

INTERNET ADDICTION AMONG CLINICAL MEDICAL STUDENTS IN SOUTH-EASTERN NIGERIA

Chinyerem Cynthia Nwachukwu¹, Ifeoma Anne Njelita², Gabriel Ifeanyi Eyisi³,
Chijioke Amara Ezenyeaku⁴, Amaechi Chinedu Nwachukwu⁵.

^{1,2,3}Department of Community Medicine & Primary Health Care, Chukwuemeka Odumegwu Ojukwu University, Awka, Nigeria.

⁴Department of Community Medicine & Primary Health Care, Nnamdi Azikiwe University, Nnewi, Nigeria. ⁵Department of Surgery, Chukwuemeka Odumegwu Ojukwu University, Awka, Nigeria.

DOI: <https://doi.org/10.5281/zenodo.7924345>

Published Date: 11-May-2023

Abstract: Internet is an important part of our daily lives and its usage has grown rapidly worldwide. The internet is used for a variety of activities including studying, playing online games, sending emails and engaging in real time chatting. Internet addiction among 187 clinical medical students in Chukwuemeka Odumegwu Ojukwu University (COOU), Awka, Nigeria was studied. Males were 108 (57.8%) and the age group 21-24 years had the highest proportion of students (53.4%). Majority, 186 (99.5%) had access to the internet and 66 (35.3%) spent 4 hour or more daily on the internet. The average monthly expenditure on internet access ranged from N200 to N10,000 (approximately \$0.44 - \$22.22) with modal expenditure of N1,000 (\$2.22). Those that frequently, often or always neglected their studies to stay online were 20 (10.7%), 20 (10.7%) and 11(5.9%) respectively. Results also showed that 1.1%, 20.3% and 41.7% were severely, moderately and mildly addicted to internet use, respectively. Younger age <25 years was significantly associated with internet addiction (p <0.05). There was no significant association between sex, class level, residence and internet addiction (p > 0.05). The most commonly used gadget for browsing the internet was mobile phone, 179 (95.7%). Awareness on the effects of internet addiction should be created.

Keywords: Internet, addiction, medical students, Awka, Nigeria.

I. INTRODUCTION

Internet is now an essential part of our daily lives with its usage spreading rapidly all over the world. This has contributed in qualifying the world as a 'global village'. Internet facilities are available virtually everywhere, in homes, schools, malls, libraries and internet cafes. Internet is used for schoolwork, playing online games, sending emails and engaging in real-time chatting. Alongside these benefits, problems associated with internet use are increasingly being reported. It has been suggested that excessive internet use could represent addictive behavior with mental health implications.

The internet has revolutionized communications and methods of doing business by allowing various computer networks around the world to interconnect. The Internet emerged in the United States in the 1970s but became visible to the general public in the early 1990s. By 2020, approximately 4.5 billion people, or more than half of the world's population, were estimated to have access to the internet. This number is growing, largely due to the prevalence of smart technology where computer-like devices like smartphones can be used.[1] Many young people are compulsive in their use the internet and this has made some of them to exhibit signs of addictive behavior that are similar to substance use, alcoholism and pathological gambling.[2]

Internet addiction is one of the harmful effects of the internet and a new form of psychological disorder causing both physical and mental health problems. Internet addiction is the inability of someone to control his or her use of the internet

which eventually may lead to some psychological and social problems in the person's life. The concept of internet addiction was popularized by Young who described addictive internet use as an impulse control disorder that does not involve intoxicant and is similar to pathological gambling.[3] Some of the signs of internet addiction include preoccupation with the internet, use of the internet in an increasing amount of time in order to achieve satisfaction, repeated unsuccessful efforts to control, cut back or stop use, as well as feelings of restlessness, depression or irritability when attempting to stop use.[3]

Researchers observed that most internet dependent users are young people especially university undergraduates. Young internet users between 19 to 24 years of age are more at risk of becoming internet addicts than older users.[4] Furthermore, university students are considered as high-risk groups for internet addiction. They pointed out the possible reasons for this to include available free time, no monitoring because of being away from parents and at times attempts to get away from tough university routines.[3] Studies have also identified benefits of internet use. These include increase in communication with fellow students and their lecturers, increased access to libraries and educational databases, as well as increasing study hours and study habits. However, despite these benefits of internet use, it has been argued that university students are at a high risk of developing internet addiction.[5]

There are variations in estimates of internet addiction. A multi-centre study across seven European countries found that about 1% of adolescents exhibited Internet Addictive Behaviour (IAB) and an additional 12.7% were at risk for IAB. The two groups combined form a group of adolescents with Dysfunctional Internet Behavior (DIB), 13.9%. The prevalence of DIB was significantly higher among boys than among girls (15.2% vs. 12.7%, $p < 0.001$).[6] In a study on internet addiction among Korean adolescents, 1.6% were diagnosed as Internet addicts, while 38.0% were classified as possible Internet addicts. The prevalence of internet addiction did not vary with gender.[7] A survey in the United States found a prevalence of Problematic Internet Use of 0.7%.[8] An internet addiction rate of 43.7% was found among university students in Iran. Out of this 39.6% are within the mild addiction level whereas 4.1% are in the moderate addiction level. There was no case of severe internet addiction established among the subjects.[9]

Despite the fact that the internet is a rich information resource that can support medical education, internationally, many reports show that medical students predominantly use the Internet for non-medical and educational purposes such as social media, email and surfing. A research on Internet use among medical students and residents of a medical college of North India ranked medical students use of the internet as e-mail (55.3%), surfing (42.1%), education (39.5%), chatting (25.4%) and entertainment (13.2%).[10] A study on computer and internet use among Iranian medical students reported that use of the internet by the students was largely for non-scientific purposes, a third did so for recreational purposes. Approximately 35% use the internet for e-mail, 5% for reading electronic newspapers and 32% use it as a resource for searching for medical articles. Almost 40% visited medical sites while they were surfing the web.[11]

On application of information and communication technology by medical students in Chandigarh, India, the study showed that 65.95% of the students use the internet for scanning the available literature, while 63.82% use it for the purposes of sending and receiving e-mail. Also 34.04% use it for online chatting with their friends.[12]

A study in Guangzhou, China showed the prevalence of internet addiction to be 26.50%, with severe addiction being 0.96. Severe Internet Addiction was not common, but mild Internet addiction was reported by more than one fourth of all participants.[13] A study done in Mumbai, India found that about 74.5% were moderate (average) users. Using Young's original criteria, 0.7% were found to be addicts.[14] A study in India among first year medical students found that 42.1% had no internet addiction, 36.4% who had mild levels, and 54.8% who had moderate levels of internet addiction. Those who had higher levels of internet addiction showed reduced subjective happiness.[15]

A multi-centre study in South India showed that 27% of medical students met criterion for mild addictive internet use, 10.4% for moderate addictive internet use, and 0.8% for severe addiction to internet. Internet addiction was higher among medical students who were male, staying in rented accommodations, spent more than 3 h per day on internet and had psychological distress.[16] Another study in India 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.[17] A study among medical students in India found that 64.4% were average users, 11.8% were possible addicts, 0.4% were addicts, and 23.2% were less than average users. Males were significantly higher users. About 63% of the medical students used mobile phones to access the internet.[18]

In a study among medical students, the mean length of internet use was 3.34 ± 1.80 h/day, with a range of 30 minutes to 12 hours. The study found that 58.87% of students had internet addiction, of which 51.42% were mild addicts while 7.45% were moderate addicts. There was no severely addicted student. Significantly associated factors were male gender, staying

in private accommodation, lesser age of first internet use, using mobile for internet access, higher expenditure on internet, staying online for longer time, and using internet for social networking, online videos, and watching website with sexual content.[19] The prevalence of Problematic Internet Use (PIU) among undergraduates in Greece was 34.7%. PIU was significantly associated with gender, parental family status, grade of studies during the previous semester, staying or not with parents, enrollment of the student in an unemployment program, and whether the student paid a subscription to the Internet. Significant risk factors for PIU were being male, enrollment in unemployment programmes, presence of negative beliefs, visiting pornographic sites, and playing online games.[20]

A study carried out among medical students in Uturu, Nigeria showed that 5 (2.5%) of subjects had severe internet addiction based on the scoring system used in this study, that is, those with scores 80-100. Out of these 5, 2 (1%) were females and 3 (1.5%) were males. [n=200]. On the prevalence of severe internet addiction, 2.3% of the 15-20 year age group, 2.7% of the 21-25 year age group and 2.22% of the 25-30 year age group had severe internet addiction.[21] A study among university undergraduates in Nsukka, Nigeria revealed that 29.0%, 20.0% and 10.2% of the respondents showed mild, moderate and severe internet addiction, respectively.[21]

II. RESEARCH METHODS

2.1 Study Area

The study area was Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka, Anambra State, South East Nigeria. The hospital is located between UNIZIK junction and the state secretariat, and it is surrounded by many business centers, cyber cafes and viewing centers.

2.2 Study Design

A cross sectional descriptive study was carried out.

2.3 Study Population

Clinical medical students in 400, 500 and 600 levels.

2.4 Sampling Method

A minimum sample size of 141 was calculated.

2.5 Data Collection

Data was collected using self-administered, semi-structured questionnaire consisting of questions on demographic data, internet usage and internet addiction test proposed by Young in 1996. The Internet addiction test is based on the DSIM-IV (Diagnostic and Statistical Manual of Mental Disorder-IV) for pathological gambling and alcoholism. Internet addiction test is a 20-item questionnaire which measures the extent of an individual's problems due to the use of the internet in daily routine, social life, productivity, and sleeping patterns. The questionnaire's core concept is to assess how you feel while using the internet, how much it affects your mindfulness when the internet is not there.

The 20-item questionnaire is rated against a five-point Likert scale. The 5 response categories are: rarely, occasionally, frequently, often, always, and they are given a value of 1 to 5. The total score for the Internet Addiction Test ranges from 20 - 100. Answer values for each respondent's questions are summed up, and it gives the overall score for the internet addiction for that individual.

A score of <30 - *Normal Internet user*

30-49 - *Mild Internet addiction*

50-79- *Moderate Internet addiction*

80-100 - *Severe Internet addiction*

2.6 Data Analysis

Data was analyzed using statistical package for social sciences (SPSS) version 20.0.

2.7 Ethical Consideration

Participation was voluntary. Verbal consent was obtained from the respondents.

III. RESULTS

Table 1 shows that 108 (57.8%) of the respondents were male, and the modal age range was 21-24 (53.4%). Most of the respondents lived in their rented accommodation 94 (50.3%), while 81 (43.3%) resided in the hostel.

Table 1: Sociodemographic characteristics of respondents

Characteristics	N=187 Frequency (n)	Percentage (%)
Age		
17-20	23	12.2
21-24	100	53.4
25-28	51	27.4
29-32	10	5.4
33-36	3	1.6
Sex		
Male	108	57.8
Female	79	42.2
Level		
400	116	62.0
500	42	22.5
600	29	15.5
Residence		
Home	12	6.4
Hostel	81	43.3
Private accommodation	94	50.3

Almost every participant reported having access to the internet, 186 (99.5%).

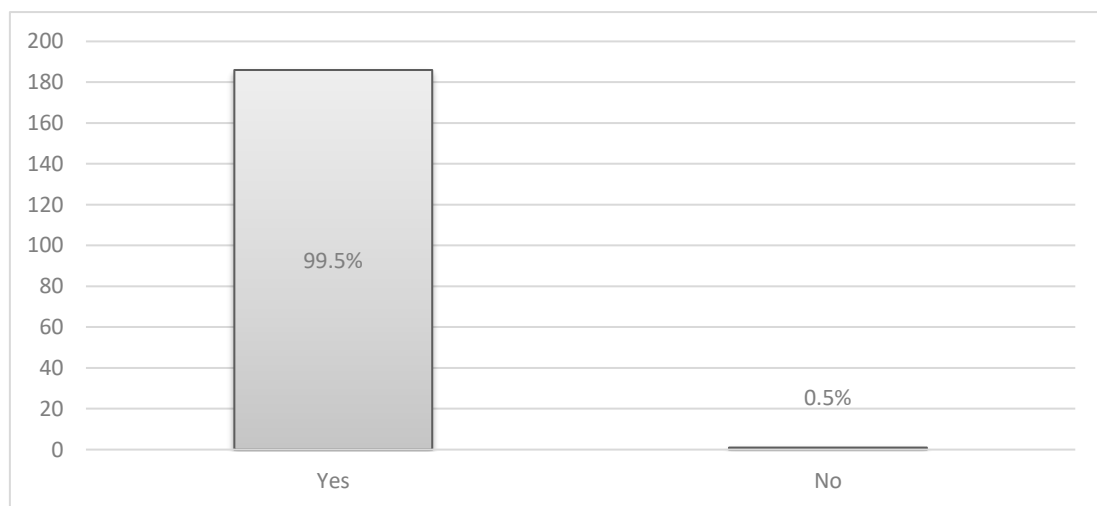


Figure 1: Access to internet

Table 2 shows that the most commonly used gadget for browsing the internet was mobile phone by 179 (95.7%) of respondents.

Table 2: Gadgets used by respondents to access the internet

Variable	N=187 Frequency (n)	Percentage (%)
Mobile phone		
Yes	179	95.7
No	8	4.3

Laptop

Yes	134	71.7
No	53	28.3

Ipad/tablet

Yes	106	56.7
No	81	43.3

Desktop

Yes	64	34.2
No	123	65.8

figure 2 showed that the range of monthly expenditure on internet access was N200 to N10,000 (\$0.44 - \$22.22) and modal expenditure was N1,000 (\$2.22) by 62 (33.2%).

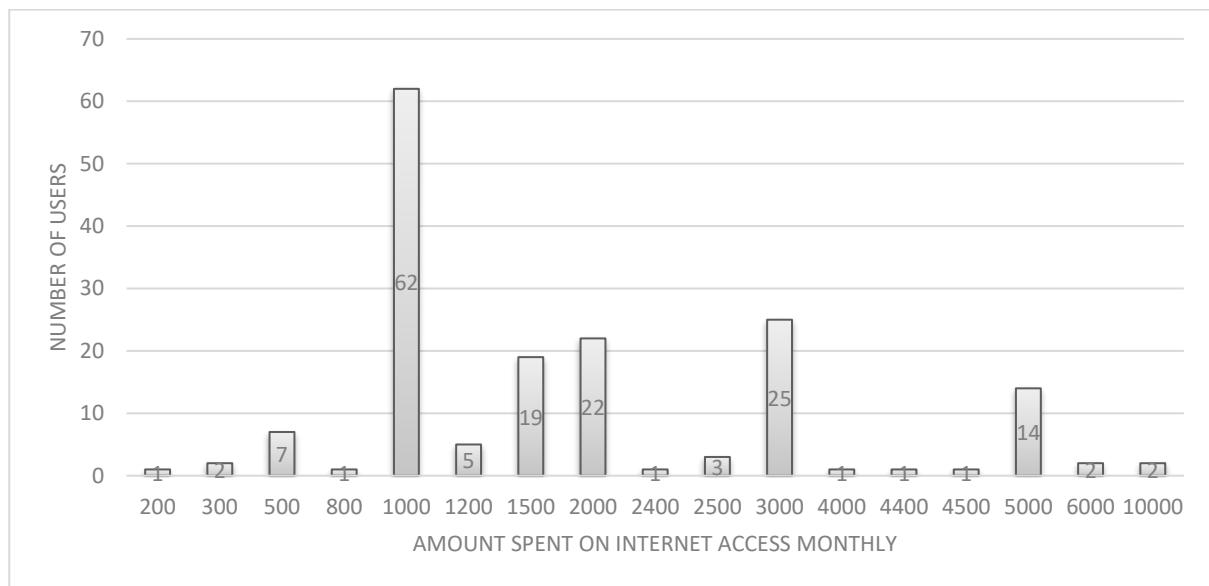


Figure 2: Average monthly amount spent on internet access by respondents

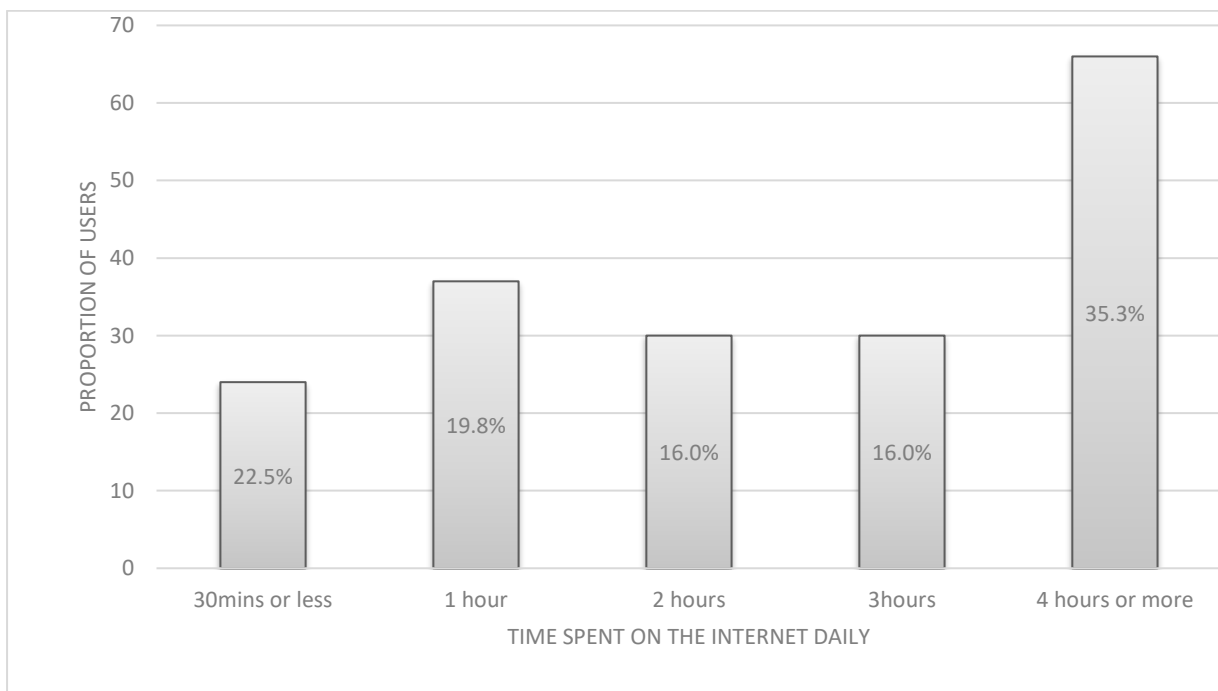


Figure 3: Average time spent on the internet daily by respondents

Table 3: Respondents' response to some questions on the Internet Addiction Test

Variable	N=187 Frequency (n)	Percentage (%)
How often do you stay longer on the internet than intended?		
Rarely	40	21.4
Occasionally	63	33.7
Frequently	29	15.5
Often	28	15.0
Always	27	14.4
How often do you neglect studies to say online?		
Rarely	67	35.8
Occasionally	69	36.9
Frequently	20	10.7
Often	20	10.7
Always	11	5.9
How often do people complain on the amount of time you spend online?		
Rarely	107	57.2
Occasionally	42	22.5
Frequently	14	7.5
Often	11	5.9
Always	13	7.0
How often do you check your email before something else?		
Rarely	97	51.9
Occasionally	40	21.4
Frequently	21	11.2
Often	17	9.1
Always	12	6.4
How often do you become defensive/secretive when ask what you do online?		
Rarely	102	54.5
Occasionally	47	25.1
Frequently	20	10.7
Often	11	5.9
Always	7	3.7
How often do you block out disturbing thought about life with thoughts of internet		
Rarely	76	20.6
Occasionally	58	31.0
Frequently	20	10.7
Often	15	8.0
Always	17	9.1
How often do start to anticipating when to go online		
Rarely	75	40.1
Occasionally	54	28.9
Frequently	25	13.4
Often	17	9.1
Always	15	8.1
How often do you fear that life without internet will be boring and empty?		

Rarely	69	36.9
Occasionally	40	21.4
Frequently	21	11.2
Often	20	10.7
Always	37	19.8
How often do you become annoyed if someone bothers you when online?		
Rarely	107	57.2
Occasionally	50	26.7
Frequently	8	4.3
Often	14	7.5
Always	8	4.3
How often do you lose sleep due to internet?		
Rarely	90	48.1
Occasionally	50	26.7
Frequently	22	11.8
Often	16	8.6
Always	9	4.8
How often do you prefer to spend more time online to go outing?		
Rarely	90	48.1
Occasionally	47	25.1
Frequently	20	10.7
Often	12	6.4
Always	18	9.6

Table 4: Internet addiction test score of respondents

Variable	Score	N=187 Frequency (n)	%
Normal internet user	<30	69	36.9
Mild internet addiction	30-49	78	41.7
Moderate internet addition	50-79	38	20.3
Severe internet addition	80-100	2	1.1
	Total	187	100

Table 5: Test of association between level of internet addiction and some variables

Variable	Internet addiction		X ²	p-value	
	Normal – mild	Moderate -severe			
Sex	Male	88 (81.5%)	20 (18.5%)	1.254	0.263
	Female	59 (74.7%)	20 (25.3%)		
Age	< 25 years	90 (73.2%)	33 (26.8%)	6.323	0.012*
	≥ 25 years	57 (89.1%)	7 (10.9%)		
Class	400	87 (75.0%)	29 (25.0%)	2.452	0.294
	500	35 (83.3%)	7 (16.7%)		
	600	25 (86.2%)	4 (13.8%)		
Residence	Hostel	66 (81.5%)	15 (18.5%)	0.701	0.473
	Outside hostel	81 (76.4%)	25 (23.6%)		

*Statistically significant

IV. DISCUSSION

This study showed that 1.1%, 20.3% and 41.7% of the respondents were severely, moderately and mildly addicted to the internet. Similarly, an internet addiction rate of 43.7% was found among university students in Iran. Out of this, 39.6% were mildly addicted whereas 4.1% were moderately addicted. There was no case of severe internet addiction established among the subjects.[9] Also, a study in Guangzhou, China showed the prevalence of internet addiction to be 26.50%, with severe addiction being 0.96%. The prevalence of severe internet addiction was small, but mild internet addiction was reported by more than one fourth of all participants.[13] A study done in Mumbai, India identified 74.5% as moderate (average) users. Using Young's original criteria, 0.7% were found to have severe addiction.[14] A study done in India among first year medical students obtained results that are consistent with our findings as 42.1% had no internet addiction, 36.4% had mild levels, and 54.8% had moderate levels of internet addiction.[15]

In a multi-centre study in Europe, the prevalence of Dysfunctional Internet Behaviour (DIB) was significantly higher among boys than among girls.[6] Our study found no association between sex and addiction. Similarly, the prevalence of internet addiction did not vary with gender in a study done in Korea.[7] However, a multi-centre study in South India showed that internet addiction was higher among medical students who were male, staying in rented accommodations and spent more than 3 hours per day on the internet.[16] Another study in India 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.[17] The prevalence of Problematic Internet Use (PIU) among undergraduates in Greece was significantly associated with gender.[20] Significantly associated factors were male gender, staying in private accommodation, lesser age of first internet use, using mobile for internet access, higher expenditure on internet, staying online for longer time, and using internet for social networking, online videos, and watching website with sexual content.[19]

Our study found that young age <25 years was significantly associated with internet addiction. This finding collaborates with that of a study in South Africa where young internet users between 19 to 24 years of age were more at risk of becoming internet addicts than older users.[4] Our study found that 35.3% of students spent 4 hour or more and 16.0% spent 3 hours on the internet daily. Similarly, another study found that the mean length of internet use was 3.34 ± 1.80 h/day, with a range of 30 minutes to 12 hours.[19] Another study also found that the majority of the medical students, about 63%, used mobile phones to access the internet.[18]

A common finding in these studies was that about 1% had severe addiction while about half of the respondents have some degree of addiction. Awareness creation on the effects of internet addiction is very important.

REFERENCES

- [1] Kahn, Robert and Dennis, Michael Aaron. "Internet". Encyclopedia Britannica, 4 May. 2023, <https://www.britannica.com/technology/Internet>. Accessed 8 May 2023.
- [2] Bidi F, Namdari-Pejman M, Kareshki H, Ahmadnia H. The mediating role of metacognition in the relationship between internet addiction and general health. *Addiction & health*. 2012;4(1-2):49.
- [3] Watson JC. Internet addiction diagnosis and assessment: Implications for counselors. *Journal of Professional Counseling: Practice, Theory & Research*. 2005 Sep 1;33(2):17-30.
- [4] Thatcher A, Goolam S. Defining the South African Internet 'addict': Prevalence and biographical profiling of problematic Internet users in South Africa. *South African Journal of Psychology*. 2005 Nov;35(4):766-92.
- [5] Suhail K, Bargees Z. Effects of excessive Internet use on undergraduate students in Pakistan. *Cyber Psychology & Behavior*. 2006 Jun 1;9(3):297-307.
- [6] Tsitsika A, Janikian M, Schoenmakers TM, Tzavela EC, Olafsson K, Wójcik S, Macarie GF, Tzavara C, EU NET ADB Consortium, Richardson C. Internet addictive behavior in adolescence: a cross-sectional study in seven European countries. *Cyberpsychology, behavior, and social networking*. 2014 Aug 1;17(8):528-35.
- [7] Kim K, Ryu E, Chon MY, Yeun EJ, Choi SY, Seo JS, Nam BW. Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: a questionnaire survey. *International journal of nursing studies*. 2006 Feb 1;43(2):185-92.

- [8] Aboujaoude E, Koran LM, Gamel N, Large MD, Serpe RT. Potential markers for problematic internet use: a telephone survey of 2,513 adults. *CNS spectrums*. 2006 Oct;11(10):750-5.
- [9] Hashemian A, Direkvand-Moghadam A, Delpisheh A, Direkvand-Moghadam A. Prevalence of internet addiction among university students in Ilam: a cross-sectional study. *International Journal of Epidemiologic Research*. 2014 Dec 1;1(1):9-15.
- [10] Lai P, Malhotra R, Ahuja C, Ingle GK. Internet use among medical students and residents of a medical college of North India. *Indian Journal of Community Medicine*. 2006 Oct 1;31(4):293.
- [11] Ghabili K, Alizadeh M. Computer and Internet use among Iranian medical students. *Medical education*. 2008 Jan;42(1):114.
- [12] Kumar P. Application of information and communication technology (ICT) by medical students: A study of Government Medical College, Chandigarh, India. *International Journal of Library and Information Science*. 2012 Mar;4(3):45-51.
- [13] Xin, M., Xing, J., Pengfei, W., Houru, L., Mengcheng, W., & Hong, Z. (2018). Online activities, prevalence of internet addiction and risk factors related to family and school among adolescents in China. *Addictive Behaviors Reports*, 7, 14–18.
- [14] Goel D, Subramanyam A, Kamath R. A study on the prevalence of internet addiction and its association with psychopathology in Indian adolescents. *Indian J Psychiatry*. 2013 Apr;55(2):140-3.
- [15] Suresh VC, Silvia WD, Kshamaa HG, Nayak SB. Internet addictive behaviors and subjective well-being among 1st-year medical students. *Archives of Mental Health*. 2018 Jan 1;19(1):24.
- [16] Anand N, Thomas C, Jain PA, Bhat A, Thomas C, Prathyusha PV, Aiyappa S, Bhat S, Young K, Cherian AV. Internet use behaviors, internet addiction and psychological distress among medical college students: A multi centre study from South India. *Asian journal of psychiatry*. 2018 Oct 1;37:71-7.
- [17] Suresh VC, CR WD, Nayok SB. Evaluation of Correlation between Internet Addiction and Psychological Status among First Year Medical Students.
- [18] Srijampana VV, Endreddy AR, Prabhath K, Rajana B. Prevalence and patterns of internet addiction among medical students. *Medical Journal of Dr. DY Patil University*. 2014 Nov 1;7(6):709-13.
- [19] Chaudhari B, Menon P, Saldanha D, Tewari A, Bhattacharya L. Internet addiction and its determinants among medical students. *Industrial psychiatry journal*. 2015 Jul;24(2):158.
- [20] Frangos CC, Frangos CC, Sotiropoulos I. Problematic internet use among Greek university students: an ordinal logistic regression with risk factors of negative psychological beliefs, pornographic sites, and online games. *Cyberpsychology, Behavior, and Social Networking*. 2011 Jan 1;14(1-2):51-8.
- [21] Prevalence of Internet Addiction among Medical Students in Abia State University, Uturu, Nigeria
- [22] Okwaraji FE, Aguwa EN, Onyebueke GC, Shiweobi-Eze C. Assessment of internet addiction and depression in a sample of Nigerian university undergraduates. *International Neuropsychiatric Disease Journal*. 2015;4(3):114-22.