Our study found a negative correlation between internet addiction and internet availability on weekdays. All depressive cases in adolescence may be checked for internet addiction and vice versa. Yadav[12] study also found a positive correlation between internet addiction and depression, and they did not find any association between gender, education, and socio-economic status of parents.

Out of the 136 students who qualified for having internet addiction, only 19.1% were found to be clinically depressed.

Conclusion

Internet addiction is significantly prevalent among school-going adolescents and needs attention, as seen in this study. Prevalence is widely variable; hence there is a need for standardized criteria. There is an enormous need to give importance to outdoor games like Kabaddi, tennikoit, tennis to adolescents. It is necessary to introduce alternative forms of activities in rural areas so that students are not at higher risk for internet addiction and depression due to lack of facilities. It has to be made compulsory in schools where all high school children suffering from anxiety, depression have to be screened for internet addiction, and all cases of internet addiction to be screened for depression and anxiety. Students coming from problem families, showing sudden academic deterioration, have to be screened for internet addiction. Risk factors for internet addiction vary for adolescents studying in urban area private schools when compared to rural counterparts.

Acknowledgments

The authors sincerely thank all participants for making it possible.

Highlights of our Study

We collected data from urban, rural Government, and private schools to overcome the sampling bias.

Drawbacks of our Study

Our study has a cross-sectional design, and it could not be established whether internet addiction has led to depression or to cope up with depression; they are resorting to internet addiction. Similarly, academic backwardness may be a cause or consequence of internet addiction. Such issues can be addressed with longitudinal study design.

Recommendations for Future

Researchers should be encouraged towards performing studies involving a larger sample size of longitudinal study design.it is also important to develop strategies for identification, treatment, prevention of internet addiction.

Conflict of Interest

Nil

Source of Support

Nil.

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