



Assessment of Internet Addiction and Depression in a Sample of Nigerian University Undergraduates

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Authors' contributions

This study was jointly conducted by all the authors. Authors FEO, ENA, GCO and CSE contributed to the conception, literature review, data collection and proof reading of the manuscript. Author ENA did the analysis. Author FEO did the discussion, while all the authors read and approved the final manuscript.

Article Information

DOI: 10.9734/INDJ/2015/19096

Editor(s):

(1) Pasquale Striano, Pediatric Neurology and Muscular Diseases Unit, University of Genoa, G. Gaslini Institute, Genova, Italy.

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Complete Peer review History: <http://sciencedomain.org/review-history/10012>

Original Research Article

Received 25th May 2015
Accepted 18th June 2015
Published 2nd July 2015

ABSTRACT

Background: Report has revealed that with about 45.04 million people that use the internet in Nigeria, the country has been named among the 20 top countries that use the internet in the world. Furthermore on a population penetration of 170.2 million people Nigeria's internet penetration ratio was put at 26.5 percent.

Objective: This study investigated internet addiction and depression in a sample of Nigerian university undergraduates.

Study Design: This is a descriptive cross sectional study design.

Place and Duration of Study: This study was carried out in Enugu, South East Nigeria between February and April 2015.

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Method: The Internet Addiction Test (IAT) by Young, the Beck Depression Inventory version two (BDI-2), by Beck et al. and a socio demographic questionnaire were used to assess 510 Nigerian university undergraduates for prevalence of internet addiction and depression.

Results: The data revealed that 29.0% of the respondents showed mild internet addiction, 20.0% showed moderate internet addiction, while 10.2% had severe internet addiction. Furthermore 20.0% and 4.5% of the respondents had mild and moderate depression respectively. No case of severe depression was registered. Equally gender and year of study showed significant differences in internet addiction and depression.

Conclusion: This study observed the prevalence of internet addiction and depression in a sample of Nigerian university undergraduates. It is recommended that if it will be possible university administration with the help of internet providers may try to work out how to monitor the rate of internet usage among undergraduates.

Keywords: Internet addiction; depression; university undergraduates.

1. INTRODUCTION

In Nigeria report has revealed that with about 45.04 million people that use the internet Nigeria has been named among the 20 top countries that use the internet in the world. Furthermore according to this report, on a population penetration of 170.2 million people Nigeria's internet penetration ratio was put at 26.5 percent [1].

The internet has been described as the most effective tool in all areas of science, business, education, culture and politics. Generally young people are seen as the most active users of the internet [2]. It has variously been argued that many young people are compulsive in the way they use the internet and this has made some of them to exhibit signs of addictive behavior that are similar to alcoholism, substance addiction and pathological gambling [3,4]. Bidi and his colleagues [5] have posited that 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 seen as 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 popularised by Young [6] who described addictive internet use as an impulse control disorder that does not involve intoxicant and is akin to pathological gambling. Young [7] further pointed out some of the signs of internet addiction to 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.

Researchers observed that most internet dependent users are young people especially university undergraduates. For instance Thatcher and Goolman [8] argued that young internet users between 19 to 24 years of age are more at risk of becoming internet addicts than older users. Furthermore Young and Rogers [9] opined that 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.

In their own contribution Suhail and Barges [10] pointed out some benefits of the internet to university students. These according to them include increase in communication with fellow students and their lecturers plus increase 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 [11].

Furthermore reports reveal that internet addiction has become a global problem. However there are variations in international estimates of internet addiction among young people. For instance Tsitsika et al. [12] in their multicenter study reported an addiction rate of 7.9% and 22.8% among their subjects. Reporting from Korea, Kim et al. [13] argued that 1.6% of Korean adolescents had reported to suffer from internet addiction. Equally Aboujaoude et al. [14] reported that every one in eight US adults suffer from internet addiction. Ataollah et al. [15] in their own study reported an internet addiction rate of

43.7% among university students in Ilam western Iran. Out of this 39.6% are within the mild addiction level whereas 4.1% are in the moderate addiction level. There is no case of severe internet addiction established among the subjects.

According to DSM-IV-TR [16] some of the signs of depression include deep sorrow or grief, insomnia, loss of appetite, unpleasant mood, hopelessness, irritability, self dislike and suicidal tendencies. Rabkin [17] further argued that depression was associated with isolated lives, the absence of pleasure as well as social and vocational impairment.

Yang et al. [18] posited that low self esteem, low motivation, fear of rejection and the need for confirmation from others which according to them are commonly observed in depressive people may result in frequent use of the internet and that the interactive functions of the internet may lead to internet addiction in individuals with these characteristics.

Internet addiction has been reported to be associated with a number of psychological disorders including anxiety disorders, shyness, personality disorders and depression among young people including university undergraduates [19,20,21]. Furthermore Ozgul et al. [22] reported a positive correlation between levels of depression and internet addiction among university students.

Other researchers found that internet addiction increases the risk of depression among adults and is associated with depression and suicide among adolescents [23,24].

Research on internet addiction and psychological problems is still emerging and no such empirical study has been reported within the study area in particular, be that at it may the present study assesses internet addiction and depression in a sample of Nigerian university undergraduates. The study will help to provide baseline data on the negative effects of internet addiction on the psychological health of young people in general and university undergraduates in particular who have been identified by various studies to be at the receiving end of internet overuse. It will also make recommendations on how to reduce the misuse of the internet by university students with a view to preventing them from getting addicted and possibly developing depressive symptoms which has been identified to be associated with internet addiction.

2. MATERIALS AND METHODS

2.1 Study Location

The study was conducted at the University of Nigeria Nsukka located in south- eastern part of Nigeria. This university was the first indigenous university established by the federal government of Nigeria in 1960. Since then it has been a great citadel of learning restoring the dignity of man in both character and learning. The university has two main campuses located at Nsukka and Enugu both in the eastern part of the country. This study was conducted at the Enugu campus of the university with a population of well over five thousand undergraduate and post graduate students. However, only undergraduate students were used for the present study because they constitute the bulk of the student population.

2.2 Subjects

Subjects for the study are male and female undergraduates at the Enugu campus of the University of Nigeria who studied various disciplines and were in different years of their studies. Using the formula for prevalence study as developed by Taylor [25] a total of 510 undergraduates out of the over five thousand undergraduates were selected and surveyed for the study using a simple random procedure.

Inclusion criteria were undergraduate students of the university of Nigeria Enugu campus who gave their consent to participate in the study, while exclusion criteria were postgraduate students of university of Nigeria Enugu campus and undergraduate students who did not consent to participate and those who were sick as at the time of data collection.

All the subjects were assured that their responses would be treated with the strictest confidence and no respondent would be identified in person, thereby assuring them of the anonymity of their responses. Ethical permit for the study was obtained from University of Nigeria Teaching Hospital Ethics Committee.

2.3 Data Collection and Instruments

The authors collected the data for the study with the help of three psychology interns between February and April 2015. The subjects were given a self-administered instrument that was made up of three parts. Part one contained basic socio-demographic information such as age, gender, religion and current year of study. Part

two was the Beck Depression Inventory, second edition (BDI-2) developed by Beck et al. [26]. The BDI-2 was used to assess depression among the respondents. It is a well-known self-report measure used to assess depression and its severity. The validity and reliability of the BDI-2 has been well established across a broad spectrum of clinical and non-clinical population. The BDI-11 positively correlated with the Hamilton Depression rating scale $r=0.71$, has a one week test-retest reliability of $r=0.93$ and an internal consistency $\alpha = .91$ [27,28,29].

The BDI-2 is a 21-item self report questionnaire, it is scored by adding the ratings of the 21 items. Each item is scored on a 4-point scale ranging from 0-3. The maximum total score is 63. The questions in the BDI-2 cover a broad area of an individual's feelings such as sadness, self-dislike, past failure and loss of pleasure. Sample questions include: I do not feel sad; I feel sad much of the time; I am sad all the time and I am so sad or unhappy that I can't stand it.

In the BDI-2 total scores ranging from 0-9 indicates absence of depression; 10-18 indicates mild depression; 19-29 indicates moderate depression while scores ranging from 30-63 indicates severe depression. The BDI-2 has been used for studies in Nigeria [30].

Part three was the Young's internet addiction test (IAT) developed by Young [6]. This 20 item test is one of the most popular standardized instruments for assessing internet addiction among a wide range of population groups including university undergraduates. The scale was originally scored on a 5-point Likert scale, but was later modified to a 6-point scale following the addition of one item [31]. The six point version of the scale was used for this study. The response options are: 0= does not apply; 1= rarely; 2 = occasionally; 3 = frequently; 4 = often and 5 = always. Obtainable scores ranged from 0-100. Scores ranging from 0-30 indicate normal internet use; 31-49 indicate mild internet addiction; 50-79 indicate moderate internet addiction and scores ranging from 80-100 indicate severe internet addiction [32]. Many studies reported its test-retest reliability to be satisfactory, ranging between $r = .73$ and $r = .88$, as well as excellent internal consistency ranging between $\alpha = .88$ and $\alpha = .93$ [33,34,35].

2.4 Data Analysis

Data for the study was analysed using the Statistical package for social science, SPSS

version 16.0. Means, standard deviations, percentages and the chi square-test were performed to find relationships between variables. The level of significance chosen for this study was $p \leq 0.05$ at 95% confidence interval.

3. RESULTS

Age of respondents ranged from 16-26 years (mean age = 20.81; SD = 2.75). 53.5% were males; most of the respondents were Christians (98.2%). The respondents were in various years of study ranging from first to final years; however, most of them were in their first year (27.5%), closely followed by those in their third year (25.5%), 20.2% were in second year, 7.5% were in fourth year, 4.7% were in the fifth year and 14.7% were in the final year.

With regard to internet addiction 29.0% showed mild addiction, 20.0% showed moderate addiction while 10.2% showed severe addiction. However a greater number of them (40.8%) showed no sign of addiction to the internet. Furthermore majority 75.5% did not show any sign of depression, but 20.0% and 4.5% indicated mild and moderate depression respectively. There was no instance of severe depression noticed Table 1.

Results further showed that significantly more males were addicted to the internet than females at the three levels of internet addiction. (Mild: 31.9%: 25.7%; moderate: 24.9%: 14.3% and severe: 12.8%: 7.2% respectively). This was significant $X^2 = 28.2$; $p \leq 0.01$.

Equally significantly ($X^2 = 6.740$; $p = 0.034$) more males who were addicted to the internet were more depressed at the mild and moderate levels. There was no instance of severe depression noticed among the genders Table 2.

There were variations in the levels of internet addiction and depression among the subjects with regard to years of study.

More final year students showed signs of severe addiction than the rest, whereas those in their third years showed more signs of mild and moderate addiction. This association between internet addiction and year of study was significant $X^2 = 47.613$; $p \leq 0.01$.

More fourth year students showed signs of moderate depression just as more third year

students showed signs of mild depression. This was also significant. Interestingly there was no case of severe depression noticed Table 3.

Table 1. Distribution of socio-demographic variables, internet addiction and depression among the respondents

Age	Frequency (n=510)	Percent
16-20	252	49.4
21-26	258	50.6
Gender		
Male	273	53.5
Female	237	46.5
Religion		
Christian	501	98.2
Atr	4	0.8
Others	5	1.0
Year of study		
First year	140	27.5
Second year	103	20.2
Third year	130	25.5
Fourth year	38	7.5
Fifth year	24	4.7
Final year	75	14.7
Internet addiction		
No addiction	208	40.8
Mild addiction	148	29.0
Moderate addiction	102	20.0
Severe addiction	52	10.2
Depression		
No depression	385	75.5
Mild depression	102	20.0
Moderate depression	23	4.5
Severe depression	None	None

ATR = African traditional religion

Table 2. Internet addiction and depression according to gender

Internet addiction	Gender	
	Male (n1=273)	Female (n2=237)
No addiction	83 (30.4)	125 (52.7)
Mild addiction	87 (31.9)	61 (25.7)
Moderate addiction	68 (24.9)	34 (14.3)
Severe addiction	35 (12.8)	17 (7.2)
	$X^2 = 28.2;$ $p \leq 0.01 *$	
Depression		
No depression	195 (71.4)	190 (80.2)
Mild depression	61 (22.3)	41 (17.3)
Moderate depression	17 (6.2)	6 (2.5)
Severe depression	None	None
	$X^2 = 6.740;$ $p = 0.034 *$	

* = Significant

Table 4 shows that there is a significant relationship between internet addiction and depression.

4. DISCUSSION

Results of this study had revealed the presence of internet addiction and depression among the university undergraduates that acted as respondents. The prevalence of internet addiction and depression varied among the respondents. 29.0% were in the range of mild addiction, 20.0% were in the range of moderate addiction, whereas 10.2% were in the range of severe internet addiction. With regard to depression 20.0% and 4.5% of the respondents were mildly and moderately depressed respectively. There was no case of severe depression recorded. This pattern of results had been variously documented by researchers across the globe [2,3,4]. Due to the compulsive way young people especially university students use the internet for various purposes; it may be very easy for them to get addicted to the internet. Though the internet assists university students in their academic endeavours, still a good number of them reported to use the internet for reasons other than useful academic activities. These include web surfing, pornography, chatting and video games that has been reported to be characterised by dry eyes, headache, sleep disturbance, depression and poor academic performance [36]. Furthermore 20.0% and 4.5% of the undergraduates were found to be mildly and moderately depressed respectively. This pattern of finding was in line with previous reports which have documented many psychological problems arising from internet addiction by university undergraduates including depression. For instance Ozgul and his colleagues [22] reported high prevalence of depression in a sample of internet addicted university students who took part in their study. The pattern of association between internet addiction and depression among university undergraduates observed in this study corroborates Ozgul et al's findings.

The age of respondents in this study ranged from 16-26 years. This is not surprising as previous reports revealed that many young internet users are more at risk at becoming addicted to the internet than older users. This may be due to the availability of free time, lack of monitoring by parents or care givers and as a way of getting away from tough university routines.

Table 3. Internet addiction and depression according to year of study

Internet addiction	Year of study	First N=140	Second N=103	Third N=130	Fourth N=38	Fifth N=24	Final N=75
None		75 (53.6)	47 (45.6)	54 (41.5)	10 (26.3)	4 (16.7)	18 (24.0)
Mild		36 (25.7)	29 (28.2)	43 (33.1)	13 (34.2)	8 (33.3)	19 (25.3)
Moderate		20 (14.3)	21 (20.4)	25 (19.2)	8 (21.1)	6 (25.0)	22 (29.3)
Severe		9 (6.4)	6 (5.8)	8 (6.2)	7 (18.4)	6 (25.0)	16 (21.3)
(A)*							
Depression							
None		118 (84.3)	85 (82.5)	102 (78.5)	25 (65.8)	11 (45.8)	44 (58.7)
Mild		18 (12.9)	17 (16.5)	24 (18.5)	11 (28.9)	10 (41.7)	22 (29.3)
Moderate		4 (2.8)	4 (1.0)	4 (3.0)	2 (5.3)	3 (12.5)	9 (12.0)
Severe		None	none	None	None	none	None
(B)*							

(A)* $\chi^2 = 47.613$; $P \leq 0.01$ *(B)* $\chi^2 = 40.195$; $P \leq 0.01$ *

* = Significant

Table 4. Relationship between internet addiction and depression

		Depression			Total
		Non depressed	Mild	Moderate	
Internet addiction	No addiction	196 (50.9)	11 (10.8)	1 (4.3)	208
	Mild	99 (25.7)	41 (40.2)	8 (34.8)	148
	Moderate	61 (15.8)	31 (30.4)	10 (43.5)	102
	Severe	29 (7.5)	19 (18.6)	4 (17.4)	52
Total		385	102	23	510

 $\chi^2 = 71.906$; $p \leq 0.01$ *

*Significant

More males were found to be addicted to the internet with associated depressive symptoms. This result corroborates earlier findings which documented gender differences in internet addiction. For instance Gnisci et al. [37] reported that male college students were more addicted than their female counterparts. Other researchers equally reported similar findings [38,39].

Variations in internet addiction and depression were also noticed among the subjects with respect to years of study with more final year students showing signs of severe addiction and levels of depression than the others. This may be because final year students may be preparing for their final year examinations and this may make them stay more on the internet in the process of searching for materials to help them write up their assignments as well as prepare very well for their examinations. In the course of this they may tend to become addicted to the internet more than other undergraduates who are not in their final years.

Significant difference was noticed between internet addiction and depression. This may imply that as one gets more attached to the

internet the possibility of becoming depressed may increase. Furthermore this finding was in line with previous documented reports which had posited a direct connection between internet addiction and depression as well as anxiety and stress [22,40].

5. CONCLUSION

The study revealed the presence of internet addiction and depression among university undergraduates. It also showed more male than female prevalence in internet addiction and a direct relationship between internet addiction and depression. If it will be possible university administration with the help of internet providers may try to work out how to monitor the rate of internet usage among undergraduates as reports has indicated that internet addiction apart from predisposing students to depression may also lead to poor academic performance.

There is also the need to screen university undergraduates for internet addiction and depression with a view to isolating those who are addicted and depressed so that relevant psychological interventions can be put in place to help prevent them from braking down completely

with full blown mental illness as this may likely impact negatively on their academic pursuit.

The collection of data for this study from only one campus of the university will limit the generalization of the results beyond the study location, however since this is the first research on internet addiction and depression among university undergraduates within the study area in particular and Nigeria in general efforts will be made to include more campuses and universities in future research.

CONSENT

All the subjects gave their consents to participate in the study.

ETHICAL CLEARANCE

Ethical clearance for this study was obtained from the university of Nigeria teaching hospital ethics committee.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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