Research Paper

Evaluation of Correlation between Internet Addiction and Psychological Status among First Year Medical Students

Vedalaveni Chowdappa Suresh[1]*, Wilma Delphine Silvia CR[2],
Swarna Buddha Nayok[3]

ABSTRACT

Background: There has been exponential increase in usage of internet in our daily routine, which can foster addictive behaviors. Adolescents and teenagers are vulnerable for such addictive behaviors, which can provide them a way of escape from stress, which they encounter during their prolonged academic career. *Objective:* To determine the internet usage pattern, assess internet addiction and its correlation with psychological status among first year medical students. *Material and Methods:* The study sample consisted of 150 first year medical students. Young's 20-item Internet Addiction Test (IAT) and Depression Anxiety Stress Scale-21[DASS-21], were administered. *Results:* The results showed higher rates of internet usage in addictive pattern (87.4%) among the students with females having milder addiction whereas males had equal distribution of mild to moderate addiction. Further, psychological distress specially anxiety (P<0.001) and depression (P=0.002) had significant correlation with addictive behaviors. *Conclusion:* Medical students undergo stressful situations during their extensive academic career. Psychological disturbances can lead to internet addiction. Hence, measures to be taken to educate and bring about awareness to promote psychological well-being and appropriate internet usage pattern among medical students.

Medical education is a highly stressful course due to vast academic curriculum, which significantly affects both physical and mental health of the undergraduate students (Gupta,

[1] Assistant Professor, Department of Psychiatry, Akash Institute of Medical Sciences and Research Center, Bangalore, India
[2] Professor & HOD, Department of Biochemistry, Akash Institute of Medical Sciences and Research Center, Bangalore, India
[3] Junior Resident, Department of Psychiatry, Akash Institute of Medical Sciences and Research Center, Bangalore, India
*Responding Author

Choudhury, Das, Mondol & Pradhan, 2015; Khan, Mahmood, Badshah, Ali & Jamal, 2006). High stress levels have negative impact on cognitive functioning and learning of the students (Dahlin, Joneborg & Runeson, 2005). The prevalence of significant emotional problems during their academic career has been reported across studies from various countries as follows: 37.3% in India (Abraham, Fan, Xin & Lim, 2009), 41.9% in Malaysia (MOHD SIDIK, Rampal & Kaneson, 2003), 57% in Singapore (Ko, Kua & Fones, 1999), 57% in US study (DUBBERT, GROTHUES & PINTO, 1994). Overwhelming academic curriculum, issues with adjusting to new environment, interpersonal problems along with financial burden, high expectations from family are some of the commonly reported stress factors among medical students (Singh, Prakash, Das & Srivastava, 2016). Although students tend to use various healthy coping strategies like positive reframing, planning, acceptance and active coping to handle stress, unhealthy/avoidant strategies (tobacco, alcohol/drug use) have also been reported in various studies (Firth, 1986; Guthrie et al., 1998; Sreeramareddy et al., 2007). Studies have shown that there is an increase in internet usage among students which have positive correlation with reduced social interaction, loneliness, depression and decreased self-esteem (Ko, Yen, Chen, Chen & Yen, 2005; Kraut et al.,1998). Medical students are vulnerable group to spend large amount of time on internet and various studies report high prevalence of internet addiction among medical students, ranging between 45.5% - 73.3% (Chaudhari, Menon, Saldanha, Tewari & Bhattacharya, 2015; Ranganatha & Usha, 2017; Srijampana, Endreddy, Prabhath & Rajana, 2014;).Psychological distress can lead to avoidant coping mechanisms and increase internet use which may further foster addictive behaviors (McNicol & Thorsteinsson, 2017). Hence, in this study we tried to look at the correlation between internet addiction and psychological status among first year medical students. Methodology:

Sample and procedure:

The study sample consists of 150 first year medical students of batch 2017-18 studying at Akash Institute of Medical Sciences and Research Centre, Bangalore. A written informed consent was taken from the students who were willing to participate in the study. Anonymity was maintained about student's individual identity. A semi-structured proforma consisting of internet usage pattern along with Young's Internet Addiction Test [IAT] questionnaire and DASS 21 were administered among the study group. Approximately 20-30 minutes were required to fill the details of the given study questionnaires. Students were briefly informed about the questionnaires and queries were addressed as when required. Institutional ethical committee clearance was obtained prior to the study.

Instruments:

1.   Young's internet addiction test [IAT]: This instrument was developed by Dr Kimberly Young (Widyanto & McMurran, 2004; Young, 1998). It is a reliable measure of severity of self-reported compulsive internet usage. It consists of 20 items and each question is rated on a 5 point Likert scale from 0 to 5 (0=Does not apply, 1=Rarely, 2= Occasionally, 3=Frequently, 4=Often, 5=Always). Total scores are calculated after adding the score on all

20 items, so as to get the score which ranges from 20 to 100. Based on the scoring results are interpreted as follows 0-19 points= Normal range, 20-49 points=Mild, 50-79 points=Moderate, 80-100 points= Severe internet addictive behaviors. Higher the total scores, greater the level of Internet addiction. The validity and reliability of the Young's IAT has been evaluated in various studies (Frangos, Frangos & Sotiropoulos, 2012; Pontes, Patrão & Griffiths, 2014).

2.   Depression Anxiety Stress Scale 21 [DASS 21]: This scale was developed by Lovibond and Lovibond (Lovibond & Lovibond, 1995). It is used to dimensionally assess the psychological distress of an individual across subscales of Depression [7- items], Anxiety [7-items] and Stress [7-items]. The subjects are asked to rate each question based on their experience in last week on 4 point Likert scale ranging from 0 to 3 (0=Did not apply to me at all- NEVER, 1= Applied to me to some degree, or some of the time- SOMETIMES, 2= Applied to me to a considerable degree, or a good part of time- OFTEN, 3=Applied to me very much, or most of the time- ALMOST ALWAYS). The scores on each subscale are summed, ranging from 0-21 and the total score on each subscale was multiplied by 2 to calculate the final score. The higher scores indicated higher levels of severity.

Statistical analysis:

The Statistical software namely SPSS 18.0, and R environment ver.3.2.2 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc**.** Descriptive and inferential statistical analyses have been carried out in the present study. Results on continuous measurements are presented on Mean ± Standard Deviation (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance. The following assumptions on data are made, 1. Dependent variables should be normally distributed, 2.Samples drawn from the population should be random, and Cases of the samples should be independent. Analysis of variance (ANOVA) has been used to find the significance of study parameters between three or more groups of students, Student t test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters. Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups, Non-parametric setting for Qualitative data analysis. Fisher Exact test used when cell samples are very small.

RESULTS

All the 150 first year medical students took part in this study. The internet usage pattern was assessed using a semi-structured proforma which showed most of the students were residing in hostel/paying guest (70%) and have been using internet for last 1-5years (53.3%). Most used internet for 1-5 hours daily (78%) through mobile/cell-phones (96.7%) and most of them logged in intermittently (70.7%).

Out of 150 students 87.4% had various levels of internet addiction. With respect to gender difference and internet addiction as depicted in Table 1, most of the female students had mild addiction (68.1%) compared to male students (44.1%). However male students showed more moderate addiction (44.1%) than female students (17.6%).

Table 1: IAT distribution according to Gender

IAT	Gender		Total
	Male	**Female**	
Normal	6(10.2%)	13(14.3%)	19(12.7%)
Mild	26(44.1%)	62(68.1%)	88(58.7%)
Moderate	26(44.1%)	16(17.6%)	42(28%)
Severe	1(1.7%)	0(0%)	1(0.7%)
Total	59(100%)	91(100%)	150(100%)

Comparison of gender and psychological status by using DASS 21 is depicted in Table 2. Among 150 students 21.3% had depression out of which male students (28.8%) over seeded the female students (16.5%) and 30.7% had anxiety in which males (42.4%) had significantly more anxiety than female students (23.1%). However, only 4% of students had reported stress.

Table 2: Depression, Anxiety and Stress (DASS 21) according to Gender

	Gender		Total (n=150)	p value
	Male (n=59)	**Female (n=91)**		
Depression				
No	42(71.2%)	76(83.5%)	118(78.7%)	0.072+
Yes	17(28.8%)	15(16.5%)	32(21.3%)	
Anxiety				
No	34(57.6%)	70(76.9%)	104(69.3%)	0.012*
Yes	25(42.4%)	21(23.1%)	46(30.7%)	
Stress				
No	57(96.6%)	87(95.6%)	114(76%)	1.000
Yes	2(3.4%)	4(4.4%)	6(4%)	

+ Suggestive significance (P value: 0.05<P<0.10)

* Moderately significant (P value:0.01<P≤ 0.05)

Comparing IAT with DASS 21 to assess the psychological status among the students and was found to have a statistically significant correlation as shown in Table 3.

Table 3: Comparison of DASS21 (Depression, Anxiety and Stress) score according to IAT levels

DASS21	IAT				Total	P value
	Normal	**Mild**	**Moderate**	**Severe**		
Depression	5.16±3.15	6.07±3.44	9.69±3.60	15.00±0.00	7.03±3.88	<0.001**
Anxiety	4.95±3.27	5.03±3.43	7.93±3.46	11.00±0.00	5.87±3.66	<0.001**
Stress	5.21±5.45	4.66±3.20	8.90±4.60	12.00±0.00	5.97±4.38	<0.001**

** Strongly significant   (P value: P≤0.01)

Comparing the levels of internet addiction to the subscales of DASS21 as shown in Table 4, it was found that only anxiety and depression showed significant values.

Table 4: IAT distribution according to Depression, Anxiety and Stress (DASS21)

IAT	Depression[1]		Anxiety[2]		Stress[3]	
	No	**Yes**	**No**	**Yes**	**No**	**Yes**
Normal	18(15.3%)	1(3.1%)	14(13.5%)	5(10.9%)	18(12.5%)	1(16.7%)
Mild	74(62.7%)	14(43.8%)	69(66.3%)	19(41.3%)	87(60.4%)	1(16.7%)
Moderate	26(22%)	16(50%)	21(20.2%)	21(45.7%)	38(26.4%)	4(66.7%)
Severe	0(0%)	1(3.1%)	0(0%)	1(2.2%)	1(0.7%)	0(0%)
Total	118(100%)	32(100%)	104(100%)	46(100%)	144(100%)	6(100%)

1= P=0.002**, Significant, Fisher Exact Test
2= P<0.001**, Significant, Fisher Exact Test
3=P=0.100, Not Significant, Fisher Exact Test

DISCUSSION

The aim of the study was to find out the correlation between internet addiction and psychological status among first year medical students. To reduce the bias in self reporting on the data provided about addiction and psychological disturbance, anonymity was ensured. Any sort of ambiguity regarding study questionnaires were addressed timely.

In this current study, internet addiction was found to be more common among medical students, as follows mild (58.7%) moderate (28.0%) and severe addiction (0.7%). Most females had milder addiction whereas males had equal distribution of mild to moderate addiction. This study also demonstrated depression and anxiety may positively predict

internet addiction behaviors. Our findings are in consistent with other studies related to depression and internet addiction (Kraut et al., 1998; McKenna & Bargh, 2000; Young & Rogers, 1998). Studies also reported that individuals who have internet addictive behaviors may also have considerable amount of anxiety and apprehension. Hence, they may use internet as way of escape from such psychological disturbances (Nastizaei, 2010).

The prevalence of internet addiction in various studies shows a wide range. The studies which show lower prevalence have considered only moderate to severe levels of addiction and have excluded the mild addictive patterns (Ranganatha & Usha, 2017). However, this study indicates those who had mild addiction pattern also had significant psychological disturbances. Hence, they should not be ignored for assessment and further intervention.

In the present study the strong predictors of higher levels of internet addiction were male gender and poor psychological status which are in consistent with previous studies wherein over use or increase dependency on internet has negative correlation with psychological well-being of students (Cardak, 2013; Ghamari, Mohammadbeigi, Mohammadsalehi & Hashiani, 2011).Systematic review of 20 studies showed a significant and strong association between pathological internet usage and individuals psychopathology, among those commonly noted are depression, anxiety, hostility/aggression, ADHD and obsessive compulsive symptoms (Carli et al., 2013).

Further studies have shown that active intervention in managing stress would reduce or successfully manage the psychological disturbances among medical students. An interventional study entitled "Mind-Body elective" in US medical school showed significant drop in anxiety scores among pre-clinical medical students (Finkelstein, Brownstein, Scott & Lan, 2007). Another study showed teaching stress management and self-care skills are effective intervention for medical students and help them in managing psychological disturbances (Redwood & Pollak, 2007). Mindfulness-based stress reduction (MBSR) has been used to enhance coping skills and reduce emotional distress among medical students (Rosenzweig, Reibel, Greeson, Brainard & Hojat, 2003).

In medical colleges, appropriate measures should be taken to address psychological issues, promote students well-being and enrich them with skills to deal with such stressful situations throughout their medical education.

LIMITATIONS

Since, the study sample is small, results cannot be generalized to a larger population. Subjective reporting of internet usage and psychological disturbances may have biased the study data. A prospective study with a larger sample size and objective data evaluation would be ideal.

CONCLUSION

There has been increase in internet usage pattern among students, which along with psychological disturbances can increase intense behavioral addiction requiring intervention. Hence measures to be taken to educate and bring about awareness to promote psychological well-being and appropriate internet usage pattern among medical students.

REFERENCES

Abraham, R. R., Fan, E. S. Z., Xin, G. N., & Lim, J. T. G. (2009). A report on stress among first year students in an Indian medical school. *South East Asian Journal of Medical Education, 3*(2), 78-81.

Cardak, M. (2013). Psychological well-being and Internet addiction among university students. *TOJET: The Turkish Online Journal of Educational Technology*, *12*(3). 134-141.

Carli, V., Durkee, T., Wasserman, D., Hadlaczky, G., Despalins, R., Kramarz, E., & Kaess, M. (2013). The association between pathological internet use and comorbid psychopathology: a systematic review. *Psychopathology*, *46*(1), 1-13.

Chaudhari, B., Menon, P., Saldanha, D., Tewari, A., & Bhattacharya, L. (2015). Internet addiction and its determinants among medical students. *Industrial psychiatry journal*, *24*(2), 158.

Dahlin, M., Joneborg, N., & Runeson, B. (2005). Stress and depression among medical students: A cross-sectional study. *Medical education*, *39*(6), 594-604.

Dubbert, P. M., Grothues, C. A., & Pinto, B. M. (1994). Stress, coping, and well-being among third-year medical students. *Academic Medicine*, *69*(9), 765-767.

Finkelstein, C., Brownstein, A., Scott, C., & Lan, Y. L. (2007). Anxiety and stress reduction in medical education: an intervention. *Medical education*, *41*(3), 258-264.

Firth, J. (1986). Levels and sources of stress in medical students. *Br Med J (Clin Res Ed)*, *292*(6529), 1177-1180.

Frangos, C. C., Frangos, C. C., & Sotiropoulos, I. (2012). A meta-analysis of the reliability of Young's Internet addiction test. In *Proceedings of the World Congress on Engineering. 1*, 368-371.

Ghamari, F., Mohammadbeigi, A., Mohammadsalehi, N., & Hashiani, A. A. (2011). Internet addiction and modeling its risk factors in medical students, Iran. *Indian journal of psychological medicine*, *33*(2), 158.

Gupta, S., Choudhury, S., Das, M., Mondol, A., & Pradhan, R. (2015). Factors causing stress among students of a Medical College in Kolkata, India. *Education for Health*, *28*(1), 92.

Guthrie, E., Black, D., Bagalkote, H., Shaw, C., Campbell, M., & Creed, F. (1998). Psychological stress and burnout in medical students: a five-year prospective longitudinal study. *Journal of the Royal Society of Medicine*, *91*(5), 237-243.

Khan, M. S., Mahmood, S., Badshah, A., Ali, S. U., & Jamal, Y. (2006). Prevalence of depression, anxiety and their associated factors among medical students in Karachi, Pakistan. *Journal-Pakistan Medical Association*, *56*(12), 583.

Ko, C. H., Yen, J. Y., Chen, C. C., Chen, S. H., & Yen, C. F. (2005). Gender differences and related factors affecting online gaming addiction among Taiwanese adolescents. *The Journal of nervous and mental disease*, *193*(4), 273-277.

Ko, S. M., Kua, E. H., & Fones, C. S. (1999). Stress and the undergraduates. *Singapore medical journal*, *40*(10), 627-630.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being?. *American psychologist*, *53*(9), 1017.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour research and therapy*, *33*(3), 335-343.

McKenna, K. Y., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the Internet for personality and social psychology. *Personality and social psychology review*, *4*(1), 57-75.

McNicol, M. L., & Thorsteinsson, E. B. (2017). Internet addiction, psychological distress, and coping responses among adolescents and adults. *Cyberpsychology, Behavior, and Social Networking*, *20*(5), 296-304.

MOHD SIDIK, S., Rampal, L., &Kaneson, N. (2003). Prevalence of emotional disorders among medical students in a Malaysian university. *Asia Pacific Family Medicine*, *2*(4), 213-217.

Nastizaei, N. (2010). The Study of Relationship between the General Health and Internet Addiction. *Journal of Oriental Medicine*, *11*(1), 57-63.

Pontes, H. M., Patrão, I. M., & Griffiths, M. D. (2014). Portuguese validation of the Internet Addiction Test: An empirical study. *Journal of Behavioral Addictions*, *3*(2), 107-114.

Ranganatha, S. C., & Usha, S. (2017). Prevalence and pattern of internet addiction among medical students, Bengaluru. *International Journal Of Community Medicine And Public Health*, *4*(12), 4680-4684.

Redwood, S. K., & Pollak, M. H. (2007). Student-led stress management program for first-year medical students. *Teaching and Learning in Medicine*, *19*(1), 42-46.

Rosenzweig, S., Reibel, D. K., Greeson, J. M., Brainard, G. C., &Hojat, M. (2003). Mindfulness-based stress reduction lowers psychological distress in medical students. *Teaching and learning in medicine*, *15*(2), 88-92.

Singh, S., Prakash, J., Das, R. C., & Srivastava, K. (2016). A cross-sectional assessment of stress, coping, and burnout in the final-year medical undergraduate students. *Industrial psychiatry journal*, *25*(2), 179.

Sreeramareddy, C. T., Shankar, P. R., Binu, V. S., Mukhopadhyay, C., Ray, B., & Menezes, R. G. (2007). Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. *BMC Medical education*, *7*(1), 26.

Srijampana, V. V. G. R., Endreddy, A. R., Prabhath, K., & Rajana, B. (2014). Prevalence and patterns of internet addiction among medical students. *Medical Journal of Dr. DY Patil Vidyapeeth*, *7*(6), 709.

Widyanto, L., & McMurran, M. (2004). The psychometric properties of the internet addiction test. *Cyberpsychology & behavior*, *7*(4), 443-450.

Young, K. S. (1998). Internet addiction: The emergence of a new clinical disorder. *Cyberpsychology & behavior*, *1*(3), 237-244.

Young, K. S., & Rogers, R. C. (1998). The relationship between depression and Internet addiction. *Cyberpsychology & behavior*, *1*(1), 25-28.

How to cite this article: Suresh VC, Wilma Delphine SCR, Nayok SB (2018). Evaluation of Correlation between Internet Addiction and Psychological Status among First Year Medical Students. *International Journal of Indian Psychology*, *6*(2), 16-24. DIP: 18.01.003/20180602, DOI: 10.25215/0602.003