BENIN
JOURNAL OF
POSTGRADUATE
MEDICINE

Volume 14, Issue 1, October – December 2023
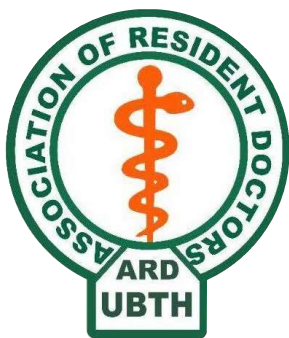
BJPM
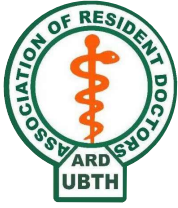
BENIN JOURNAL OF POSTGRADUATE MEDICINE

Original Article

Knowledge, Prevalence And Pattern Of Internet Addiction Among In-school Adolescents In Benin City

*Joy Chinyere Nwaogwugwu[1], Ewere Scholastica Ehinze[1], Vincent Yakubu Adam[1,2], Andrew Ifeanyichukwu Obi[1,2], Ndubuisi Mokogwu[1,2], Essy Clementina Isah[1,2], Grace Sagay, Halimat Shaibu[2], Tope Taiwo[2], Prosper Ukiri[2], Jeffery Uzoyare Otighigbo[2].

AFFILIATION:

[1]Department of Public Health and Community Medicine, University of Benin Teaching Hospital, Benin City, PMB 1111, Edo State.
[2]Department of Community Health, University of Benin, Benin City, PMB 1154, Edo State.

CORRESPONDING AUTHOR

Dr. Joy Chinyere Nwaogwugwu, Department of Public Health and Community Medicine, University of Benin Teaching Hospital, Benin City, Edo State, Nigeria.
E-mail: nwaogwugwu.cp@gmail.com

ABSTRACT

Background: The prevalence of internet addiction (IA) varies worldwide and several factors have been linked to internet addiction including age, knowledge of internet addiction, internet accessibility, pattern of internet use and the duration of time spent on the internet. IA can occur among all age groups; however, adolescents are particularly vulnerable because of the mental, emotional, and social developments associated with this period. Therefore, this study was carried out to assess the knowledge, prevalence, pattern and predictors of Internet addiction among in-school adolescents in Benin City, Nigeria in order to raise awareness of Internet addiction and posit solutions to reduce its prevalence among adolescents.

Methods: This was an institution based cross-sectional study conducted among 645 adolescents in Benin City using multi stage sampling method. Data was collected using an adapted structured interviewer administered questionnaire and analysed using IBM SPSS Version 25.0. The level of statistical significance was set at p < 0.05 while the 95% confidence interval was constructed around the odds ratio and this indicated the precision of the estimate.

Results: The study revealed that less than half 301(46.7%) had heard of internet addiction out of which only 85 (28.7%) had good knowledge. Over two third 323 (68.6%) of the respondents had internet addiction, out of which 53.2% had mild internet addition, 42.8% had moderate internet addiction, while 4.0% had severe internet addiction. Socio-demographic characteristics found to be significantly associated with the prevalence of internet addiction were age and class of respondents.

Conclusion: The study revealed that most students had fair knowledge about internet addiction while more than half of them were addicted to the internet. There is therefore need to improve the knowledge of the students about internet addiction and its effect, set time limits for internet usage and seek treatment when internet use becomes problematic.

Keywords: *Adolescents, Internet Addiction, Internet, Benin City, Nigeria*

INTRODUCTION

There are about 5.16 billion Internet users worldwide, and majority are adolescents and young adults. [1] In Africa, there are about 570 million internet users and 152.7 million users in Nigeria. [1] [2] Globally, 71% of the young people aged 15 to 24 years use the internet and are 1.24 times likely to connect to the internet than the rest of the population.[2] In Nigeria as at 2022, the internet penetration rate (an indicator that expresses the percentage of the total population that uses the internet) reached 55.4 percent. Also, Nigeria had about 33 million social media users with the most preferred being WhatsApp, Facebook and Instagram.[3]

The internet provides numerous possibilities such as establishing risk-free social connections with people, privacy, unlimited access to prohibited content, involvement in unique games, and and this has increased utilization of the internet worldwide.[4] Internet freedom in Nigeria is among the most established in Africa and this has been determined using three domains namely obstacles to access, limits on content, and violations of user rights. Nigeria is currently ranked fifth position for internet freedom in Sub-Saharan Africa[3] and this has blurred the boundaries between functional and dysfunctional internet use, leading to a thin line between internet use and internet addiction as some individuals cannot control their use of internet, whereas others can limit their use.[5] Despite the potential benefits the Internet offers, it is prone to excessive and uncontrolled use, thus resulting in a condition called Internet addiction (IA)[6]. Internet addiction (IA) results in an individual's inability to control his or her own use of the internet thereby causing disturbances in the fulfilment of work, social, and personal commitments.[4]

Good knowledge of internet addiction and its consequences has been shown to be effective in reducing the prevalence of internet addiction among adolescents.[7] In Turkey, a program called the Healthy Internet Use Program was developed to educate adolescents and their parents on internet addiction, and this intervention resulted in a decrease in the rate of internet addiction among adolescents.[7] Conversely, poor knowledge of internet addiction has been linked to increased prevalence of internet addiction.[8] Globally, knowledge of internet addiction varies as studies in Tirupati and Mangalore, India showed that only 2% and 30% of the adolescents had good knowledge of internet addiction respectively.[9] Another study conducted among adolescents in Dehradun, India, showed that 75% had fair knowledge of the consequences of IA, 23% had good knowledge, and 2% had poor knowledge.[10] In a study conducted in Benin City, Nigeria, 81.4% of adolescents had good knowledge of internet addiction, 93.3% understood the meaning of addiction, and 93.6% understood the meaning of internet addiction.[8]

The prevalence of internet addiction varies worldwide. China, India, and the United States, have witnessed over two-fold increase in their prevalence rates of IA (from 15% average to 28% average) since IA gained global recognition in 2014.[11] In low- and middle-income countries (LMIC), the prevalence of IA among adolescents in Africa is 40.3%, North Africa has a prevalence of 44.6%, and sub-Saharan Africa has a prevalence of 31.0%.[12,13] In Nigeria, a study done in Ibadan observed a prevalence rate of 32%.[6]

Several factors have been linked to internet addiction and they include age, knowledge of internet addiction, internet accessibility, pattern of internet use and the duration of time spent on the internet. Studies have shown that adolescents who spend 4 to 6 hours on the internet are two times more likely to develop IA[6] and those who have

easy access to the internet, and those younger than 13 years have a higher likelihood of developing IA.[15,16] Adolescents spend over 4 hours daily on social media sites like YouTube, Instagram, and Facebook and also engage in online gaming, cybersex/pornography, and online gambling. This pattern of internet use is linked to increased risks for developing internet addiction and its attendant sequelae. [11,17]

IA can occur among all age groups; however, adolescents are particularly vulnerable to IA because of the mental, emotional, and social developments associated with this period.[13] The consequences of IA cannot be overemphasized as IA has been linked to several negative health outcomes ranging from physical, to mental, academic, and economic outcomes. It poses a significant challenge to the wellbeing, productivity, and longevity of adolescents.[11] IA has generally been strongly associated with reduced sleeping time, a tendency for postponing sleep, insomnia, excessive tiredness, anxiety, depression, suicide, and attention deficit hyperactivity disorder.[6] Sleep impairment caused by internet addiction impairs adolescents' immunity against diseases, thus, placing them at higher risk of communicable and non-communicable diseases. Sleep impairment and deprivation also causes excessive fatigue and impaired intellectual functioning.[18] IA leads to other consequences like poor school performance and school absenteeism which affects their present and future productivity.[18] Also internet addiction has been linked to several mental health conditions like anxiety, attention deficit disorder, phobias, schizophrenia, aggressive behaviours, cognitive dysfunction, obsessive compulsive disorder, depression, suicidal ideation, and suicide among adolescents.[11,19] IA and its consequences also incur huge financial cost for adolescents and their families.[20]

Therefore, there is a need for the public, most especially adolescents, to understand what internet addiction is, and what its consequences are if the increasing problem of IA is to be appropriately addressed. This study was carried out to assess the knowledge, prevalence, pattern and predictors of Internet addiction among in-school adolescents in Benin City, Nigeria in order to raise awareness of Internet addiction and posit solutions to reduce its prevalence among adolescents.

METHODOLOGY

Study Area/Design

This was an institution based cross-sectional study conducted among adolescents in Edokpolor Grammar School, New Benin, Benin City, Edo State. Edo state has a total population of 3,233,366 as at the 2006 census and a projected population of 4,634,480 as at 2022. The predominant ethnic group is Benin, the people are mainly traders and majority practice Christianity. The population of adolescents in Edo state is 734,492, making up about 28% of the population. The population of adolescents in Benin City is 227,226, making about 21% of the population.[21,22] Oredo LGA has ninety-nine (99) secondary schools which consists of 14 state schools and 85 private schools.[23] Edokpolor Grammar School is a state secondary school founded in 1960. It has 2 principals, one for the junior secondary school and one for the senior secondary school and a total of 2,544 students.

Study Population

The study was carried out from 2022 to 2023. The study population comprised of Secondary school students of Edokpolor Grammar School in Benin city, Edo State, Nigeria. The minimum sample size required was calculated using the Cochran's formula for descriptive study ($n = Z^2pq/d^2$).[24] For

the purpose of this study, p was taken as 30% which represents the proportion of adolescents who had internet addiction in Bhutan.[25] After adjusting for nonresponse at a rate of 10%, and a design effect of 1.5, minimum sample size calculated was 539 although, a sample size of 645 was used. Adolescents who met the inclusion criteria were recruited and a multi stage sampling method consisting of four stages was used in selecting the respondents.

Stage one involved using a simple random sampling method through balloting to select one secondary school from a list of all the public secondary schools in Oredo LGA retrieved from Edo State Ministry of Education board and used as a sampling frame. In stage two, the selected school was stratified into classes (JSS1 – SSS3) and a random sampling technique by balloting was used to select one arm from each stratum. In stage three, a systematic sampling technique was used to select the students in each who participated in the study. A sampling interval was computed for each class. Sampling interval = N/n (where N = allocated sample size of senior secondary school students in each selected school, n = sample size allocated to each class. The class register of each class was used as the sampling frame from which the first student was selected using simple random sampling and subsequently students were selected using the sampling interval until the required sample size was achieved. To ensure that each class was represented proportionally based on their size, the total number of secondary school students (JS1- SS3) was obtained from the Principal. Proportional allocation of the sample was done so that the classes with more students had more allocated to them. The sample size to be allocated to each class was calculated by multiplying the sampling fraction (obtained by dividing the population of students in each selected class with the total population of students in the school) with the sample size. Sample size for each class = Sampling fraction x class population.

DATA MANAGEMENT

Data collection tools and methods
Data was collected using a structured interviewer administered questionnaire adapted from the smart phone addiction scale (SAS) and Internet Addiction Test (IAT) to assess the knowledge, pattern and prevalence of Internet addiction.[26] Survey questionnaire was divided into sections based on the socio demographic data and the objectives of the study. The questionnaire was used to seek information on the socio-demographic characteristics of the respondents, pattern of internet use, knowledge and prevalence of Internet Addiction.

Scoring
The occupations of the parents were categorized into skill levels 0 to 4 according to the modified ILO-ISCO-08 classification.[27] Respondents' caregivers were grouped into low, medium, and high socioeconomic status based on their skill level and level of education. Low socio-economic status scores of 1 – 2; Middle socioeconomic status scores of 3 – 4; High socioeconomic status scores of ≥ 5[28]

A total of 20 questions were used to assess knowledge, a score of 1 was assigned for correct responses and a score of 0 for incorrect responses, giving a total score of 20. Scores were computed into percentages and the respondents classified as having good knowledge if they scored 70 and above, fair knowledge if they scored 50-69 and poor knowledge if they scored less than 50 percent.[29]

The prevalence of internet addition was assessed using the Internet Addiction Test comprising of 20

questions and based on 5-point Likert scale ranging from 0 to 5. '0' is assigned for 'never happened', '1' for 'rarely', '2' for 'occasionally', '3' for 'frequently', '4' for 'very often' and '5' for 'always' giving a maximum score of 100 and a minimum score of 0. The scores were converted to percentages and scores from 0-30% were categorized as not addicted, scores from 31-49% were categorized as mild level of addition, scores from 50-79% were categorized as moderate level of addiction and scores of 80-100% were categorized as severe level of addiction. However, mild, moderate and severe levels of addiction were categorized together as presence of addiction.[13]

DATA ANALYSIS

Data obtained was cleaned, screened for completeness and accuracy, coded and entered into International Business Machines Corporation (IBM) Statistical Package for the Social Sciences (SPSS) Version 25.0 spread sheet for analysis. Univariate analysis was performed for all variables. Continuous data like age was summarized using the mean and standard deviation. Categorical data such as ethnicity, class and level of education of parents were presented as frequencies and percentages in a table or represented using other appropriate graphical methods. Bivariate analysis was done to determine the association between social demographic variables (age, sex, class and religion), knowledge and prevalence of internet addiction. Multivariate analysis was performed to ascertain the determinants of internet addiction. The level of statistical significance was set at $p < 0.05$ while the 95% confidence interval was constructed around the odds ratio and this indicated the precision of the estimate.

ETHICAL CONSIDERATION

Permission was taken from Ministry of Education, Edo State, SUPEB and the Principals of the Secondary School, while respondents below 18 years gave assent before participating in the study. Confidentiality of information was guaranteed and maintained by withholding vital information like names and addresses.

RESULTS

About half of the respondents 372 (57.7%) and 346 (53.5) were within the age groups 15-19 years, with a mean age of 14.5 ± 2.4 years and females respectively. A greater proportion 164 (25.4%) of students were in SS3 and the predominant ethnic group was Benin, represented by 307 (47.6%). Majority of the respondents 618 (95.8%) practiced Christianity while 25(3.9%) were from monogamous homes 591(91.6%) and nuclear families 564 (87.4%). Majority 563 (87.3%) of respondents' parents were married while 414 (64.2%) of them were from a household size of ≤6. Four hundred and five (62.8%) of them had 3 siblings or less, while majority 551(85.4%) of the respondents were between first and third positions in the family and resided with both parents as represented by 493(76.4%). Majority 403(62.5%) of respondents' caregivers fell within the middle socioeconomic class, 208 (32.2%) of them were of high socioeconomic class while only 34 (5.3%) of them belonged to the low socioeconomic class.

TABLE 1: SOCIODEMOGRAPHIC CHARACTERISTICS OF IN-SCHOOL ADOLESCENTS IN NEW BENIN, BENIN CITY

Variables	Frequency (n=645)	Percent
Age (years)		
10-14	305	47.3
15-19	327	50.7
20-24	13	2.0
Mean age ± SD (14.5 ± 2.4)		
Sex		
Male	300	46.5
Female	346	53.5
Class		
JSS 1	103	16.0
JSS 2	75	11.6
JSS 3	85	13.2
SSS 1	111	17.2
SSS 2	107	16.6
SSS 3	164	25.4
Religion		
Christianity	618	95.8
Islam	25	3.9
ATR	2	0.3
Ethnic group		
Benin	307	47.6
Esan	104	16.1
Igbo	78	12.1
Yoruba	77	11.9
Urhobo	39	6.0
Etsako	21	3.3
Others*	19	1.0
Family Structure		
Monogamy	591	91.6
Polygamy	54	8.4
Family Type		
Nuclear	564	87.4
Extended	81	12.6
Primary caregiver		
Both Parents	493	76.4
Mother	117	18.1
Guardian	25	3.9
Father	10	1.6
Caregiver's economic status/class		
High	208	32.2
Middle	403	62.5
Low	34	5.3

*Hausa, Efik, Isoko, Ijaw, Igala, Ika

Although a little greater than half 376 (58.3%) of the respondents owned a smartphone, majority 471 (73.0%) of them reported to have used the internet. About half 253(53.8%) of the respondents started using the internet between ages 12-14, and mean age at first internet use was 12.16±1.64 age. Majority 331(70.3%) got money for data subscription from their parents and less than half 217 (46.1) of the respondents spent < N1000 on monthly subscription. One hundred and ninety one (44.9%) of the respondents used the internet on a daily basis, and 166 (39.1%) spent less than 1 hour on the internet per day. Majority 359 (76.2%) of the respondents were active on Facebook and over half 351(54.4%) engaged in chatting with friends online.

Only 301(46.7%) had heard of internet addiction out of which 118(39.2%) got the information from books, 104(34.6%) from television, 102(21.0%) from school, 78 (25.9%) from radio. Among those who were aware of internet addiction, 141(46.8%) of them had fair knowledge of internet addiction, 85(28.7%) had good knowledge, while only 75(24.9%) had poor knowledge of internet addiction.

Over two third 323 (68.6%) of the respondents had internet addiction, out of which 72.1% who had internet addiction, 53.2% had mild internet addition, 42.8% had moderate internet addiction, while 4.0% had severe internet addiction. Socio-demographic characteristics found to be significantly associated with the prevalence of internet addiction were age and class of respondents.

TABLE 2: PATTERN OF INTERNET USE AMONG ADOLESCENTS IN-SCHOOL ADOLESCENTS IN NEW BENIN, BENIN CITY

| Variables	Frequency (n=645)	Percent
Device owned*		
Smart Phone	376	58.3
Basic Phone	199	30.9
Tablet	29	4.5
Laptop	13	2.0
Computer	7	1.2
Use of Internet	471	73.0
Means of internet access* (n=471)		
Personal smart phone	363	77.1
Family smart phone	90	19.1
A friend's smart phone	74	15.7
Family computer	19	4.0
Personal computer	16	3.4
School computer	10	2.1
Cyber café	5	0.8
Source of subscription* (n=471)		
Parents	331	70.3
Self	120	25.5
Friends	105	22.3
Siblings	97	20.6
Monthly subscription amount (n=471)		
< N1000	217	46.0
N1000-N2000	159	33.8
N2000-N3000	50	10.6
> N3000	45	9.6
Duration of internet use (n=471)		
<1 hour	127	27.0
1-2 hours	172	36.5
2-4 hours	82	17.4
>4hours	90	19.1
Social network used* (n=471)		
Facebook	359	76.2
Whatsapp	289	61.5
Tiktok	141	29.9
Instagram	136	28.9
Snapchat	121	25.7
YouTube	114	24.2
Twitter	73	15.5
LinkedIn	37	7.9
Online activities* (n=471)		
Chat with friends	404	85.8
Watch movies	198	42.2
Check for academic information	192	40.9
Play games	172	36.6
Check for health information	63	13.4
Watch pornography	35	7.4
Gambling	20	4.3
Others***	1	0.2

*Multiple response   ***internet fraud
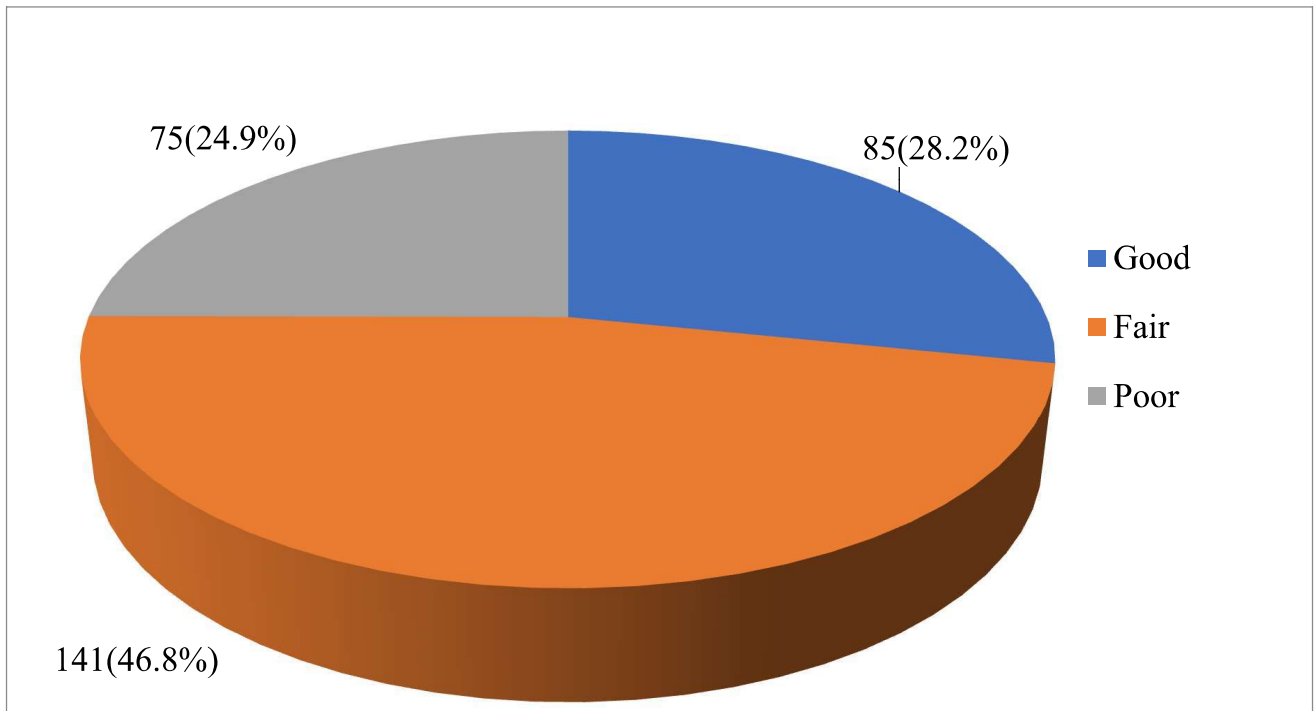
Figure 1: Pie Chart Showing The Knowledge Of Internet Addition Among Of Respondents.
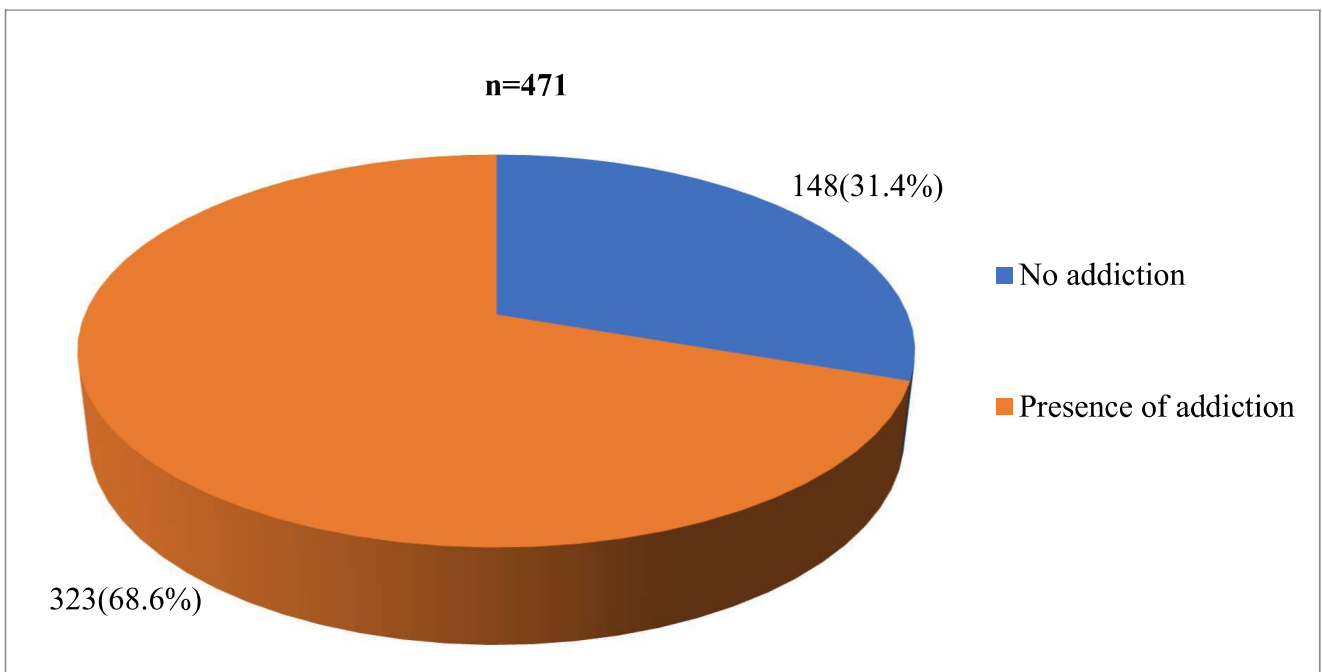
Figure 2: Pie Chart Showing Prevalence Of Internet Addition Among Respondents
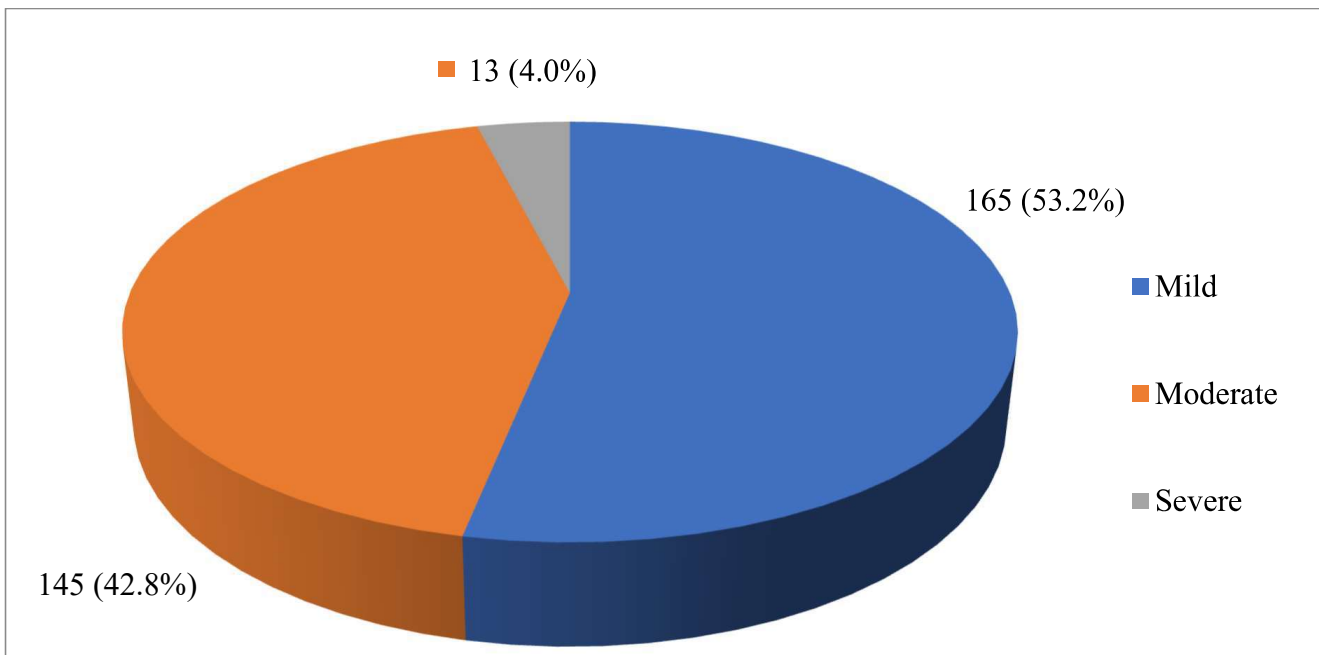
Figure 3: Pie Chart Showing The Level Of Internet Addiction Among Respondents

The prevalence of internet addiction was found to increase with increasing age at first internet use. 75.3% of respondents who started using the internet at later age between 9-11 years had internet addiction. There was no significant relationship between the age at first internet use and the prevalence of internet addiction. 75.2% of respondents who owned a smartphone had internet addiction and there was significant relationship between the use of smartphone and the prevalence of internet addiction. The prevalence of internet addiction increased with increased duration of daily internet use. Ninety percent of respondents who spent more than 4 hours on the internet daily had internet addiction. There was significant relationship between the duration of internet use and the prevalence of internet addiction as 91.1% of respondents who spent more than 3000 naira on monthly data subscription had internet addiction. There was a significant relationship between the amount spent on monthly subscription and the prevalence of internet addiction. Duration of internet use was also found to be significantly related to the prevalence of internet addiction.

Prevalence of IA increased with increased knowledge of internet addiction as 82.7% of respondents who had good knowledge of internet addiction had internet addiction. There was a significant relationship between the knowledge of internet addiction and the prevalence of internet addiction.

TABLE 3: ASSOCIATIONS BETWEEN SOCIODEMOGRAPHIC CHARACTERISTICS, KNOWLEDGE OF INTERNET ADDICTION, PATTERN OF INTERNET USE AND PREVALENCE OF INTERNET ADDICTION AMONG IN-SCHOOL ADOLESCENTS IN NEW BENIN, BENIN CITY

Variables	Addiction		χ^2	p value
	Present n = 310 (%)	**Absent** n = 115 (%)		
Age group (years)				
10-14	104 (57.1)	78 (42.9)	18.970	**<0.000**
15-19	210 (75.3)	69 (24.7)		
20-24	9 (90)	1 (10)		
Class				
JSS 1	11 (34.4)	21(65.6)	33.600	**<0.000**
JSS 2	23 (47.6)	25 (52.1)		
JSS 3	41 (68.3)	19 (31.7)		
SSS 1	70 (75.3)	23 (24.7)		
SSS 2	70 (72.2)	27 (27.8)		
SSS 3	108 (76.6)	33 (23.4)		
Owned a smartphone				
Yes	273 (75.2)	90(24.8)	32.284	**<0.001**
No	50 (46.3)	58(53.7)		
Duration of internet use				
<1 hour	67 (52.8)	60 (47.2)	24.615	**<0.001**
1-2 hours	115 (66.9)	57 (33.1)		
2-4 hours	60 (73.2)	22 (26.8)		
>4 hours	81 (90.0)	9 (10.0)		
Frequency of internet use (n=471)				
Daily	128 (73.1)	47(26.9)	16.492	**<0.001**
1-2 days in a week	59 (56.7)	45(43.3)		
3-4 days in a week	67 (62.6)	40(37.4)		
5-6 days in a week	69 (81.2)	16(18.8)		
Monthly internet subscription				
<1000	131 (60.4)	86 (39.6)	34.958	**<0.001**
1000-2000	109 (68.6)	50 (31.4)		
2000-3000	42 (84.0)	8 (16.0)		
>3000	41 (91.1)	4 (8.9)		
Knowledge				
Good	62 (82.7)	13 (17.3)	5.038	**0.025**
Fair	88 (73.9)	31 (26.1)		
Poor	43 (66.2)	22 (33.8)		

*Fischer Exact

DISCUSSION

The findings of this study revealed that majority of the respondents owned a personal smartphone. This is similar to studies done in India and Tanzania where majority of respondents owned and used a personal smartphone. The preponderance of smart phone users among respondents could be attributed to the increasing technological advancement which has led to the availability, affordability, and accessibility of internet services.[30, 31] This increased access to the internet could be abused.

This study also revealed that majority of the respondents used the internet daily and spent 1-2 hours chatting with friends on Facebook and WhatsApp. This is in contrast to studies done in India and Southeast Nigeria where majority of respondents used the internet predominantly for academic purposes.[17,30] This finding is also in contrast with a study done in India where the duration of internet usage was over two hours per day and majority responded that they used the internet for playing and downloading music. Increased frequency and prolonged duration of internet use among respondents could lead to harmful use of the internet, if not done in moderation.[32]

A greater proportion of the respondents in started using the internet at the age of 12-14 years. This is similar to findings of a study done in Ibadan, which showed that majority of the respondents started using the internet within the ages of 10 -12.[6] This may be due to the fact that, many secondary schools now take advantage of the internet to teach students thereby encouraging them to utilize the internet for academic purposes in order to enhance learning thus improving productivity.[6]

Findings of this study revealed poor knowledge of Internet addiction among respondents. This finding is in keeping with a similar study conducted among secondary school students in Sri Tirupati, India in 2014, which showed that the majority of respondents had inadequate knowledge about Internet addiction.[33] However, this finding is in contrast to studies conducted among high school students in Elthawra, Sudan in 2018 and in Southeast Nigeria in 2021, which revealed that majority of respondents had good knowledge of internet addiction.[16,33] The reasons for poor knowledge of internet addiction could be due to lack of awareness and understanding of IA resulting from paucity of information from parents, teachers, mass media and health professionals about the term. Poor knowledge of internet addiction among the study population may predispose to harmful Internet use. It also implies that they may be oblivious of its deleterious effects on personal, mental, social and financial wellbeing. This can ultimately lead to excessive use of the Internet at the detriment of productive academic work.

There was statistical association between age, class level and prevalence of internet addiction as a high proportion of the adolescents surveyed had internet addiction with the highest prevalence among those aged 15 – 19 years, and those in SS3. This is similar to a study conducted in Southeast Nigeria where majority were addicted to the internet and it was highest among middle adolescents.[16] This finding is not surprising as young people are the largest users of the internet, and those in the mid- to late adolescent age group may have less parental guidance regarding their internet use. Internet addiction in this age group will negatively affect their productivity in school. Also internet addiction has been linked to several mental health conditions like anxiety, attention deficit disorder, phobias, schizophrenia, aggressive behaviours, cognitive dysfunction, obsessive compulsive disorder, depression, suicidal ideation, and suicide among

adolescents.[11,19]

Adolescents from nuclear families with married parents in the high and middle social class had a higher prevalence of IA which is similar to what was observed in studies conducted in Southwest and Southeast Nigeria.[6,16] Nuclear families are more likely to have better income distribution among the children compared to extended families. Likewise, married couples in the high and middle have considerably more funds to expend from their combined incomes. In the setting of IA, children from such homes will have access to more money for internet subscription.

CONCLUSION

Majority of in-school adolescents used the internet and accessed it via their Smartphones engaging with friends mostly on Facebook. Most students had fair knowledge about internet addiction while more than half of them were addicted to the internet. There is therefore need to improve the knowledge of the students about internet addiction and its effect, set time limits for internet usage and seek treatment when internet use becomes problematic.

Contribution of Authors
All authors contributed to the design, literature review, data collection, analysis and writing of the results. All the authors reviewed and approved the final manuscript.

REFERENCES

1. Data reportal. What is the internet used for. Orbelo. 2022. Available at: https://ng.oberlo.com/statistics/what-is-the-internet-used-for Accessed: 5/4/23.

2. Jeremiah et al. internet usage, innovation and human development nexus in Africa: the case of ECOWAS: journal of economic structures; 2019: 8 (15). Available at https://doi.org/10.1186/s40008-019-0146-2 Accessed 30/4/23

3. Sasu DD.Distribution of social media advertising audience in Nigeria in 2021, by age group and gender. Statista. 2023. Available at: https://www.statista.com/statistics/1176100/distribution-social-media-advertising-audience-nigeria-age-gender/. Accessed 1/5/23

4. Anand N, Jain P.A, Prabhu S, Thomas C, Prathyusha P.V, et al. Internet Use Patterns, Internet Addiction, and Psychological Distress Among Engineering University Students: A Study from India. Indian Journal of Psychological Medicine. 2018; 40(5):458–467. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6149312/#ref3 Accessed on 1/4/23.

5. World Health Organization. Public health implications of excessive use of the Internet and other communication and gaming platforms. WHO. 2018. Available at: https://www.who.int/news/item/13-09-2018-public-health-implications-of-excessive-use-of-the-internet-and-other-communication-and-gaming-platforms Accessed on 15/3/23

6. Afolabi AA, Ilesanmi OS, Adebayo AM. Prevalence and Pattern of Internet Addiction Among Adolescents in Ibadan, Nigeria: A Cross-Sectional Study. Cureus. 2022 Feb 16;14(2):e22293. doi: 10.7759/cureus.22293. PMID: 35350489; PMCID: PMC8933260.

7. Uysa, G. & Balcı, S. Evaluation of a

School-Based Program for Internet Addiction of Adolescents in Turkey. Journal of Addictions Nursing. 2018;29:43-49. Available at: https://pubmed.ncbi.nlm.nih.gov/29505460/ Accessed on 31/3/23

8.   Ogboghodo E.O, Omoregie E.K, Omoikke E, Omuemu V.O. Knowledge of and attitude towards internet addiction among undergraduate students in the University of Benin, Edo State, Nigeria. Nigerian Journal of Health Sciences. 2018;18(2):51-57. Available at: https://www.chs-journal.undergraduate/article.asp?issn=1596-4078;year=2018;volume=18;issue=2;spage=51;epage=57;aulast=Ogboghodo Accessed on 15/03/23

9.   Chacko H, Joseph J.T, Abraham J, Aranha P.R, Shetty A.P. Ill effects of internet addiction - Knowledge and Attitude among Students. Res J of Computer Info Technol. 2015;3(4):1-4. Available at: http://www.isca.in/COM_IT_SCI/Archive/v3/i4/1.ISCA-RJCITS-2015-010.pdf Accessed on 14/03/23

10.   Panthri K. A Descriptive Study to assess the level of Knowledge regarding Consequences of Internet Addiction among Adolescents in SGRR Public School, Patel Nagar, Dehradun. Asian Journal of Nursing Education and Research. 2020);10(1):1 – 4. Doi: 10.5958/2349-2996.2020.00001.4 Accessed on 14/3/23

11.   Xin, M., Xing, J., Pengfei, W., Houru, L., Mengcheng, W., & Hong, Z. Online activities, prevalence of Internet addiction and risk factors related to family and school among adolescents in China. Addictive Behavior Reports. 2017. Available at: https://www.sciencedirect.com/science/article/pii/S2352853217300627 Accessed on 15/3/23

12.   United Nations Children Fund. How many children and young people have internet access at home? UNFPA. 2020. Available at: https://data.unicef.org/resources/children-and-young-people-internet-access-at-home-during-covid19. Accessed on 30/4/23.

13.   Al-hantoushi M, Al-abdullateef S. Internet addiction among secondary school students in Riyadh city, its prevalence, correlates and relation to depression: A questionnaire survey. International Journal of Med Science Public Health. 2014;3(1):10 – 15. Doi: 10.5455/ijmsph.2013.130920131. Accessed on 15/3/23

14.   Ajike, A.K and Nwakoby N.P. The Impact of Social Networking Sites on teenagers in Nigeria. International Journal of Public Policy and Administrative Studies. 2016;11(1):35-64. Available at https://www.researchgate.net/publication/327100589_The_Impact_of_Social_Networking_Sites_on_Teenagers_in_Nigeria Accessed 7/03/23.

15.   Aziz MA, Wan IWS, Bahar N, Mahadevan R, and Azhar SS. Internet Addiction among Secondary School Students in Klang Valley, Malaysia: What is the Association with Depressive Symptoms, Anxiety Symptoms, and SelfEsteem? International Medical Journal Malaysia . 2020;17(2). DOI: https://doi.org/10.31436/imjm.v17i2.267.

16.   Onukwuli V.O, Onyinye E.N, Udigwe I.B, Umeh U.M, Enebe J.T, Umerah A.T. Internet addiction during the COVID-19 pandemic among adolescents in southeast Nigeria and implications for adolescent care in the post-pandemic era: A cross-sectional study. SAGE Open Med. 2023. doi: 10.1177/20503121231152763 Accessed on 15/3/23.

17.   Lam L.T. Risk factors of Internet addiction and the health effect of internet addiction on adolescents: a systematic review of longitudinal and prospective studies. Curr Psychiatry Rep. 2014;16(11):508. Available at: https://pubmed.ncbi.nlm.nih.gov/25212714/

Accessed on 27/3/23

18. Kuss DJ, van Rooij JA, Shorter GW, Griffiths MD, and Van de Mheen D. Internet addiction in adolescents: Prevalence and risk factors. Computers in Human Behaviour. 2013;29(5):1987 – 96. Doi: https://doi.org/10.1016/j.chb.2013.04.002. Accessed on 15/3/23

19. Greenberg P.E, Fournier A.A, Sisitsky T, Simes M, Berman R, Koenigsberg S.H, Kessler R.C. (2018). The Economic Burden of Adults with Major Depressive Disorder in the United States. Pharmacoeconomics. Available at : https://pubmed.ncbi.nlm.nih.gov/33950419/ Accessed on 29/3/23

20. Koyuncu T, Unsal A, Arslantas D. Assessment of internet addiction and loneliness in secondary and high school students. Journal of the Pakistan Medical Assoc. 2014;64(9). Available at https://jpma.org.pk/article-details/6923?article_id=6923 Accessed on 9/3/23

21. National Population Commission. Population Distribution by Sex, State, LGA & Senatorial District. Federal Republic of Nigeria 2006 Population and housing census, priority table volume III. 2010;3:60. Accessed 30th August, 2019

22. Federal Government of Nigeria. Population and Housing Census: Population distribution by age and sex (state and local government area). Abuja, Nigeria; 2006:110–114. Accessed 30th August, 2019

23. National Population Commission (NPC), ICF. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF; 2019 p. 707. Report No:6. Available from: dhsprogram.com.

24. Cochrane G. Sampling techniques. 2nd ed. New York.: John Willey and Sons Inc; 1963. Accessed 30th August, 2019

25. Tenzin K, Dorji T. Internet Addiction among Secondary School Adolescents: A Mixed Methods Study. Journal of the Nepal Medical Association. 2019;57(219) Available at https://www.researchgate.net/journal/JNMA-journal-of-the-Nepal-Medical-Association-1815-672X Accessed on 23/3/23

26. Kwon M, Lee J.Y, Won W.Y, Park J.W, Min J.A, Hahn C, et al. Development and validation of a smartphone addiction scale (SAS). PLoS One. (2013) Available at https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0056936 Accessed on 21/2/23.

27. International Labour Organization. Global wage report 2012/2013: Wages and equitable growth. ILO Publications; Available at https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_194843.pdf Accessed on 20/2/23

28. Oyedeji G.A. Socio-economic and cultural background of hospitalized children in Ilesha. Nigerian journal of paediatrics. 1985;12:111-117 Accessed on 3/3/23

29. Mohammed B.M.. Internet addiction among secondary school students in Sudan. The International Organization of Scientific Research Journal. 2018;20(1):16-22. Available at http://www.iosrjournals.org/iosr-jce/papers/Vol20-issue1/Version-3/D2001031622.pdf Accessed on 1/8/21

30. Mohammed N.,Tariqul I. Exploring Senior Secondary Students' Internet Use Pattern. The Journal of Indian Library Association (JILA). 2019;55(3). Available at https://www.ilaindia.net/jila/index.php/jila/article/view/464 Accessed on 31/07/21

31. Tarimo R, Kavishe G Internet access and usage by secondary school students in Morogoro Municipality, Tanzania. International Journal of Education and Development using Information and Communication Technology (IJEDICT).

2017;13(2):56-69. Available from: https://files.eric.ed.gov/fulltext/EJ1153320.pdf. Accessed on 14/3/2023

32. Fayaz Ahmed Internet use by Rural and Urban college students. Journal of Library & Information Technology. 2019;31(6):431-436. Available at https//www.researchgate.net/publication/265891 395/ Accessed 16th march, 2023.

33. Lavanya M. The knowledge on internet addiction among adolescents in selected colleges. Narayana Nursing Journal. 2014;3(1):46-49. Available at https://www.bibliomed.org/mnsfulltext/157/157-1455087799.pdf?1627808460 Accessed on 1/8/21