

A cross sectional study of the prevalence and various factors contributing for internet addiction among college students

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Abstract

Background: Internet has become a wide spread tool and easy accessibility to students for many purposes which has led to increasing prevalence of internet addiction, India being second with more number of users. **Aim of the study:** To evaluate rooting cause of internet addiction in addition to the prevalence. **Materials and Methods:** It is a cross sectional study with 1000 students from both engineering and medical colleges assessing the prevalence and rooting causes of internet addiction by using a semi structured questionnaire and Young's IAT scale. **Results:** Of the 1000 students 490 were males and among them 32% were addicted, females are 510 and 8.2% were addicted. Higher education status of both father (p value=0.017) and mother (p value=0.000) leading to internet addiction in students, students who perceived authoritative parenting being less addictive (p value=0.000) which signifies balancing care is more efficient and more parental interaction with students is protective (p value=0.000). To conclude parental care towards their children is protective against internet addiction which may be influenced by socio economic status and education of parents.

Key Word: internet addiction.

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INTRODUCTION

Internet is a global computer network providing a variety of information and communication facilities. As the connection through it is quicker, the usage has increased by several folds. The developing countries are not spared either due to extreme infiltration of technology even into the remotest corners.¹ According to statistical analysis given by International Telecommunication Union (ITU), internet usage has reached to 48% of world population in

2016 which has once been 6.8% in 2000. Despite India being the one with low penetration (34.8%), it ranks second with more number of users. It shares 13.5% of world's internet users. Internet is useful in many aspects of daily life but on the other hand, it can be used by some to indulge in pornography, excessive gaming, chatting for long hours and even gambling.² Due to its easy accessibility Internet addictive behavior especially among young people tend to develop into a major health issue in near future in rapidly developing countries. So, there have been growing concerns worldwide for what has been labeled as "internet addiction²." The term "internet addiction" was proposed by Dr. Ivan Goldberg in 1995 for pathological compulsive internet use. Internet addiction commonly refers to an individual's inability to control his or her use of the Internet (including any online-related, compulsive behavior), which eventually causes one's marked distress and functional impairment in daily life.¹ It has been reported that internet addiction leads to depression, insomnia, attention deficit, hyper activity, social phobia. The people who are addicted to

this tool have low extra version, low agreeableness low emotional stability.³ There is also impaired functioning at work, poor academic performance, sleep deprivation, poor functioning of immune system, increased risk of carpal tunnel syndrome, back strain, eye strain, even cardiac arrest.⁴ From the reported negative consequences, it appears that Internet addiction can have a variety of detrimental, psychosocial and physical outcomes. So there is a need to elicit the elements rooting Internet addiction. These risk factors¹ may vary basing upon, age, sex, socioeconomic status, parenting, parents having history of any substance abuse, initial years of course work etc.

Review of literature

There has been an explosive growth of internet use not only in India but also worldwide and India ranking 2nd in having more number of internet users it is essential to see the prevalence in the most vulnerable group of people who are adolescents and especially college students. According to the study done by Deepak Goel and Alka Subramanyam in college students they found 74.5% of average users, 24.8% moderate users and 0.7% as addicts.² Another study conducted in Bengaluru college students by Krishnamurthy and Satish Kumar found 34% to be average users and 9% moderate users and no addicts were found.¹ The other study conducted by Venugopal Raju and Anand Reddy in medical college students found 64.4% average users, 11.8% moderate users and 0.4% addicts.⁶ Addiction has been generally defined as uncontrolled, compulsive use of a substance over time, the development of addiction can thus be analyzed along a temporal progression. The process whereby casual use ends and addiction begins has been proposed to involve complex changes in mechanisms of

- 1) Positive reinforcement⁷
- 2) Negative reinforcement⁷
- 3) Hedonic dysregulation⁷⁻⁸

Positive reinforcement and negative reinforcement are type of learning principles which was proposed by B.F. Skinner, who expanded Edward Thorndike's Instrumental conditioning, both of them are American psychologists. And regarding Hedonic dysregulation, Sensitization and counter adaptation are being hypothesized by George F. Koob, Micheal le Moal.⁹ Since the drug addictive behavior and Internet addiction behavior both involve same process,¹⁰ the mechanisms involved in drug addiction are Positive reinforcement, Negative reinforcement and Hedonic dysregulation can be applicable to Internet addiction and these are the learning principles and are been imbedded in our daily life starting from childhood to till date. In this study we apply the role of the above three mechanisms in Internet

addiction. Since our learning begins with our parents we focused on parenting style which is of three types¹² i.e. 1) Permissive, 2) Authoritative, 3) Authoritarian. Authoritative parenting style blends caring tone with structure and consistent limit setting and empowers child's decision making, whereas Authoritarian parenting style emphasizes obedience and dismisses child's feelings, and Permissive parent is affectionate and anxious to please the child.¹² The child who finds Positive reinforcement towards their parents which is seen in Permissive and Authoritative parenting style, it has least effect on internet addiction whereas the child with Authoritarian parenting style has more effect on Internet addiction.¹³ Adolescents with partial internet addiction perceived their parenting style to be more responsive than non-addictive adolescents, while adolescents with partial symptoms and pathological internet addiction have perceived their parents to be more protective and demanding and authoritarian compared to non-addictive adolescents.¹⁴ According to the above studies the least addiction being Permissive and Authoritative parenting style and pathological addiction being Authoritarian parenting style, but according to The Centre for Parenting Education the most balanced and successful parenting style is Authoritative alone and this study focuses on which perceived parenting style by the adolescent is Protective, since the above two studies didn't show the difference in partial addiction in both Permissive and Authoritative parenting style. Similarly the role of the three addictive mechanisms can be implicated for the factors within the family, like parents education status, parent's occupation, socio economic status, substance abuse of the parents, parent-child interaction, and outside the family which are social factors like Peer group influence and education. These factors play a crucial role for the development of a well-balanced life style, managing stress and its complications or become vulnerable to stress and addictive behaviors.

AIMS AND OBJECTIVES

This study was aimed:

- a) To evaluate the prevalence of Internet addiction among college students.
- b) To elicit the probable causes of rooting such an addictive behavior.

MATERIAL AND METHODS

This was a cross sectional study done among students of three professional colleges (one government medical college and two private engineering colleges) in and around Guntur city after obtaining appropriate approval from the institutional ethical committee over a period of three months. Students who have given valid written

consent and who were above 18 years were taken into the study and students with serious medical illness and pre-existing psychiatric disorders were excluded from the study. Totally 1000 students participated in the study after satisfying the inclusion and exclusion criteria. Semi-structured questionnaire comprising of socio demographic characters, purpose of using the internet (by choosing multiple among the options like education, entertainment, shopping, social networking or gaming), questions regarding the parenting style, parental supervision, and any substance abuse by parents was used to collect the

data. Data was entered in MS Excel and analyzed using appropriate statistical tests.

INTERNET ADDICTION TEST (IAT) BY DR.KIMBERLY YOUNG which is a reliable and valid measure of addictive use of Internet was used to measure no addiction (0-19), mild (20-49), moderate (50-79), and severe (80-100) level of Internet Addiction. The excellent psychometric properties of the questionnaire are well-documented in the literature¹. The reason for choosing Young's IAT is it has good internal consistency reliability as well as concurrent validity with an alpha coefficient of 0.93 in similar studies.²

RESULTS

Table 1: Socio-demographic data of study subjects

Gender	Background	Socio-economic status	Place of stay	Parenting styles in study subjects	Year of professional course
Male 490(49.0%) Female 510 (51.0%)	Rural 325 (32.5%) Urban 675 (67.5%)	Lower class 032 (03.2%)	Hostel 415 (41.5%) Day scholar 585 (58.5%)	Authoritarian 083 (08.3%)	1 st year 165 (16.5%)
		Middle class 556 (55.6%)		Authoritative 647 (64.7%)	2 nd year 245 (24.5%)
		Upper class 412 (41.2%)		Permissive 270 (27.0%)	3 rd year 358 (35.8%)
					4 th year 232 (23.2%)

Table 1 describes the socio-demographic data of the study subjects. Totally 1000 students have participated in the study, of them 49% were males, 67.5% were hailing from urban background, 55.8% were day scholars, majority (55.6%) of them belonged to middle socio-economic status followed by upper socio-economic status (41.2%). Regarding the perception of the parenting styles by the students, 64.7% perceived as authoritative, 27% as permissive and 8.3% as authoritarian.

Table 2: Distribution of Internet addiction among study subjects

No addiction	340 (34.0%)
Mild addiction	461 (46.1%)
Moderate addiction	192 (19.2%)
Severe addiction	007 (00.7%)

Table 2 shows the distribution of internet addiction in study subjects. Of the total sample, 34% had no addiction, 46.1% had mild addiction, 19.2% had moderate addiction and 0.7% had severe internet addiction.

Table 3: Comparison of internet addiction with various sociodemographic characteristics

Characteristic	Severity of addiction based on IAT score			p-value
	No addiction	Mild	Moderate to severe	
Gender:				
Male	095	238	157	< 0.005*
Female	245	228	042	
Background:				
Rural	134	142	049	<0.005
Urban	206	319	150	
Place of stay:				
Hostel	211	268	106	>0.005
Day scholar	129	193	093	
Socio-economic status:				
Lower	005	018	009	>0.005
Middle	252	341	144	
Upper	083	102	046	
Year of professional course				
1 st year	062	065	038	>0.005
2 nd year	077	122	046	

3 rd year	122	179	057	
4 th year	079	095	058	
Parenting style:				
Authoritarian	013	023	047	
Authoritative	272	310	065	
Permissive	055	128	087	< 0.005*
Substance abuse in parents				
No Substance abuse	316	414	174	
Alcohol	009	020	013	
Smoking	011	020	008	>0.005
Both	004	007	004	
Parental interaction				
With Internet	000	004	008	
With TV	096	164	103	
With Children	244	293	088	<0.005*

Table 3 shows comparison of between non-addicted and addicted subjects on various socio-demographic and other factors. Gender wise males were addicted to internet more when compared to females which was statistically significant.

Students hailing from urban background had more chances of addiction compared to students from rural background (69.5% in urban and 58.7% in rural students) which was statistically significant. When compared on the perceived parenting style, the authoritarian parenting style perceived students had higher chances to get addicted to internet, followed by permissive type of parenting style and authoritative parenting having the least potential. Statistically significant difference was found between the groups when compared based on the type of parental interaction with their children ($p < 0.05$). There was no difference between the groups when compared on the factor of whether staying in the hostel or a day scholar and also when compared between the year of study, the absence or presence of substance abuse in parents and also the economic status.

DISCUSSION

A number of studies have been conducted on prevalence of Internet Addiction among college students but very few studies have been conducted to identify the rooting causes of Internet addiction. This study is an attempt to know the extent of Internet addiction and to identify the probable elements rooting to addiction. Deepak Goel and Alka Subramanyam investigated in college students and they found 74.5% of mild users, 24.8% moderate users and 0.7% as addicts (study 2). The findings of present study (Table 2) corroborate with the total students with internet addiction and not with the mild and moderate users because their study focused on different streams of students and also very limited age group 16-18 yrs and only past six months of exposure to Internet. This study doesn't corroborate with other studies conducted by

Krishna murthy¹ and Anand Reddy⁶, probably because Krishna Murthy study had post graduate students included and the present study didn't have any post graduate students, Anand Reddy⁶ conducted only in medical colleges but this study had both engineering and medical college students and these could be the confounding factors. The rate of internet surfing is more in males than females and this study corroborates with rest of other studies done by Deepak Goel², Krishna murthy¹ and Anand reddy.⁶ Role of residence could play a part in internet addiction. The study conducted by Vasilis Stavropoulos¹⁵ in Greek high school had found more average users in rural population (87.10%) than urban population (86.30%) and higher addiction potential is seen in students originating in urban population (13.7%) when compared to students coming from rural population (13%), though the present study shows more addiction in urban population (22.2%), it also shows more number of average users in urban population (47.3%) and the values are significant (p value < 0.003) (Table 3). The study done from in Greek has focused in school children and this present study focused on college going students could be the confounding factor. Since the urban area students are more in number and also more exposed to technology there are both high addictive and high average users. The study published by international journal of medical sciences and health in 2014 found that hostlers have higher addiction potential (28.7%) than the day scholars (17.9%) and average users are more from day scholars (82.1%)¹⁶. This present study found different results with higher addiction potential seen in day scholars (22.4) and hostlers comparatively low addictive potential (18.1%) and average users are more in day scholars (46.5%) which correlates with the mentioned study (Table 3). In the present study there are more number of hostlers ($n=585$) who could probably be hailing from rural areas ($n=325$) and the day scholars coming from urban background are more exposed to

technology, this could be the probable reason why our study is showing more addiction potential among day scholars. Internet addiction based on socio economic status conducted by Artemis Tsitsika¹⁸ had found that the addiction percentage is more in middle class (70.9%) followed by high class (20.9%) and least in low class (8.2%), but this is prevalence but not severity, our study focuses on severity of addiction which shows higher addiction potential in low socio economic status (28.1%) followed by upper class (24 %) and upper middle class (19.9%) least addiction seen in middle class (13.1%) and lower middle class (17.2%) (Table 3) and the values are significant (p value <0.05). The severity in low socio economic needs deep research about peer group influences in those particular persons, other than that upper class and upper middle class addiction may be due to ease of usage and least addiction of lower and lower middle class could be due to family factors. The severity of addiction is high in first and fourth years of course when compared to second and third years (Table 3). Our study doesn't correlate with the study conducted by Krishna Murthy and Satish kumar¹ where they found highest percentage of addicts in 2nd (48%) year followed by 1st (38%) and then 3rd (12%) and 4th (2%). The reason could be that study had included both undergraduates and post graduates. The present study shows 4th year being more percentage of addicts (25%), followed by 1st year (23%) then 2nd year (18.8%), least being 3rd year (15.9%) though the values are insignificant, the reason for 4th year and 1st year being more addictive percentage could probably be easy and speed of access to information related to education which could be difficult to go through the text books, which need further investigation. Relationship of parenting style to internet addiction is significant ($p < 0.05$) in our study which showed highest addiction potential in Authoritarian parenting style (56.6%), followed by Permissive parenting style (32.2%) and least potential being Authoritative parenting style (10.1%) (Table 3). Our study doesn't corroborate with the findings of A. Moazedian who found permissive and authoritative groups have lowest problematic internet use¹³, and the study conducted by Huseyindogan found positive correlation between internet addiction and authoritarian, protective- demanding (authoritative) parenting style. So there are conflicting results which shows further research in this aspect¹⁴. The impact of parent's substance use on internet addiction has not been focused previously in any study. In the present study students of the parents who have only smoking as the habit and who do not have any substance abuse have least addiction potential, and those students whose parents are consuming alcohol and both have higher addiction potential, but the values are insignificant (p value >0.05)

(Table 3). Further investigation and research needed about use, abuse and dependency nature of substance in parents leading to internet addiction in students. Parental interaction with their children might prevent them from getting addicted to internet, according to the study conducted by Jian Xu, addiction percentage is inversely proportional to the parent child relationship.¹⁴ If the relationship between father and the adolescent is relatively very bad the addiction percentage is 18.2%, with respect to mother relationship the addiction percentage is 31.2%, which shows more addiction if maternal care is bad. In our study we assessed the interaction of both parents as a whole and found significant (p value <0.05) relationship between parental interaction and internet addiction, with least interaction leading to more addictive potential (66.6%) when parents spend most of time on internet, which is followed by parents spending more time on watching television (28.4%) and least addiction potential when parents are spending adequate time (14.1%) with the adolescent (Table 3).

CONCLUSION:

With the higher advancements in technology the internet addiction has become more rampant and the prevalence being increasing. So we focused to identify the prevalence among the students who are at high risk and elicit the probable causes. Our study reflects that male population and those who are coming from urban areas are more prone to internet addictive behaviors, the probable causes rooting the internet addiction in has been found to be, higher education status of parents and also paradoxically the students who come from low socio economic status are more addicted to internet. So here need to further investigate the probable reasons like peer group influences, type of course and any support receiving from third parties. If both parents are going for work due to improper economic back ground then lack of parental supervision might lead to addictive behaviors and our study did not find significant correlation here further research about nuclear or joint family is needed. Coming to the familial factors the balancing parental style which is authoritative is more protecting from internet addiction which may also reflect parental interaction with students. The more the interaction the less the addiction and less the interaction the more the tendency to search for alternate ways of pleasure like starting to use internet at very early age and due to development of craving advances to restricted sites and virtually interacting with unknown persons privately. In detail research is needed in the students whose parents having substance use according to the level of use where dependency on substance leads to neglect of family and precipitate the

search of alternate means of seeking pleasure outside the family which may lead to adverse consequences.

REFERENCES

1. Krishnamurthy S, Chetlapalli SK. Internet Addiction: Prevalence and risk factors: A cross-sectional study among college students in Bengaluru, the Silicon Valley of India. *Indian Journal on Public Health*, Volume 59, Issue 2, April-June, 2015.
2. Marahatta, *et al.*, Internet Addiction and Associated Factors among Health Sciences Students in Nepal, *J Community Med Health Educ* 5:362. doi:10.4172/2161-0711.1000362.
3. Kuss DJ, Griffiths MD. Online social networking and addiction – A review of the psychological literature. *International Journal on Environmental Research and Public Health* 2011; 8:3528-52.
4. Clyde C. Robinson, Barbara Mandlco, Authoritative, Authoritarian, and Permissive Parenting Practices: Development of a New Measure, *sagepub.com/77/3/819*.
5. Krishnamurthy S, Chetlapalli SK. Internet Addiction: Prevalence and risk factors: A cross-sectional study among college students in Bengaluru, the Silicon Valley of India. *Indian Journal on Public Health*, Volume 59, Issue 2, April-June, 2015.
6. Deepak Goel, AlkaSubramanyam, A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents, *Indian J Psychiatry*. 2013 Apr-Jun; 55(2): 140–143.
7. George F. Koob, Hedonic Homeostatic Dysregulation as a Driver of Drug-Seeking Behavior, 2008 winter; 5(4): 207–215.
8. Cynthia Sau Ting Wu *et al*, Parenting approaches, family functionality, and internet addiction among Hong Kong adolescents, *BMC Pediatrics* (2016) 16:130 DOI 10.1186.
9. Bouton, Mark E, Sunderland, MA, US: Sinauer Associates Learning and behavior: A contemporary synthesis, (2007), Xiii 482 pp.
10. George F. Koob*, Michel Le Moal, Drug Abuse: Hedonic Homeostatic Dysregulation, *Science* 03 Oct 1997, Vol. 278, Issue 5335, 52-58, DOI: 10.1126.
11. Dogan, H., Bozgeyikli, H. and Bozdas, C. (2015). Perceived parenting styles as predictor of internet addiction in adolescence. *International Journal of Research in Education and Science (IJRES)*, 1(2), 167-174.
12. George F. Koob and Michel Le Moal, Addiction and the Brain Antireward System, *Annual Review of Psychology*, Vol. 59: 29-53 (Volume publication date January 2008), DOI: 10.1146.
13. Lin F *et al*, Abnormal white matter integrity in adolescents with internet addiction disorder: a tract-based spatial statistics study, 2012; 7 (1):e30253. doi: 10.1371/journal.pone.0030253. Epub 2012 Jan 11.
14. A. Moazedian *et al*, Parenting Style and Internet Addiction, *J. Life Sci. Biomed.* 4(1): 9-14, 2014.
15. Grover *et al*, Pattern of internet use among professionals in India: Critical look at a surprising survey result, *Industrial Journal Psychiatry*, July-Dec 2010, volume 19, Issue 2, 94-100.
16. Stavropoulos V *et al*, Recognizing internet addiction: prevalence and relationship to academic achievement in adolescents enrolled in urban and rural Greek high schools, *Journal of Adolescence* 2013, 36(3):565-576.
17. Internet Addiction Disorder. Are Medical Students using Internet wisely? *International Journal of Medical Sciences and Health Care*, 2014, volume-2-issue-3, Page 1-5.
18. Xu *et al*, Parent-adolescent interaction and risk of adolescent internet addiction: a population-based study in Shanghai, *BMC Psychiatry* 2014;14:112, DOI: 10.1186/1471-244X-14-112.
19. Artemis Tsitsika *et al.*, Determinants of Internet Addiction among Adolescents: A Case-Control Study, *The Scientific World Journal* (2011) 11, 866–874.
20. Carolyn Duffy Marsan, The-evolution-of-the-internet Network World, article2870267, Feb 9, 2009.
21. RajuSrijampana VG, Anandreddy AR, Prabhath K, Rajana B. Prevalence and patterns of internet addiction among medical students. *Med J DY Patil Univ* 2014; 7: 709-13.
22. Jean Piaget, Part I: Cognitive development in children: Piaget development and learning, September 1964, Volume 2, Issue 3, Pages 176–186.
23. Barry J Everitt and Trevor W Robbins, Neural systems of reinforcement for drug addiction: from actions to habits to compulsion, *Nature Neuroscience* 8, 1481 - 1489 (2005), published online: 26 October 2005 | doi: 10.1038/nn1579.

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