PREVALENCE, PATTERN AND CORRELATES OF INTERNET USE INCLUDING PROBLEMATIC INTERNET USE AMONGST IN-SCHOOL ADOLESCENTS IN IBADAN, NIGERIA

BY

OGUNMOLA, Olusegun Ayomikun
B.Sc (Ed) Health Education (Ilorin)
MATRICULATION NUMBER: 211965

A PROJECT SUBMITTED TO THE CENTRE FOR CHILD AND ADOLESCENT MENTAL HEALTH, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE OF THE UNIVERISTY OF IBADAN

MAY, 2019

DECLARATION

I declare that this proposal was prepared by me and was submitted to the Centre for Child and Adolescent Mental Health, University of Ibadan. No part of this project has been previously presented or submitted anywhere else.

…… Date ……..

Ogunmola, Olusegun Ayomikun

CERTIFICATION

This is to certify that this research project was carried out by Olusegun Ayomikun Ogunmola of the Centre for Child and Adolescent Mental Health, University of Ibadan.

..... Date……..

Prof O.O. Omigbodun

Head, Department of Psychiatry &

Director, Centre for Child and Adolescent Mental Health,

University of Ibadan

…….. Date ……..

Dr. H.A. Abdurahman

Centre for Child and Adolescent Mental Health

University of Ibadan

…….. Date ……..

Dr B. Adedokun

Department of Epidemiology and Medical statistics,

University of Ibadan

Table of Contents

List of Tables

List of Figures

List of Appendices

Acronyms

ADHD- Attention Deficit Hyperactivity Disorder

CIAS- Chen Internet Addiction Scale

CIUS- Compulsive Internet Use Scale

DSM- Diagnostic and Statistical Manual of Mental Disorders

ERB- Ethical Review Board

GIAD- Goldberg Internet Addiction Disorder Scale

IAT- Young's Internet Addiction Test

ICD- International Classification of Diseases

ITU- International telecommunications Union

LCDAs- Local Council Development Authorities

LGA- Local Government Area

PIU- Problematic Internet Use

PIUQ- Problematic Internet Use Questionnaire

RSES- Rosenberg Self-esteem Scale (RSES)

SDQ- Strengths and Difficulties Questionnaire

SPSS- Statistical Package for Social Sciences

SS- Senior Secondary

UCH- University College Hospital

UI- University of Ibadan

VRRS- Variable Ratio Reinforcement Schedule

WHO- World Health Organization

Abstract

Background: The advent of the Internet, referred to as a global communication of millions of computers connected over large distances, has undoubtedly revolutionised virtually every aspect of human life—from communication, business, entertainment to research and information gathering. In spite of the obvious benefits inherent in this technological breakthrough, there are growing concerns about the addictive potential of the Internet. An emergent body of research evidence suggests that Problematic Internet Use (PIU) is an evolving public health issue. Clinicians are beginning to have patients present with psychosocial difficulties arising from Internet use, and some countries have even declared PIU a public health problem. Given the uniqueness of the developmental phase they are in, adolescents, tend to be at an increased risk of using the Internet to excessive levels with the attendant social, educational and psychological consequences. Research on PIU is particularly lacking in Africa (Nigeria inclusive), despite the teeming adolescent population of the continent as well as a growing Internet access. It is against this backdrop, therefore, that this study was deemed worthy of execution.

Objective:

This study aimed at assessing the prevalence, pattern and correlates of Internet use (including problematic Internet use) amongst in-school adolescents in Ibadan, Nigeria.

Method: This was a cross-sectional study in which students aged 12-19 years were recruited from four (4) secondary schools in two (2) urban local government areas in Ibadan through a four-stage sampling technique participated in the study. The Young's Internet Addiction Test (IAT) was used to assess participants Internet usage level, the Strengths and Difficulties Questionnaire (SDQ) was used to screen for mental health problems and the Rosenberg Self-esteem Scale (RSES) was employed to assess the respondents' self-esteem. Data was analysed using Statistical Package for

Social Sciences (SPSS) version 23 with percentages and frequencies used to describe the socio-demographic characteristics of the respondents as well as the prevalence of problematic Internet use in the study population. Means and standard deviations were used to present continuous data while chi-square was used to investigate the association between categorical variables. Predictors were obtained using multiple regression logistic model.

Results: A total of 387 participants aged 12 to 19 years (mean=15.76 years ± 1.57), with 215 (55.6%) being females. A total of 379 (97.9%) reported they were Internet users and 93 (24.8%) were classified as PIU. The Internet activities participants engaged in included: accessing academic information (72.6%), social media (61.5%), gambling (11.5%) and obtaining sex-oriented information (12.1%). Participants who perceived themselves "addicted" to the Internet were more likely to be PIU (χ^2=25.787; p= <0.001). PIU was found to be associated with conduct problems (χ^2= 4.430; p= 0.035) but not with total difficulty, as measured by the SDQ (χ^2= 0.278; p= 0.598). A significant association was also found between PIU and e-mail use (χ^2= 3.907; p= 0.048), but not so with social media use (χ^2=1.653; p= 0.198). Males were found to be almost twice as likely to develop PIU (OR= 1.79; 1.098-2.921; p= 0.020); working to earn money was associated with lesser odds of developing PIU (OR= 0.55; CI= 0.309-0.963; p= 0.037); and low self-esteem was associated with a greater likelihood of developing PIU (OR= 2.242; CI=1.365-3.680; p= 0.001).

Conclusion: This study was able to demonstrate that Problematic Internet Use is not a phenomenon limited to the advanced world; rather it is a global issue that is present in our setting as well, and is associated with conduct problems in adolescents. Adolescents who have low self-esteem are more likely to be problematic Internet users and consequently suffer the psychosocial impairments that may be associated with it. It, therefore, behoves all stakeholders to put adequate

measures in place to ensure that the tremendous benefits the Internet promises are not undermined by unrestrained and unguarded Internet behaviours on the part of adolescents.

Key Words: Problematic Internet Use, In-School Adolescents, Self Esteem, Mental Health

Chapter One

Introduction

1.1 Background

Google, *Facebook*, *Twitter*, *2go*, *LinkedIn*, *Instagram*, *Yahoo*— have become household "names" in today's world (Müller *et al.,* 2016). The aforementioned and countless other social media platforms have revolutionised learning, entertainment, communication and virtually all of human activities (Babalola *et al.,* 2017; Chang & Hung, 2012). Through these social media platforms messages can now be sent across thousands of miles in a twinkling of an eye and information on any known subject can be obtained in split seconds (Chang & Hung, 2012). Bills can also be paid with unprecedented ease and the list of benefits from social media tools is endless (Chang & Hung, 2012). However, at the very base of all this activity and benefits is the entity termed the "Internet" (Babalola *et al.*, 2017).

The Internet, referred to as a global communication of millions of computers linked together over large distances, has pervaded the lives of humans, so much so that it has become the most commonly utilised medium, particularly by children and adolescents (Olatokun, 2008; Chang & Hung, 2012). According to the International Telecommunication Union (ITU), global usage of the Internet increased drastically from 1 billion users in 2005 to almost 4 billion, more than half of the world's population in 2017 (ITU, 2017a). Unsurprisingly, young people, aged 15-24 years, are at the forefront of Internet usage globally, with 70% of this age group having access to the Internet, as opposed to the 48% for the world population (ITU, 2017b). Therefore, given the increasing evidence in literature suggesting that usage of the Internet may actually be in excess, with ensuing

significant psychosocial impairments (adolescents being particularly vulnerable); it provides a valid base for mental health research to pay a closer attention to this matter (Cash *et al.,* 2012; Aboujaoude, 2010).

So what exactly does problematic Internet use mean? When does one's use of the Internet begin to get problematic? Problematic Internet use has been said to mean a maladaptive preoccupation with Internet use experienced as irresistible use, for periods of time longer than intended; experiences significant distress or impairment resulting from Internet use, in the absence of other psychiatric pathology such as mania or hypomania, which might explain the excessive Internet use (Shapira *et al.,* 2000). In simpler terms, it refers to psychosocial impairments occurring as a result of certain Internet-related behaviours (Chang & Hung, 2012). Problematic Internet use may be *specific* (involving a particular Internet activity e.g. online gaming) or *generalized* (involving a wide range of Internet activities) (Davis, 2001). Other terms such as *Internet addiction* (Young, 1996), *Internet dependence*, *pathological Internet use* (Davis, 2001), *compulsive Internet use* (Thorsteinsson & Davey, 2014) etc. have also been used in extant literature to refer to this same condition.

Despite on-going arguments about the validity of PIU as a mental disorder, as well as a lack of uniform diagnostic criteria for the condition, many are currently being treated for psychological distress ensuing from excessive Internet use (Cash *et al.,* 2012; Block, 2008). In fact, the co-existence of PIU with other mental health problems has been said to be the rule rather than the exception (Aboujaoude, 2010). Mental disorders such as anxiety and depression, attention deficit hyperactivity disorder (ADHD) have been consistently found to be related to PIU (Aboujaoude, 2010). Sleep disturbances, substance use disorders, aggressive behaviours are examples of other

behavioural problems that have been closely linked to PIU. Although the majority of studies on PIU have been cross-sectional in nature, a number of longitudinal (prospective) studies have been able to demonstrate that PIU can actually be a predictor for certain mental disorders in adolescents (Anderson *et al.*, 2017).

It has been theorised that internet users experience multiple layers of reward, which is actually a function of the variable ratio reinforcement schedule (VRRS) structure on which digital technology is based (Young & Nabuco de Abreu, 2011). The implication of this is that, when an individual uses an Internet application (games, social networking sites etc) they experience varied, unpredictable rewards. This unpredictability of the reward, which may also be complimented by mood-enhancing activities (e.g. immersive graphics in video games, sense of belonging in social media etc) is what makes the user vulnerable to engaging the Internet application in excess, as s/he anticipates the rewarding experience (Amichai-Hamburger & Ben-Artzi, 2003).

Individual factors such as male gender, introversion, negative cognitions, low self-esteem, hostility and poor academic disposition, have also been shown to positively correlate with PIU in adolescents (Chen *et al.*, 2015; Davis, 2001; Okwaraji, 2015a; Ko *et., al* 2007; Hong *et al.*, 2014). Contextual factors such as divorced parents, low parental education, and lower social support and social adjustment (Willoughby, 2008; Chen *et al.*, 2015; Chen *et al.*, 2015) are also positively correlated with PIU.

Estimates from the Eastern and Western climes have pegged the prevalence of PIU among adolescents at 1%-18% (Cao *et al.*, 2007; Jang *et al.*, 2008). Although data on PIU amongst

adolescents is lacking in Africa, findings from a handful of studies, suggest that PIU may be an emerging adolescent mental health problem (Okwaraji *et al.,* 2015a; Balhara *et al.,* 2015). Studies reveal rates as high as 11% severe Internet addiction among studied adolescents (Balhara *et al.,* 2015; Ogbomo & Ivwighreghweta, 2016; Okwaraji *et al.*, 2015b; Chérif, 2015).

Studies have established that the co-existence of PIU with other mental health problems is the rule rather than the exception (Aboujaoude, 2010). Children and adolescents who suffer from behavioural or emotional disturbances have also been shown to be more susceptible to the negative impacts of Internet use (Pridgen, 2010). Anxiety, social phobia, depression, obsessive-compulsive behaviours and ADHD have all been found to be both predictors and sequelae of PIU (Cho *et al.,* 2013; Dong *et al.*, 2011; Gámez-Guadix, 2014; Ko, Liu, *et al.*, 2009; Ciarrochi *et al.,* 2016; Dong *et al.,* 2011; Gentile *et al.,* 2011). This, therefore, gives the impression that a bi-directional relationship exists between PIU and mental health problems.

1.2 Problem Statement

Some mental health experts have termed Problematic Internet use (PIU) an emerging public health issue, which is begging for urgent and deliberate attention from relevant quarters. Research and clinical findings currently suggest that the academic and social lives of many adolescents are currently undergoing significant impairments (with some experiencing symptoms of mental health problems) as a result of excessive use of various Internet applications (Aboujaoude, 2010; Cash *et al.,* 2012; Block, 2008). A study among secondary school students in the South-eastern part of Nigeria revealed that 11% of the participants were suffering from severe PIU, a rate much higher than rates ranging from 2%-8.2% found in many studies from more developed nations of the world (Okwaraji *et al.,* 2015; Kormas *et al;* 2011). This aforementioned study also found psychological

distress to be prevalent amongst respondents who reported various levels of PIU. It is, however, quite unsettling to know that, in spite of a growing body of information about the link between PIU and the mental health of young people, research from Nigeria (a country with a significant adolescent population) has not paid sufficient attention to this emerging problem.

Adolescents in urban areas are particularly more vulnerable to using the Internet to an excessive extent vis-à-vis their rural counterparts, with the urban areas affording the youngsters greater opportunities for Internet access— such as cyber cafés and internet-enabled devices (of which the smartphones are gaining prominence) (Google Consumer Barometer, 2017; Kormas *et al;* 2011; Aboujaoude, 2010). Adolescents have, however, been found to deny problems with Internet use, and as a result, persist in a problematic pattern of use of Internet applications in spite of the obvious negative consequences. Owing to denial, therefore, the impact of Internet usage is seldom fully appreciated until the consequences become escalated (Pridgen, 2010).

1.3 Justification and Relevance of the Study

The negative impact of Internet usage on individuals is not only underestimated (Chang & Hung, 2012), it has been particularly understudied in Africa, especially among the adolescent age group, which has been found to be more susceptible to the harmful effects of Internet use (Okwaraji *et al.*, 2015a). The few available studies have focused largely on university undergraduates, a population that does not typically represent the adolescent age group. Compared to older populations, adolescents are likely to interact with the Internet in a different way (especially given the uniqueness of this developmental phase), and this difference may subsequently imply different vulnerabilities or even "immunity" in terms of risk of developing PIU (Ioannidis, 2018). Also,

given the reciprocal relationship which has been found to exist between PIU and mental health problems, the presence of PIU in adolescents may serve as an indicator for other mental health problems in them.

This study would, therefore, seek to improve upon previous studies by examining the relationship between PIU and symptoms of mental health problems including externalizing problems and low self-esteem, which to the best of the researcher's knowledge have hitherto not been examined in adolescents within the African setting. It is therefore hoped that this study would inform policy and interventions across relevant sectors including education, health, and information and communications technology, towards ensuring that the internet and indeed, digital technology does not end up doing more harm than good to budding adolescents.

1.4 Research Questions

The study seeks to answer the following questions amongst in-school adolescents in Ibadan, South-west, Nigeria:

1. What is the prevalence and pattern of Internet use?
2. What is the prevalence of problematic Internet use?
3. What are the socio-demographic correlates of problematic Internet use?
4. What is the association between self-esteem and problematic Internet use?
5. What is the association between patterns of Internet use, problematic Internet use and mental health problems?
6. What is the association between symptoms of mental health problems and problematic Internet use?

1.5 Aim

This study aimed at assessing the prevalence, pattern and correlates of Internet Use (including Problematic Internet Use) amongst In-school adolescents in Ibadan, Nigeria

1.6 Specific Objectives

The specific objectives of this study were to determine amongst in-school adolescents in Ibadan, South-west, Nigeria:

1. The prevalence and pattern of Internet use
2. The prevalence of problematic Internet use
3. The socio-demographic correlates of problematic Internet use
4. The association between self-esteem and problematic Internet use
5. The association between patterns of Internet use, problematic Internet use and mental health problems
6. The association between symptoms of mental health problems and problematic Internet use.

1.6 Primary Outcome Measure

The primary outcome is the prevalence of problematic Internet use among in-school adolescents in Ibadan, Southwest, Nigeria.

Word count: 1,752

Chapter Two

Literature Review

2.1 Introduction

It is no longer news that we now live in a "global village"; that our erstwhile grand world shrinks into a smaller one by the passing day. Through diverse applications such as *WhatsApp*, *Facebook*, *Google*, *Instagram* etc. messages can now be sent across thousands of miles in a twinkling of an eye; information on any known subject can be obtained in split seconds; social and professional networks can be created and maintained much more seamlessly; bills can be paid with unprecedented ease; and the list goes on. At the very base of this is the 20th century *wonder* called the "Internet".

The Internet has been described as a global communication of millions of computers in a single network cache (Joanna, Melinda, Lawrence & Jeanne, 2014; Block, 2008). This *child* of technology has grown from being just another research endeavour in the 1960s to becoming an almost inevitable part of human life few decades later, as it has become a medium through which virtually all of man's primary and secondary needs can be met (Ogbomo & Ivwighreghweta, 2016; Babalola et al, 2017). Undoubtedly, the internet has been of tremendous benefits to the human race and has definitely come to stay. Having established this fact, however, there has been increasing apprehension among clinicians and researchers about the addictive potential of the internet-related activities. It has therefore become imperative that deliberate efforts be made to explore the interaction between man and this tool (which continues to pervade every aspect of his life), with a view to understanding better its association with psychological well-being—particularly among vulnerable groups of children and adolescents (Chang & Hung, 2012;).

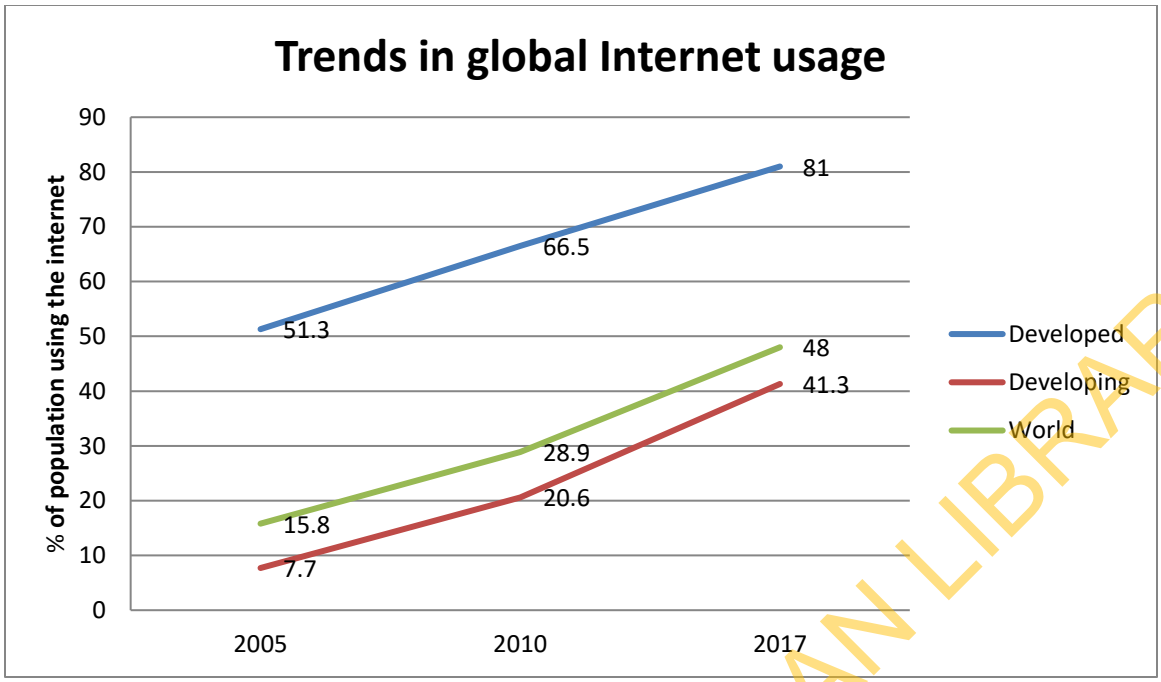

Figure 1: Trends in Global Internet Usage (adapted from ITU, 2017)

2.2 Healthy Internet Use

To define or identify abnormality one must first have the knowledge of normality. Therefore, before plunging into the discussion on unhealthy (problematic) Internet use, it would be helpful to touch on the aspect of healthy, normal Internet use. The Internet can actually be used in a lot of healthy ways (and indeed, it was primarily intended by its creators to be a plus to human existence and not otherwise) and is currently being used by many to find useful information, communicate easily regardless of physical location; and, in these days of "social media-preneurs", many earn a honest living through the Internet. And, speaking of mental health, the Internet has also been found to be home to a number of relatively advantageous mental health support groups (Ybarra & Eaton, 2005; Perron, 2002; Scharer, 2005); a medium for delivering effective psychological therapies (Christensen *et al.*, 2002; 2004); and its use has even been found to lead to a reduction in depression in individuals (LaRose et., al, 2001).

Davis (2001) refers to healthy Internet use as "using the internet for an expressed purpose in a reasonable amount of time without cognitive or behavioural discomfort". It involves having the ability to maintain a balance between online communication and real-life interaction, such that the Internet is seen as a complimentary tool rather than an alternative to real-life interactions or even a source of identity. Therefore, neither the Internet nor its inventors should be demonised by the society. However, given the increasing pervasiveness of the Internet in the lives of many the world over (young people in particular), coupled with the fact that a good number of people seem to have been presenting with behavioural and psychological distress ensuing from their excessive use of the Internet (Cash et., al, 2012; Chang & Hung, 2012); it therefore behoves researchers to take a closer look at excessive use of the Internet as well as its associated factors, among adolescents.

2.3 Problematic Internet Use

2.3.1 Patient Zero

Problematic Internet use seemed to have been brought to limelight by the clinical psychologist, Kimberly Young in 1996, through her seminal case report. The case was particularly interesting because she (referred to as 'patient zero') was said to have been a "non-technologically oriented 43-year-old homemaker with a content home life and no prior addiction or psychiatric history". However, within three months of discovering chat rooms, she was online for as long as 60 hours per week. She presented with complaints such as feeling energized in front of the computer, anxious, depressed; and even likened her addiction to the internet to alcohol dependence. And within a year of purchasing her home computer, her addiction to the internet was reported to have impaired her functioning so adversely that she had started leaving home chores undone, had quit

previously enjoyed activities, and had become withdrawn from her two daughters and her husband (Young, 1996; Aboujaoude, 2010). A number of other studies, both in the Eastern and Western climes (the majority coming from the former) have, since the release of this lone case report, been conducted with the aim of bringing some more illumination to this concept which many reckon to be an emerging public health problem (Aboujaoude, 2010; Block, 2008).

A lot of studies on problematic Internet use have focused on specific internet activities, particularly online gaming (Kuss & Griffiths, 2012; Gentile *et al.*, 2011; Coyne *et al.*, 2015). However, in this study, in referring to the Internet, we would include any activity or application which an individual engages in by using an internet connection— be it gaming, social networks, chat rooms, downloading, checking e-mails, general surfing etc—as it has been found that a range of Internet-related activities can result in PIU (Beard, 2005; Davis, 2001; Griffiths et al, 2000; King et al, 2009; Young, 1996).

2.3.2 Constructs, Definitions and Diagnostic Criteria, and Instruments

Various authors have explained the excessive use of the internet using various constructs, the earliest of them being *internet addiction*, as used by Young (1996). Others include: *internet addiction disorder*, internet *dependence*, *pathological internet use*, *compulsive internet use*, and even *problematic internet use*. Some of these terms tend to have a broad outlook (considering various internet-related activities), while others, such as *online game addiction*, *pathological video game use*, and *problematic online game use*, have focused only on specific internet activities (Anderson et al, 2017). A later section of this review will expatiate on the different constructs that have been used in the literature to qualify dependence on certain internet-related activities. For the purpose of this study, however, the term 'Problematic Internet Use' has been chosen over 'Internet addiction' in referring to a range of internet-related activities that lead to psychosocial

impairments, largely because it appears to be less controversial compared to 'Internet addiction', which has yet to be formally accepted as a mental disorder (Chang & Jung, 2012).

The term "Problematic Internet Use" was introduced by Shapira et al (2000) as a less controversial alternative to 'internet addiction'. PIU is said to be a condition which is characterized by a maladaptive, irresistible preoccupation with Internet use, for periods of time longer than intended, resulting in significant distress or impairment, in the absence of other psychopathology (e.g. mania or hypomania) that might explain the excessive internet use.

According to the pioneer Internet addiction researcher, Kimberly Young, 'Internet addiction' is an impulse-control disorder, which is characterised by preoccupation with Internet activities, excessive and compulsive use of the Internet, leading to neglect of work (Young, 1996). To Shapira *et al.,* (2000), who rebuffed the 'Internet addiction' label for lack of diagnostic merit and thus adopted a less controversial term, Problematic Internet Use can be defined as showing:

a. a maladaptive preoccupation with Internet use, experienced as irresistible, for periods of time longer than intended
b. significant distress or impairment resulting from Internet use
c. absence of other psychiatric pathology that might explain the excessive Internet use, such as mania or hypomania.

The lack of consensus on the right terminologies and diagnostic criteria are major limitations that have hampered the ability of professionals to accurately diagnose the condition, devise effective specific treatment modalities, as well as educate the public about the problem. Hence the earnest call by some researchers for a uniform set of diagnostic criteria for PIU (Cash et al, 2012), particularly one that is based on a continuum (dimensional) conceptualization (Anderson *et al.,* 2017).

Given her stance that sufferers of 'Internet addiction' presented with symptoms similar to the tolerance and withdrawal symptoms found in substance dependence, Young (1996) proposed the first set of diagnostic criteria for PIU, an eight-item questionnaire tailored after the DSM-IV criteria for pathological gambling. She had, however, gone on to develop a 20-item Internet Addiction Test, which is a modification of the earlier 8-item questionnaire. The IAT is reputed to be the most widely used instrument for measuring PIU (Young, 1998; Anderson *et al.*, 2017).

Table 1 Young's Internet Addiction Diagnostic Questionnaire, adapted from Young (1998)

(Diagnosis suggested if individual answers "yes" to five or more questions
• **Do you feel preoccupied with the Internet (think about previous online activity or anticipate next online session)?** • **Do you feel the need to use the Internet for increasing amounts of time in order to achieve satisfaction?** • **Have you repeatedly made unsuccessful efforts to control, cut back, or stop Internet use?** • **Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Internet use?** • **Do you stay online longer than originally intended?** • **Have you jeopardized or risked the loss of significant relationship, job, educational or career opportunity because of the Internet?** • **Have you lied to family members, therapist, or others to conceal the extent of involvement with the Internet?** • **Do you use the Internet as a way of escaping from problems or of relieving a dysphoric mood (e.g. feelings of helplessness, guilt, anxiety, depression)?**

Table 2 Proposed diagnostic criteria for Internet Addiction by Ko et al., (2005)

A. Six or more of:

1. **Preoccupation with Internet activities**
2. **Recurrent failure to resist the impulse to use the Internet**
3. **Tolerance: a marked increase in Internet use needed to achieve satisfaction.**
4. **Withdrawal, as manifested by either of the following: a) dysphoric mood, anxiety, irritability, and boredom after several days without Internet activity; b) use of the Internet to relieve or avoid withdrawal symptoms.**
5. **Use of the Internet for a period of time longer than intended**
6. **Persistent desire and/or unsuccessful attempts to cut down or reduce Internet use.**
7. **Excessive time spent on Internet activities.**
8. **Excessive effort spent on activities necessary to obtain access to the Internet**
9. **Continued heavy Internet use despite knowledge of physical or psychological problem caused or exacerbated by Internet use.**

B. Functional impairment. One or more of:

1. **Recurrent Internet use resulting in a failure to fulfill major obligations.**
2. **Impairments in social relationships.**
3. **Behavior violating school rules or laws due to Internet use.**

C. The Internet addictive behavior is not better accounted for by another disorder.

So far, diverse instruments have been used to assess PIU in individuals (both in clinical practice and research). Some of the commonly used instruments for assessing PIU include: Young's Diagnostic Questionnaire, Young's Internet Addiction Test (IAT), *Chen Internet Addiction Scale* (CIAS), *Problematic Internet Use Questionnaire* (PIUQ), *Goldberg Internet Addiction Disorder Scale* (GIAD); *Compulsive Internet Use Scale* (CIUS) (Young, 1996; Young, 1998; Yen et al, 2008; Thatcher et al, 2005; Armstrong et al, 2000; Meerkerk *et al.*, 2009). The psychometric properties (e.g. validity and reliability) of most of the instruments used for measuring PIU, have, however, not been widely studied yet, thus giving room for some misgivings about the measurements gotten with such instruments. This suggests an area of focus for future research. Having said this, however, a pocket of studies have reported high reliability values for some of

these instruments such as IAT, CIAS, and CIUS (Anderson *et al.,* 2017; Young, 1998; Okwaraji *et al.,* 2015).

2.3.3 Controversies and Conceptualizations

2.3.3.1 Anti-disorder

A major controversy surrounding the term 'internet addiction' is centred on the very existence of the condition. There is a crop of experts who are of the opinion that 'internet addiction' does not merit to be seen as a separate disorder. First, in their own view, the so-called "internet addicts" usually have underlying mental health problems— social anxiety or depression—and only use the internet as a way of coping with such problems (Shaffer *et al.,* 2000; Bell, 2009). And so such people should be said to be suffering from social anxiety disorder or depression, as the case may be, and not internet addiction. Secondly, they argue that the available diagnostic criteria for "Internet addiction" do not satisfy the six defining elements of an addiction viz; salience, mood modification, tolerance, withdrawal, conflict and relapse (Griffiths, 1996). However, some of these researchers also submit that it is possible for individuals to perform certain internet activities to excessive levels (Bell, 2007). Thirdly, they argue that proposed diagnostic criteria for internet addiction usually make reference to such things as, "preoccupied with the internet", "stay online longer than intended", without referring to any particular internet activity. Thus they erroneously imply that one could be addicted to the internet as a medium, rather than specific internet activities; since the internet itself is a medium that supports a host of activities (Bell, 2007). And this, therefore, contradicts the DSM-IV criteria for other behavioural addictions (e.g. pathological gambling), which specifies the activity and not the medium.

2.3.3.2 Pro-disorder

A second group of authors, however, believe that internet use can actually be problematic. It should be noted that this "Pro-disorder group" is not homogenous in itself, as there are differences in perceptions of researchers as to how best to classify the condition (these nuances in conceptualisations would be discussed later in this chapter). These differences notwithstanding, this group of researchers unanimously agrees that Internet use can assume a pathological nature and may lead to psychosocial impairments; with some studies even going ahead to use PIU, Compulsive Internet Use, and Internet Addiction interchangeably (Mittal *et al.*, 2013; Sun *et al.*, 2012). Some have observed it to be an addiction that presents in a similar fashion to substance dependence, as dependents exhibit behaviours similar to tolerance and withdrawal seen in substance dependents (Young, 1996; David Greenfield, 1999), and that "people currently suffering from Internet addiction are seeking treatment" (Cash et., 2012). They posit that internet addiction is often co-morbid with other mental health problems such as depression, anxiety, attention-deficit hyperactivity (ADHD) traits etc, and so support its inclusion in DSM-V and the International Classification of Diseases 11 (ICD-11) as a mental disorder (Cash et., al, 2012; Flisher, 2010). The majority of the studies belonging to this group seem to have emanated from Asia, where governments (particularly South Korea and China) have declared internet addiction a serious public health problem (Block, 2008; Chang & Hung, 2012).

As earlier mentioned, subtle differences still exist in the conceptualisations of various researchers who support the recognition of PIU as a mental disorder. A group argues that PIU is an addiction, hence the tendency of the protagonists of this view to qualify the disorder with the term "Internet addiction". According to Anderson et., al (2017), these researchers "emphasise on the similarities between aspects of PIU and addictive behaviours regarding how PIU impacts concurrent and future

general adaptation". For example, Young, who proposed the first set of diagnostic criteria for PIU (referred to by her as "Internet addiction"), tailored it along DSM-IV criteria for substance dependence, since her clinical experience suggested to her that there were striking similarities between the tolerance and withdrawal present in substance dependence. This conceptualisation has been greeted with quite a lot of criticisms, particularly as it pertains to the use of the term 'addiction'— as highlighted earlier (Young, 1996; Beard & Wolf, 2001; Ko *et al*., 2005).

A second group of researchers rather viewed PIU as a psychological dependence characterized by lack of control over the time spent online (Gámez-Guadix, 2014; Gámez-Guadix, Calvete, Orue, &Havas, 2015; Gámez-Guadix, Orue, Smith, &Calvete, 2013; Mittal, Dean, & Pelletier, 2013). Young, following further evaluations, also seemed to have acknowledged the impulse-control issues in PIU, hence she modified her earlier diagnostic criteria; this time fashioning it after the DSM-IV criteria for pathological gambling (Young, 1996; Aboujaoude, 2010). This view has been corroborated by a study by Dong et al (2011), where individuals with PIU were found to have exhibited poorer impulse control than non-affected individuals. Proponents of this conceptualization seem, however, to overlook aspects of the PIU that gives it the look of a compulsive disorder (Anderson et., al, 2017).

To some researchers, PIU is a compulsive disorder, thus informing their choice of "Compulsive internet Use" in referring to the condition. This involves loss of control in relation to certain Internet activities and compulsively using the Internet in order to access these applications (Thorsteinsson& Davey, 2014; van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008; van den Eijnden, Spijkerman, Vermulst, van Rooij, & Engels, 2010). Shapira et al (2010), however, found the contrary in their study, where they observed that the patients' Internet-related

symptoms were impulsive and ego-syntonic rather than compulsive and egodystonic. They therefore concluded that PIU is more related to DSM-IV definition of an impulse-control disorder than an obsessive-compulsive disorder. This view is also supported by some clinicians whose experiences suggest that PIU is often associated with gratifying and ego-syntonic experiences (Aboujaoude, 2010; Stavropoulos, Gentile, & Motti-Stefanidi, 2016). This is one aspect that future studies may want to further clarify, particularly to find out whether individual variations exist in the manifestations of the compulsive symptoms of PIU, as it is not impossible to have two individuals with PIU, with one having ego-syntonic compulsions and the other having ego-dystonic compulsions.

Some authors also argue that the problem is not the medium─ the Internet─ rather it is the different applications and activities facilitated by it (Ciarrochi *et al.*, 2016; Meerkerk, Van Den Eijnden, &Garretsen, 2006; Sun *et al.*, 2012; van Rooij, Schoenmakers, van de Eijnden, & van de Mheen, 2010; Van Rooij, Schoenmakers, Vermulst, Van Den Eijnden, & Van De Mheen, 2011). Young (1996) also observed a similar trend in her study where it was observed that PIU was associated with specific on-line activities, thus informing the conclusion that the internet itself is not addictive. Highly interactive applications, such as chat rooms, gaming, and cybersexual activities, have been particularly linked with PIU, therefore suggesting that highly interactive internet applications have a higher addictive potential and these applications should probably be the focus of PIU in research and practice (Young, 1996; Bell, 2007; Chak & Leung, 2004; Chou & Hsiao, 2000; Meerkerk *et al.*, 2006 ; Morahan-Martin & Schumacher, 2000; Simkova & Cincera, 2004). In this light, this study would endeavour to find out, amidst other things, what specific internet activities are actually associated with psychosocial problems in in-school adolescents, who are identified as problematic Internet users.

2.3.4. Aetiology

A number of attempts had been made in existing literature to provide a framework for the understanding of the development of PIU. Two of those frameworks (the Cognitive-Behavioural Model and the Biopsychosocial Model), which have been found to provide appreciable insight into the understanding of the PIU phenomenon, are discussed below.

2.3.4.1 The Cognitive-behavioural Model

Davis (2001), through his cognitive-behavioural model, asserts that PIU results from interplay of some "distal" and "proximal" causes. As the name implies, it is founded on the premise that certain cognitions are involved in the development of PIU, while certain behavioural symptoms maintain or intensify the condition (a notable departure from earlier models which had proposed PIU was largely a behavioural problem). The model highlights two broad causes of PIU— distal and proximal causes. The distal causes, explained using a "diathesis-stress" framework, involves the diathesis (vulnerability)—an underlying psychopathology (e.g. anxiety, depression), which must be present for PIU to be developed (although its presence does not guarantee the occurrence of PIU); while the stress refers to the internet or a new internet application to which the user has just been exposed (e.g. chat-room, pornography), which must also be present before PIU can be developed in the individual. The distal causes, as explained by the model, though must be present before PIU can be developed, do not necessarily have to lead to PIU. So, the reward the user gets from the internet application reinforces the behaviour (use of the internet), to the point the individual now needs to spend more time using the internet in order to experience the usual reward gotten from their online activities.

The proximal causes are negative cognitions and behaviours, with the cognitions playing the major role in the development of the condition. The author hypothesizes that negative cognitions such as a ruminative cognitive style (constantly thinking about one's internet use problems), low self-esteem, self-doubt, and low self-efficacy, and negative self-appraisal (e.g. "I am worthless offline, but online I am someone", "The Internet is the only place I am respected" etc) would usually be present in an individual with PIU. These proximal causes of PIU must lead to PIU.

This model, however, was not explicit in accounting for possible social influences like availability and accessibility of the internet. Also, assertion of the proponent of this model, that an underlying psychopathology must be present in an individual before PIU can be developed, seems a rather hasty conclusion. This is so, because the bulk of research on PIU have lacked the methodological power to establish causality, with current findings revealing, at best, a reciprocal relationship between psychopathology and PIU (Aboujaoude, 2010; Bell, 2007; Anderson et al; 2015). Also PIU has also been reported to have been found in individuals with no known history of psychopathology (Young, 1996). The criticism, notwithstanding, the model remains a bold and intelligible attempt at explaining the development and maintenance of PIU.

2.3.4.2. The Bio-psycho-social Model

The biopsychosocial model, which has been employed in explaining the aetiology of psychiatric disorders, has also been hypothesized to be applicable in explaining the development and maintenance of PIU (Chang & Hung, 2012). The biopsychosocial model of illness takes into consideration the interplay of biological (genetics, biochemical processes), psychological (mood, personality, behaviours etc), and social (family, social economic background) factors in the development of diseases (Nurcombe, 2014; Engel, 1977).

Biological factors

There appears to be compelling evidence from neuroimaging studies establishing similarities between substance-related addiction and Internet addiction. Studies have shown that PIU is characterised by an overall reward deficiency, which is associated with reduction in dopaminergic activity (although the direction of the relationship has yet to be investigated) (Kuss & Griffiths, 2012). Individuals suffering from PIU have been found to have "increased activation in the orbito-frontal cortex in gain trials and decreased activation in the anterior cingulate cortex in loss trials"; and also been found to have longer response times and more errors on the Stroop Test, when compared with individuals without PIU (Ko et al, 2009; Chang & Hung, 2012; Dong et al, 2011a; Dong et al, 2011b). Since addictive disorders have been found to have links with heredity, some individuals may, therefore, be more genetically susceptible to developing PIU, even though other factors would have to be in place for the individual to eventually develop PIU) (Chang & Hung, 2012).

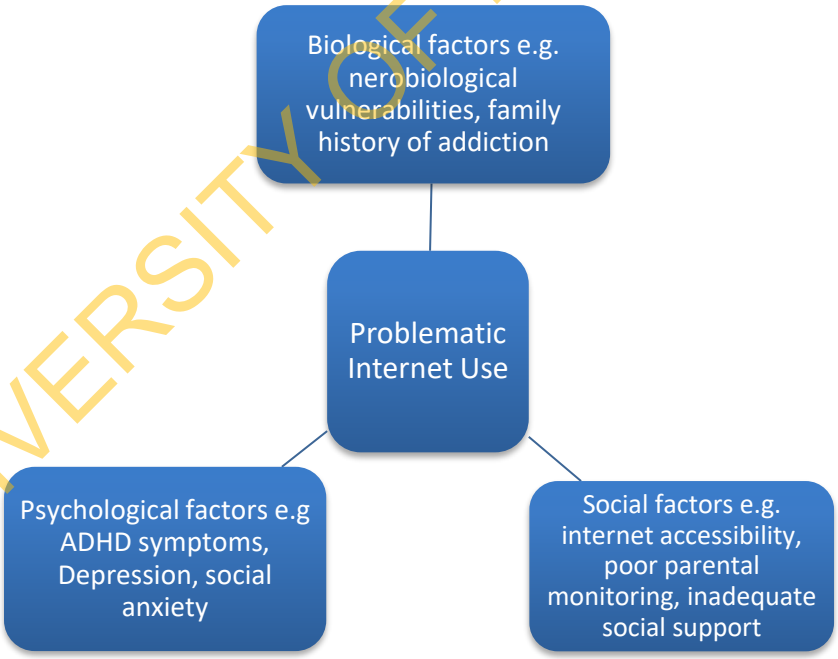

Figure 2: The Biopsychosocial model for the development of PIU (adapted from Chang & Hung, 2012)

Psychological factors

According to Pridgen (2010), children and adolescents who suffer from behavioural or emotional disturbances are more susceptible to the negative impacts of Internet use. Anxiety, social phobia, depression (Cho *et al.*, 2013; Gámez-Guadix, 2014; Ko, Liu, *et al.*, 2009); obsessive-compulsive behaviours (Dong *et al.*, 2011); and Attention-Deficit Hyperactivity Disorder (ADHD) and (Ko, Liu, *et al.*, 2009; Chen *et al.*, 2015), have all been found to be predictors of PIU. The assumption is that the individual initially sets out to use Internet activities as a means for coping with stress or avoiding unwanted feelings. Dependence on such Internet activities may, however, develop in the process (Lin & Tsai, 2002). It has also been suggested that the co-occurrence of PIU with ADHD might be due to ADHD features such as low impulse control, delay aversion, and situational attention, which may readily make Internet use more attractive to affected individuals (Ko, Liu, *et al.*, 2009).

Aside from underlying psychological disturbances, the "psychology" behind Internet activities has also been enunciated as a potential psychological factor contributing to the development of PIU in individuals. Internet-related activities are believed to possess inherent addictive potentials, which thrive on the variable ratio reinforcement schedule (VRRS) on which digital technology is largely based (Young, 2011). The VRRS ensures that users experience rewards at varied, unpredictable rates. So, the anticipation of a reward— especially when such is of a mood-enhancing nature (e.g. sexual stimulation in pornography, identifying with a hero in video games, monetary in online gambling, perceived social belonging and acceptance on social media networks etc) — would endear the individual to the medium all the more, until more of such rewarding activities is needed

to achieve a certain level of gratification (Cash et al, 2012; Amichai-Hamburger & Ben-Artzi, 2003).

Personality traits such as shyness (Chak and Leung, 2004) and introversion (Kraut et al; 1998) have also been implicated in the development of Internet addiction. It is likely that the anonymity, less time constraints in preparing messages, as well as the absence of other people's observation of one's behaviour (which are all associated with Internet interactions), combine to make online communication appealing to shy people, who usually struggle to have fulfilling face-to-face relationships (Young *et al.*, 2000; Amichai-Hamburger, 2002; Carducci & Zimbardo, 2005).

Social factors

Findings from longitudinal studies which have studied the relationship between family/parental factors and PIU suggest that, low family functioning (Ko *et al.*, 2007), lower parental education and divorced parental couples (Willoughby, 2008), and less protective parenting (Chen *et al.*, 2015), were found to be associated with higher PIU. Good communication in the family, about Internet use, has, on the other hand been shown to lower adolescents' risk of developing PIU (van den Eijnden *et al.*, 2010; Yu & Shek, 2013). Findings from longitudinal studies among adolescents reveal that low family functioning (Ko *et al.*, 2007), lower parental education and divorced parental couples (Willoughby, 2008), and less protective parenting (Chen *et al.*, 2015), were found to be associated with higher PIU. Good communication in the family, about Internet use, has, on the other hand been shown to lower adolescents' risk of developing PIU (van den Eijnden *et al.*, 2010; Yu & Shek, 2013). Poor peer relationships and lower social support have also been suggested by prospective studies to constitute significant predictors of PIU (Gámez-Guadix *et al.*, 2013; Chen *et al.*, 2015).

2.4. Adolescents and the Internet

The period of adolescence is one marked with significant physical, biological, behavioural and psychological changes. Increased desire for autonomy, risk taking and novelty seeking, peer acceptance, social belonging, and school demands, are some of the typical features of adolescents— all resulting from interplay of biological and environmental forces. Navigating these changes is stressful for many adolescents (and learning to safely navigate the Internet has been identified as one of the major challenges for the present day adolescents) (Jaworska & MacQueen, 2015; Quas, 2014). In coping with these changes, adolescents adopt a range of behaviours— healthy or otherwise— with behaviours adopted during adolescence having significant health and overall life outcomes later in life (WHO, 2018).

With the current proliferation of smartphones and other Internet-enabled devices which provide compact means of texting, talking, video games, and browsing (coupled with increasing ease of use, access, immersive and engaging user interface), adolescents are predisposed to engaging the various applications at increased levels (Aboujaoude, 2010; Müller *et al.*, 2016). Findings from both literature and informal observations reveal that adolescents are popular users of social networking sites such as Facebook, Twitter, WhatsApp, Instagram, as well as online platforms for watching movies and television programs, listening to music, and playing online games (Chang & Hung, 2012; Olatokun, 2008). For example, the majority of secondary school students in Ibadan, southwest, Nigeria, have been found to use the Internet for reading and sending e-mail, online chatting with old and new friends, playing and downloading music; browsing for fun, and Instant Messaging, with fewer reporting using the Internet for homework and reading newspapers. This

suggests, therefore, that fewer adolescents tend to use the Internet for academic purposes vis-à-vis using it for leisure and socializing (Olatokun, 2008).

The growing exposure of adolescents to the virtual world presents both opportunities and threats for this age group. Opportunities in that, with greater access to the Internet, adolescents are better able to access educational materials, information about their own health and development, those in underserved communities can be more visible to interventions; and indeed, many other opportunities cutting across the various facets of their lives could be positively influenced. And threats, in that, increased access to the Internet can expose adolescents to noxious content even when unsolicited (e.g. pornography, gambling etc); and even while engaging in seemingly innocuous online activities, they might end up spending unnecessary time on those activities (Olatokun, 2008). And when this maladaptive pattern of Internet use becomes persistent, risk for the development of behavioural and psychological problems such as low self-esteem, poor academic performance, mood disorders, social anxiety, risky sexual activities, alcohol and substance abuse, may be increased (Pridgen, 2010; Chang & Hung, 2012).

2.5. Problematic Internet Use in Adolescents

"Tim, a 15 year-old boy, was brought to the psychiatric clinic by his parents due to his spending excessive time on the Internet and deterioration in his daily activities, performance at school and relationships with peers. Tim was first introduced to the Internet at school when he was working on an assignment in 3rd grade. In the last 2 years, he had joined online social networks such as Facebook and MySpace, where most of his friends share their activities and thoughts…He spends more than 12 hours per day…online, even cutting down his sleeping time.

His grades have dropped recently and he has started to skip classes to be on the Internet. He feels happier and more empowered when online…He has more arguments with his parents, and quarrels are often associated with his Internet use…he has started lying to them about the hours he spends online. He feels restlessness, irritable and unhappy when…away from the computer. When he first walked into the clinic, he told the psychiatrist 'I know I should cut down on the hours I spend online and concentrate on my school work, but I just can't. I feel so anxious and joyless when not online.' Tim…had thought about suicide, but says he does not have the courage to do it. Tim's depressed mood had worsened in the previous 2 months... (The psychiatrist diagnosed Tim with depression and problematic Internet use)". (Chang & Hung, 2012).

Onset of PIU is most likely during late childhood and early adolescence, although adolescents often tend to deny their problems with Internet use (Pridgen, 2010). This, however, maintains the problem, as they continue engaging in their maladaptive pattern of Internet usage in spite of obvious negative consequences. The case of a real-life patient presented above captures succinctly issues surrounding PIU in adolescents— from risk factors and symptoms, to consequences. Problematic Internet use among adolescents seem to be fast attaining public health significance. In South Korea, for instance, consequent upon a series of 10 cardiopulmonary-related deaths in cyber cafés and a video game related murder, Internet addiction had since been rated as a public health problem (Choi, 2007; Koh, 2007). Similarly, in China, it is estimated that 13.7% of adolescent Internet users (about 10 million teenagers) meet the diagnostic criteria for Internet addiction. And this has prompted the Government to issue a directive to enforce the setting up of a *game fatigue system* (a system consisting of mechanisms to discourage teenagers from engaging

in Internet games beyond 3 hours in a day) by online game operators (China Daily, 2007).

The situation in Europe and America seems to be very much similar to what obtains in the East (in spite of differences in culture and modes of accessing the Internet), as alarming rates of Internet addiction cases have been reported in Western climes as well (Block, 2007a; Block 2007b; Winkler & Dörsing, 2011). On the average, estimates from the Eastern and Western societies have pegged the prevalence of PIU among adolescents at 1%-18%, with the huge variation being ascribed largely to a lack of uniformity in diagnostic criteria and assessment tools (Cao et al, 2007; Jang et al, 2008).

Although data on PIU amongst adolescents is particularly lacking in Africa, a handful of studies have detected PIU amongst young people in Africa— more focus, however, seem to have been placed on university undergraduates (Okwaraji *et al.*, 2015a; Balhara *et al.*, 2015; Ogbomo & Ivwighreghweta, 2016). In a study conducted among 587 teenagers in an urban location in Tunisia, a PIU prevalence of 18% was observed (although no distinction was made between mild, moderate and severe PIU) (Chérif, 2015). In a similar study among secondary school adolescents in Enugu, southeast Nigeria, Okwaraji et al. (2015) found majority (63%) of the adolescents reporting symptoms of PIU spread across mild (28.5%), moderate (23.5%), and severe (11%) categories. These findings tend to suggest that PIU may well be as much a challenge in the African context as it is in the developed world. This therefore provides a valid basis for further investigation into the phenomenon in Nigeria, particularly among in-school adolescents, especially when such factors as the surge in the number of Internet users as well as the proliferation of smartphones among young people in the country are taken into consideration.

2.5.1 Correlates of Problematic Internet Use in Adolescents

2.5.1.1. Mental Health Correlates

It is widely established in extant literature that the co-existence of PIU with symptoms of psychiatric disorders is the rule rather than the exception (Aboujaoude, 2010). Results from longitudinal studies have established that poor mental health can be a strong predictor of PIU (Gentile *et al.,* 2011) and vice-versa (Ciarrochi *et al.,* 2016; Dong *et al.,* 2011; Gentile *et al.,* 2011; van den Eijnden *et al.,* 2008); thus alluding to a bi-directional relationship between PIU and mental health. Internalizing problems, such as social phobia, anxiety and depression have been consistently shown to be associated with PIU in adolescents (Anderson *et al.,* 2015). In a study conducted among school-going adolescents in Greece, it was observed that adolescents who were found to be at risk of developing PIU and those who had clear-cut PIU were 2 to eight times, respectively, more likely to suffer emotional and psychological maladjustment—as assessed by the Strengths and Difficulties Questionnaire (SDQ) (Kormas *et al.,* 2011). Similarly, a study conducted among secondary school students in south-eastern, Nigeria, revealed that 87.5% of the adolescents who reported various levels of PIU also reported psychological distress, as opposed to 54.1% found in those who reported normal internet use. Thus suggesting a relationship between psychological distress and problematic Internet use (Okwaraji *et al.,* 2015).

LaRose, Eastin, & Gregg (2001), however, reported a contrasting finding as their study showed that Internet use was associated with reduction in depressive symptoms among students—suggesting that students used the Internet for social support, rather than to replace it. Therefore, this study would also be looking to determine the nature of the relationship between Internet use and emotional problems among adolescents in the area under study.

Low self-esteem is another psychological factor that has been found by a pocket of longitudinal studies among Asian adolescents to be a risk factor for PIU (Ko et., al 2007; Hong *et al.*, 2014). However, given the blurriness of this relationship (a contradictory finding to those in the Asian studies were found in Europe), it becomes obvious that the relationship between self-esteem and PIU still requires further exploration by research (Kowert et., 2015; Stavropoulos, Alexandraki, & Motti-Stefanidi, 2013). Therefore, this study would also be looking to explore the relationship between self-esteem and PIU among adolescents, thus contributing to scientific knowledge.

A negative association has consistently been found to exist between adolescents' academic disposition and PIU. Chen *et al.*, (2015) were able to demonstrate that poor academic performance was predictive of PIU amongst Taiwanese adolescents, while Yu *et al.*, (2015), Hong *et al.*, (2014) and Willoughby (2008) have also demonstrated that higher school engagement and better academic disposition were protective factors against PIU. Gentile *et al.*, (2011) also found online gaming to be a significant predictor of poorer academic performance amongst Singaporean adolescents. This findings altogether suggest that a bi-directional relationship also exists between PIU and academic disposition.

Peer relationships have also been suggested to protect against or predict PIU. Gámez-Guadix *et al.*, (2013) found significantly higher Internet usage amongst adolescents who were cyber-bullied and those who were both cyber-bullied and cyber-bullies themselves. Lower social support and social adjustment have also been shown to be predictors of PIU among adolescents (Chen *et al.*, 2015).

2.5.1.2. Socio-demographic correlates

The majority of studies on PIU in adolescents have found the male gender to be at a higher risk of developing PIU (Anderson, 2013). Studies among in-school adolescents in Greece (Kormas *et al.,* 2011), Jordan (Al-Shdayfat *et al.,* 2016), and Nigeria (Okwaraji *et al.,* 2015), corroborate this finding. Coyne et al (2015), however, noted that females exhibit more severe symptoms of PIU (particularly online-gaming). Findings from longitudinal studies which have studied the relationship between family/parental factors and PIU suggest that, low family functioning (Ko *et al.,* 2007), lower parental education and divorced parental couples (Willoughby, 2008), and less protective parenting (Chen *et al.,* 2015), were found to be associated with higher PIU. Good communication in the family, about Internet use, has, on the other hand been shown to lower adolescents' risk of developing PIU (van den Eijnden *et al.,* 2010; Yu & Shek, 2013).

Rural-urban differences also exist in the prevalence of PIU among adolescents, with higher rates having been found in those living in urban area. Adolescents in urban areas may be more vulnerable to using the Internet to an excessive extent vis-à-vis their rural counterparts, given the fact that the urban areas tend to afford youngsters greater opportunities for Internet access─ such as cyber cafés and internet-enabled devices (of which the smartphones are gaining prominence) (Google Consumer Barometer, 2017; Kormas *et al;* 2011; Aboujaoude, 2010).

2.5.1.3. Internet-related correlates

As noted earlier, some authors have argued that the internet may only be rightly understood in terms of specific applications or activities that take place upon it; thus only specific Internet activities, as opposed to the Internet itself, should be the target of investigations related to problematic internet use (Bell, 2007). Giving credence to this position, certain Internet activities such as chatting, general surfing (which some suggest may be an underrated *culprit*), playing games, and using the Internet to retrieve sexual information — have all been consistently demonstrated to be strongly linked to PIU in adolescents (Al-Shdayfat, 2016; Kormas *et al.*, 2011; Ioannidis, 2018). Whereas Internet use for academic purposes is positively correlated with less substance use, greater self-worth, and better parent-child relationships; Internet use for chat rooms, shopping, entertainment, pornography, and videogames have been associated with drinking, illicit drugs use, greater number of sexual partners and lower self-worth. Also, playing violent Internet games is associated with having more sexual partners and poorer quality of interpersonal relationships in this group. (Padilla-Walker et al, 2010).

Problematic Internet use in adolescents has also been demonstrated to be significantly associated with the site of Internet access, with accessing the Internet at Internet cafés and home portals predicting excessive Internet use (Olatokun, 2008; Kormas *et al.*, 2011). The popularity which cybercafés once enjoyed seemed to have, however, plummeted significantly over time (no thanks to the nearly ubiquitous internet-enabled devices and the increasing affordability of mobile data plans). It would, therefore, be interesting to find out what relationship exists between the primary source of Internet access and the development of PIU among in-school adolescents, in the face of recent trends.

2.6. Relevance of the Study to Child and Adolescent Mental Health Practice in Nigeria

Although the onset of PIU is most likely during late childhood and early adolescence, the negative impact of Internet usage on adolescents has been particularly understudied in Africa (Pridgen, 2010; Chen & Hung, 2012). Adolescents with emotional and behavioural disorders have been found to be more vulnerable to the negative effects of Internet use, as many of them see it as a way to protect themselves from seeing or feeling things that are unpleasant (Pridgen, 2010). As adolescents in Nigeria, therefore, continue to constitute a significant percentage of the country's growing population of internet users, it becomes imperative that the existence of PIU in this age group be investigated and defined, particularly given the reciprocity that has been suggested to occur between PIU and mental health problems. The presence of PIU in adolescents may, therefore serve as an indicator for other mental health problems in them, and may subsequently help to inform the introduction of the appropriate interventions.

Word count: 6,797

Chapter Three

Methodology

3.1 Study Area

The study was carried out in the city of Ibadan, southwest Nigeria. Ibadan, derived from *ebaodan* (meaning 'at the fringes of the savannah'), is a metropolitan city located completely within the tropical forest and close to the boundary between the forest and the savannah. Ibadan is the capital of Oyo State and the largest indigenous city in Nigeria, with a population of about 6 million (World Population Review, 2018). Ibadan City comprises 5 urban local governments Areas (LGAs). There is a larger area described as Greater Ibadan, made up of eleven (11) LGAS consisting of the 5 urban LGAs (Ibadan City) and 6 semi-urban LGAs. According to the Nigerian Urban Reproductive Health Initiative (NURHI), people of Yoruba ethnicity (NURHI, 2018) dominate Ibadan. However, given its cosmopolitan nature, the city also houses people from many other ethnicities and nationalities (Adedire & Olofinlua, 2017). The system of education in Ibadan city follows the general pattern in the country. Typically, children begin primary education at about 6 years of age, and spend 6 years in primary school, before proceeding to junior secondary school (JSS). Three (3) years are spent in JSS and another 3 in senior secondary school (SSS), after which students may proceed to tertiary institutions.

With regards to Internet penetration, Oyo state, of which Ibadan is the capital city, is reputed to be the state with the third highest numbers of Internet subscribers in Nigeria after Lagos and Ogun states which are first and second respectively (National Bureau of Statistics, 2017). Secondary

school students in Ibadan have been found to be frequent users of the internet for up to two hours daily— right from the period when cyber cafés, as opposed to mobile phones, were the main sources of Internet access (Olatokun, 2008).

3.2. Study Design

This study was a cross-sectional study primarily concerned with determining the prevalence of problematic Internet use at a given point in time in secondary school students in Ibadan city.

3.3. Study Population

The study population consisted of male and female adolescents aged 12 to 19 years in senior secondary classes in Ibadan metropolis.

Inclusion criteria

1. Students in senior secondary one to three (SS1-3)
2. Students aged 12 to 19 years

a) Exclusion criteria

1. Students who met the inclusion criteria but who declined to participate in the study and/or whose parents or caregivers did not give their informed consent.

3.4. Sample Size Calculation

Being a prevalence study, the following formula was used in estimating the sample size

$$\frac{Z^2pq}{d^2}$$

where Z= standard deviation for 95% confidence interval in a normal curve, p= expected prevalence, q= 100-p, d= degree of precision

Therefore, using an estimated problematic Internet use prevalence of 34.5% (for moderate PIU and severe PIU)— as found by Okwaraji *et al* (2015) among in-school adolescents in secondary schools in southeast Nigeria— and a degree of precision of 5%, the estimated sample size (n) equals:

n = $\frac{1.96^2 \times 34.5 \times 65.5}{5^2}$ = 347.24 (approximately, 347).

Anticipating a non-response rate of 10%, the adjusted sample size (n) will then be,

$\frac{100 \times 347}{100-10}$= 385.55 (approximately, 386)

Therefore, a total of three hundred and eighty six (386) participants were recruited for the study.

3.5. Sampling Technique

This study employed a four-stage sampling technique in arriving at the sample for the study. The stages are explained below:

Stage 1: Urban LGAs were purposively selected and two (2) of the five (5) urban LGAs in Ibadan were selected using simple random sampling.

Stage 2: A public school and a private school were selected by simple random sampling technique, from the total population of schools in each of the 2 selected LGAs─ giving rise to a total of four (4) schools in all (single sex schools were eliminated).

Stage 3: The total number of respondents to be selected from each school was computed based on the proportion of each school's population of SSS students in comparison with the entire SSS population of the 4 participating schools.

Stage 4: Two arms from each SSS class were selected in each school using simple random sampling (each of the senior classes had two arms— Arts/Commercial and Science) and an equal number of participants were chosen from each class in each participating school. Participants were selected from each participating arm using systematic random sampling.

3.6. Study Procedure

3.6.1. Data collection

After having obtained the requisite permission from the Ministry of Education, the authorities of each of the participating schools were approached, and the essence of the research and the procedure were explained. Upon securing the approval of the schools, the study participants were selected using the sampling technique highlighted above. The researcher ensured that in each of the schools, a well-lit- and ventilated hall (or class, as the case may be) with adequate chairs and tables was secured for the questionnaire administration process. Two (2) research assistants assisted in administering the questionnaires to study participants and providing clarifications that were needed. A self-report approach was employed in retrieving the needed information from the participants with guidance from the researchers.

3.6.2. Study Instruments

The following instruments were employed to collect information from the study participants.

a) Socio-demographic Questionnaire (See Appendix II)

An adapted version of the questionnaire used by Omigbodun *et al* (2008) in a study conducted among adolescents in rural and urban Ibadan was employed in collecting information about relevant socio-demographic variables of relevance to the study. The questionnaire originally seeks to elicit, amongst other things, personal, family and school-related, information.

b) Internet Addiction Test:

The Internet Addiction Test (IAT) (**See Appendix II**) is a 20-item questionnaire developed by Young (1998), which measures behaviours associated with problematic use of the Internet. The instrument assesses impairments in personal, occupational, and social functioning related to problematic Internet use. The items include: *How often do you find that you stay online longer than you intended? How often do others in your life complain to you about the amount of time you spend online? How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?* The items on the instrument are rated on a 6-point Likert scale, with response options: 0= does not apply; 1= rarely; 2 = occasionally; 3= frequently; 4 = often and 5 =always. The obtainable score on this instrument ranges from 0-100, with a scores ranging from 0-30 indicating normal Internet use. A score of 31-49 indicates mild problematic Internet use, 50-79 indicates moderate problematic Internet use and scores ranging from 80-100 indicate severe problematic Internet use. In order to ensure that a pure sample of problematic Internet users was obtained, only respondents who fell in the moderate and severe categories were classified as problematic Internet users, which meant that a cut-off of 50 on the IAT was used to classify problematic Internet users. The IAT had been validated for use among adolescents in Nigeria and found valid and reliable (Okwaraji *et al.,* 2015).

c) The Strengths and Difficulties Questionnaire (SDQ) (See Appendix II)

The Strengths and Difficulties Questionnaire (SDQ) is a behavioural screening tool developed by Goodman et al (1997), which has been found to possess good psychometric properties in children as young as 2 years old and individuals beyond 18 years of age. Relative brevity, measurement of both mental health difficulties and strengths, and ease of administration, are features, which have

made the SDQ a popular screening tool among clinicians and researchers alike (Adeniyi & Omigbodun, 2017). The tool comprises five (5) scales namely: emotional problems, hyperactivity/inattention, conduct problems, peer relationship problem and pro-social scales.

Scores on the pro-social scale gives the total strengths score while the total scores on the other four scales provide the difficulties score for an individual. An individual's total difficulty score can range from 0 to 40, as scores on each of the four (4) difficulty sub-scales range from 0-10. In this study a score of 6 and above was used to indicate presence of emotional problems; a score of 4 and above was used to indicate presence of conduct problems; a score of 6 and above indicated hyperactivity problems; and a score of 4 and above indicated the presence of peer problems. A total difficulty score of 16 and above indicated significant total difficulties. Three versions of the SDQ exist, viz; the parent-reported, teacher-reported and self-report versions. The self-report version for individuals above 10 years by Goodman (2009) was used in this study. The questionnaire has been translated into over eighty (80) languages— the Yoruba language inclusive (sdqinfo.com {accessed 21/10/2018}).

d) Rosenberg Self-esteem Scale (RSES) (See Appendix II)

The Rosenberg self-esteem scale is a 10-item scale that measures global self-worth by measuring both positive and negative feelings about oneself (Rosenberg, 1965). It is a self-report measure that has been validated for use in various contexts, including Nigeria (Okoiye, Nwoga, & Onah, 2015). The instrument consists of 10 items (5 positive and 5 negative) measured on a 4-point Likert scale, with the negative items being reversed scored. The responses are scored thus: 0=strongly disagree, 1= disagree, 2= agree, and 3= strongly. A score less than 15 suggest low self-esteem.

Respondents who scored below the mean on the RSES were classified as having low self-esteem, while those who had the mean scores and above it were classified as having high self-esteem.

e) Self-perception of Internet addiction

In addition to the IAT mentioned above, the respondents were also asked to respond "Yes" or "No" to the question, "Do you think you are addicted to the internet?" The purpose of this was to further investigate the relationship between participants' self-perception of their level of Internet use and their actual classification on the IAT, which Widyanto *et al.,* (2010) found to be a direct relationship.

3.6.3. Validity of Study Instruments

The English and Yoruba versions of the SDQ had been validated among secondary school students (Adeniyi & Omigbodun, 2017; Bakare *et al.,* 2009). The English version of the RSES had been validated for use among secondary school students. The English version of the IAT had also been validated among adolescents in secondary schools by Okwaraji *et al* (2015). It was, however, back-translated and examined for content validity by a psychiatrist.

3.6.3. Administration of Study Instruments

Information was obtained from study participants via self-report. Two trained research assistants assisted in administering the questionnaires. Adequate preparation was made in conjunction with the school authorities to ensure that suitable time and venue for the questionnaire administration were secured. Respondents were not asked to provide their names, to allay fears bordering on issues of confidentiality and thus allowing for more honest responding (ref).

3.7. Data Management and Analysis

Each questionnaire was given a unique number and each item on the questionnaire was appropriately coded before entering them into the data analysis software. Data was analysed using Statistical Package for Social Sciences (SPSS) version 23 and was cleaned by running frequencies. Percentages and frequency count were used to describe the socio-demographic characteristics of the respondents (e.g. sex, type of school etc), as well as the prevalence of problematic Internet use in the study population. Descriptive statistics of mean and standard deviation were used to present continuous data such as the age and IAT scores of respondents. Chi-square test of association was used to investigate the association between categorical variables, such as problematic Internet use and socio-demographic variables and SDQ sub-scales. Independent t-test was used in comparing the difference in mean of continuous variables such as the RSES scores, as it relates to respondents' categories on the IAT. Predictors were obtained using multiple regression logistic model.

3.8. Ethical Considerations

Ethical approval was obtained from the Oyo State Ministry of Health Ethical Review Board (ERB), and permission will be obtained from the State Ministry of Education. Assent was obtained from participants below the age of 18, and the informed consent of the legal guardians of the assenting ones was subsequently obtained. Informed consent was obtained from all study participants who were between 18 and 19 years of age. The fundamental principles of ethical research— Beneficence, Autonomy, Non-maleficence and Justice— were adhered to throughout the course of the study.

Word count: 2,007

Chapter Four

Results

This result section is presented as guided by the study objectives into the following sections:

- Socio-demographic Characteristics of Study Participants
- Prevalence and Pattern of Internet Use among Study Participants
- Socio-demographic correlates of Problematic Internet Use (PIU) among study population
- Association between Self-esteem and Problematic Internet Use among study population
- Association between Problematic Internet Use and Mental Health Problems

4.1 Socio-demographic Characteristics of Study Participants

A total of 387 participants aged 12 to 19 years (mean= 15.76 years, SD= 1.57), were recruited into this study. There were 309 (79.8%) aged 15 to 19 years and 78 (20.2%) aged 10 to 14 years. Females made up 55.6% (215) of the study population, and 79.8% (309) were attending public schools. See Table 3 for details.

Table 3 Personal Characteristics of Study Participants

N=387

Variable	n	%
Age group (in years)		
12–15	176	45.5
16 –19	211	54.5
Total	387	100
Gender		
Male	172	44.4
Female	215	55.6
Total	387	100
Type of school		
Private	78	20.2
Public	309	79.8
Total	387	100
Class		
SS1	129	33.3
SS2	129	33.3
SS3	129	33.3
Total	387	100
Religion		
Islam	148	38.2
Christian	217	56.1
Did not indicate religious affiliation	22	5.7
Total	387	100

4.1.2 Family Information of Study Participants

Of the three hundred and seventy-six (376) participants who indicated the type of family they came from, 77.4% (291) and 22.6% (85) reported that they were from monogamous and polygamous homes respectively. Respondents whose parents were divorced or separated made up 7.9% (30/380) of the study population, 276 (71.3%) lived with their parents and 10 (2.6%) participants with other people apart from their parents or grandparents, while 29.1% (112/385) of participants worked to earn money before or after school. See details in table 4 below.

Table 4 Family Information of Study Participants

N=387

Variables	n	%
Family Type		
Monogamous	291	77.4
Polygamous	85	22.6
Total	376	100
Marital status of parents		
Married	328	86.3
Separated/Divorced	30	7.9
Widowed Mother	16	4.2
Widowed Father	6	1.6
Total	380	100
Who do you live with presently?		
Parents	276	71.3
Mother	63	16.3
Father	16	4.1
Grandparents	22	5.7
Other	10	2.6
Total	387	100
Do you do any kind of work to earn money?		
Yes	112	28.1
No	275	71.1
Total	387	100
Level of Father's education		
Don't Know	26	6.9
No Formal education	41	10.0
Primary education	17	4.5
Secondary education	185	49.3
Tertiary education	106	28.3
Total	375	100
Level of Mother's Education (N=366)		
Don't Know	17	4.6
No Formal education	13	3.6
Primary education	32	8.7
Secondary education	186	50.8
Tertiary education	118	32.2
Total	366	100

N <387 indicates missing data; Participants did not complete

Table 5 Family Information of study participants (cont'd)

Variables	N	%
Do you like your family		
Yes	370	95.6
No	17	4.4
Total	387	100

N <387 indicates missing data

4.1.3 School-Related Characteristics of Study Participants

Table 6 below shows that 378/380 (97.7%) of study participants reported liking their school, 22/368 (5.7%) reported that they did well academically, and 28/387 (5.7%) reported having difficulties with their teachers.

Table 6 School-related Characteristics of Study Participants

Variables	n	%
Do you like your school? (N=380)		
Yes	378	97.7
No	9	2.3
Total	387	100
Do you do well academically (N=368)		
Yes	365	94.3
No	22	5.7
Total	387	100
Are you having difficulties with your teachers (N=363)		
Yes	28	5.7
No	359	94.3
Total	387	100

N<387 indicates missing data

4.2 Prevalence and Pattern of Internet Use among Study Participants

4.2.1 Prevalence of Internet Use among Study Participants

Three hundred and seventy-nine (379) of the 387 study participants, representing 97.9% of the study population, reported they were Internet users.

4.2.2 Prevalence of Problematic Internet Use

The three hundred and seventy-five (375) of the 379 internet users who completed the internet addiction test (IAT) had a mean score of 38.2 ± 16.6 on the Internet Addiction Test (IAT). Figure 1 below reveals that 43.7% (164/375), 23.7% (89/375) and 1.1% (4/375) of Internet users reported mild problematic Internet use, moderate problematic internet and severe problematic internet use respectively. 165 (44%) internet users perceived that they were addicted to the internet. In all, 93 (24.8%) internet users were classified as problematic internet users.

Also, when asked whether they perceived they were addicted to the Internet, 167 (44.1%) Internet users reported that they perceived themselves addicted to the Internet, while 212 (55.9) Internet users perceived that they were not addicted to the Internet.

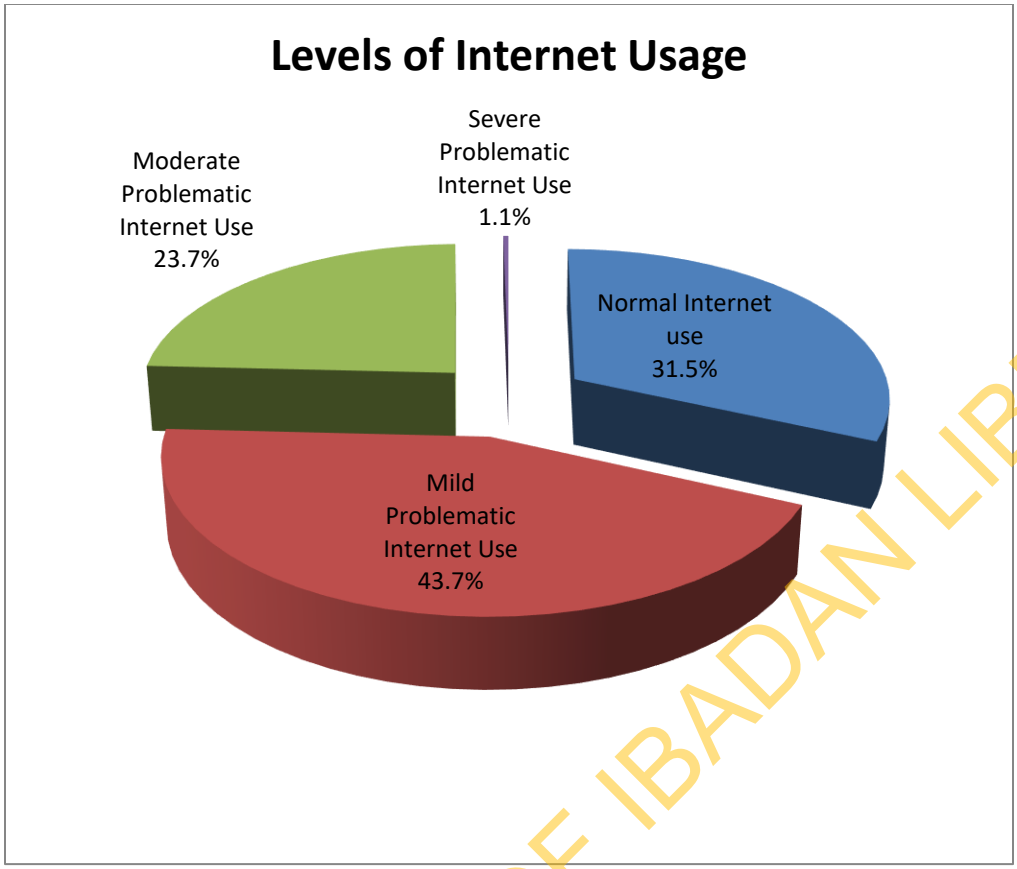

Figure 3 Levels of Internet Usage on the Internet Addiction Test

4.2.3 Pattern of Internet Use among study participants

4.2.3.1 Major means of accessing the Internet and Internet activities performed over the past month

Table 7 below reveals that, of the three hundred and seventy-five (379) respondents who were Internet users, 267/376 (71.5%), 45/376 (12.3%) and 1/376 (0.3%) accessed the Internet primarily through their personal mobile phones, someone else's mobile phone and the Cyber Café respectively. The table also reveals that 233 (61.5%) of the internet users reported using the internet for social networking, 275 (72.6%) used the internet to access information related to academic work, 43 (11.5%) gambled online, and 46 (12.1%) accessed information with sexual content online.

Table 7 Major means of accessing the Internet and Internet activities performed over the past month

Variable	n	%
Major means of accessing the Internet		
Personal mobile phone	267	71.0
Computer at home	27	7.2
Cyber café	1	0.3
At school	31	8.2
Someone else's mobile phone	50	13.3
Total	**376**	**100**
Internet activities performed over the past month*		
Socializing/chatting	233	61.5
Reading news	217	57.3
Information for schoolwork	275	72.6
Online gambling	44	11.6
Sex-oriented information	46	12.1
Online gaming	133	35.1
Online shopping	88	23.2
E-mail	123	32.5
General surfing	157	41.4
Downloading videos, documents etc.	239	63.1

***Multiple response item**

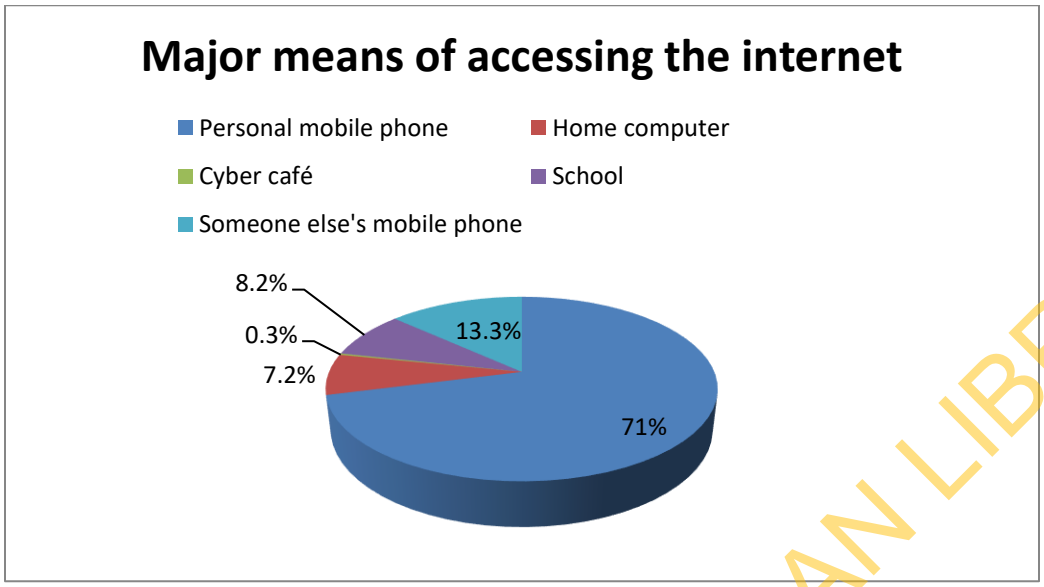

Figure 4 Participants' major means of accessing the Internet

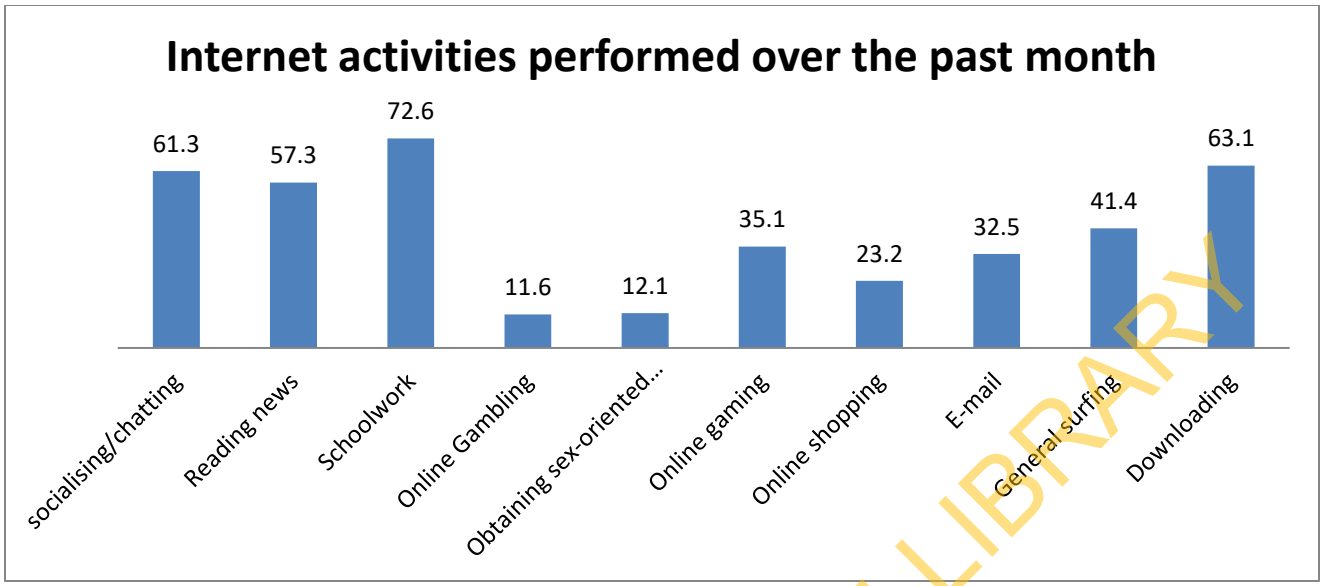

Figure 5 Internet activities performed over the past month

4.2.3.2 Cost of and sources of Finance for Internet use

Of the three hundred and seventy-nine (379) internet users, 148 (40.1%) felt that they spent too much money on internet subscriptions. On the amount spent per month on internet subscription, 44.8% (158/353) of internet users reported that they spent less than ₦500 on internet subscription, and 4.2% (15/353) claimed they spent over ₦5000. Also, 8.4% (32/379) reported ever stealing money to afford them internet access. See Table 8 below for details.

Table 8 Cost of and sources of finance for Internet use

N= 379

Variables	n	%
Do you think you spend too much money to access the Internet?		
Yes	148	39.1
No	231	60.9
Total	379	100
How much do you spend in a month to subscribe to the Internet? (missing data: 26)		
I don't spend money	89	25.2
<₦500	158	44.8
₦500-₦1000	80	22.7
₦1000-₦5000	11	3.1
>₦5000	15	4.2
Total	353	100
Have you ever lied to get money so you could access the Internet?		
Yes	95	25.1
No	284	74.9
Total	379	100
Have you ever stolen money so you could access the Internet?		
Yes	32	8.4
No	347	91.6
Total	379	100

4.3 Socio-demographic correlates of Problematic Internet Use (PIU) among study population

Table 9 below reveals the correlates of PIU. Eighty (80) out of 302 (26.5%) public school participants were problematic internet users compared to 13 out of 73 (17.8%) participants in private schools; the association was, however, not statistically significant (χ^2= 2.376; p= 0.133). Although a greater proportion of male participants were problematic internet users (29%) compared to their female counterparts (21.4%), gender was not significantly associated with problematic internet use (χ^2= 2.902; p=0.094).

Table 9 Association between Personal Characteristics and Problematic Internet Use (PIU) among Internet Users

N=379

Variables	Problematic Internet Use		Total	χ^2	p
	Yes	No			
	n (%)	n (%)			
Type of school					
Private	13 (17.8))	60 (82.2)	73 (100)	2.376	0.133
Public	80 (26.5)	222 (73.5)	302 (100)		
Class					
SS1	33 (27.0)	89 (73.0)	122 (100)	0.597	0.737
SS2	31 (24.6)	95 (75.4)	126 (100)		
SS3	29 (22.8)	98 (77.2)	127 (100)		
Age					
12-15 years	35 (21.0)	132 (79.0)	167 (100)	2.383	0.149
16-19 years	58 (27.9)	150 (72.1)	208 (100)		
Gender					
Male	49 (29.0)	120 (71.0)	169 (100)	2.902	0.094**
Female	44 (21.4)	162 (78.6)	206 (100)		
Religion					
Islam	36 (24.5)	111 (75.5)	147 (100)	0.294	0.624
Christianity	56 (27.1)	151 (72.9)	207 (100)		

N<379 indicates missing values
****Significant at p<0.1**

4.3.2 Association between Family Characteristics and Problematic Internet Use

Table 10 reveals the family correlates of PIU. Sixty-six (66) out of 285 (23.2%) participants from monogamous homes were problematic Internet users compared to 25 out of 80 (31.3%) participants from polygamous; the association was, however, not statistically significant (χ^2= 2.186; p= 0.146). Eighty-eight (88) out of 230 (27.7%) participants whose parents were married were problematic Internet users compared with 4 out 28 (14.3%) of participants whose parents were either separated or divorced, and 1 out of 21 (4.5%) participants whose parents were widowed. This association was found to be statistically (χ^2= 7.765; p= 0.020).

Table 10 Association between Family Characteristics and Problematic Internet Use

N= 379

	Problematic Internet Use		Total	χ^2	p
	Yes n (%)	No n (%)			
Family type					
Monogamous	66 (23.2)	219 (76.8)	285 (100)	2.186	0.146
Polygamous	25 (31.3)	55 (68.8)	80 (100)		
Marital Status of Parents					
Married	88 (27.7)	230 (72.3)	318 (100)	7.765	0.020**
Separated/Divorced	4 (14.3)	24 (85.7)	28 (100)		
Father or Mother dead	1 (4.5)	21 (95.5)	22 (100)		
Who do you live with presently?					
Parents	74 (27.7)	193 (72.3)	267 (100)	4.738	0.094*
Father/Mother only	15 (19.5)	62 (80.5)	77 (100)		
Others	4 (12.9)	27 (87.1)	31 (100)		
Do you do any kind of work to earn money?					
No	72 (27.3)	192 (72.7)	264 (100)	2.924	0.091*
Yes	21 (18.9)	90 (81.1)	111 (100)		
Father's level of Education					
Don't know	7 (31.8)	15 (68.2)	22 (100)	1.217	0.876
No formal education	11 (26.8)	30 (73.2)	41 (100)		
Primary education	4 (23.5)	13 (76.5)	17 (100)		
Secondary Education	47 (26.3)	132 (73.7)	179 (100)		
Tertiary education	23 (22.1)	81 (77.9)	104 (100)		
Mother's Level of Education					
Don't know	7 (46.7)	8 (53.3)	15 (100)	5.039	0.284
No formal education	4 (30.8)	9 (69.2)	13 (100)		
Primary education	7 (22.6)	24 (77.4)	31 (100)		
Secondary education	48 (26.7)	132 (73.3)	180 (100)		
Tertiary education	25 (21.4)	92 (78.6)	117 (100)		
Do you like your family					
No	4 (28.6)	10 (71.4)	14 (100)	0.111	0.755+
Yes	89 (24.7)	272 (75.3)	361 (100)		

N<379 indicates missing values
****Significant at p<0.05**
***Significant at p<0.1**
+Fisher's exact statistic

4.3.3. Socio-demographic Factors Independently associated with Problematic Internet Use

Table 11 reveals that male adolescents were almost twice more likely to be problematic internet users (OR= 1.79; 1.098-2.921; p=0.020). Adolescents who worked to earn money (OR= 0.55; CI= 0.309-0.963; p= 0.037) and those whose parents were either separated or widowed (OR= 0.30; CI= 0.105-0.850; p= 0.037) were less likely to be problematic internet users. The person whom the adolescent lived with was not found to be independently associated with problematic internet use.

Table 11 Socio-demographic Factors independently associated with Problematic Internet Use

Variable	odds ratio	95% CI	p
Gender Male vs *Female*	1.79	1.098-2.921	0.020*
Parent's marital status Married vs *Separated/Divorced/Widowed*	0.30	0.105-0.850	0.024*
Work to earn money No vs *Yes*	0.55	0.309-0.963	0.037*
Who adolescent lives with *Parents* vs Father/Mother alone	0.98	0.486-1.964	0.948
Parents vs others (including grandparents, aunts, siblings)	0.48	0.156-1.454	0.193

Only variables significant at p<0.1 level of significance on the bivariate analysis were included in the logistic regression analysis.
***Significant at p<0.05**
Reference category in italics

4.4 Association between Self-esteem and Problematic Internet Use among study population

4.4.1 Self-esteem ratings of Internet Users

Study participants had a mean score of 18.97 (SD= 3.64) and median score of 19 on the Rosenberg Self-esteem scale, with 172/368 (45.4%) participants having scores less than the mean.

4.4.2. Association between Self-esteem and Problematic Internet Use among study population

Table 12 reveals that participants who had low self-esteem had a higher mean score on the IAT (40.30±17.81) compared to those who had higher self-esteem scores (36.48±15.67), and this difference was statistically significant (t= 2.178; p= 0.030).

Table 12 Association between Self-esteem and scores on the Internet Addiction Test (IAT)

Self-esteem	IAT score				
	n	Mean	SD	t	p
Low	171	40.30	17.81	2.178	0.030*
High	193	36.48	15.67		

***significant at p<0.05**

4.4.2.2 Association between Self-esteem and Problematic Internet Use

Table 13 below reveals that 57 out of 171 (33.3%) participants who had low self-esteem were problematic Internet users compared to 36 out of 193 (18.7%) participants who had high self-esteem; this association was statistically significant ($\chi 2 = 10.273$; $p = 0.002$).

Table 13 Association between Self-esteem and Problematic Internet Use

	Problematic Internet Use				
Self-esteem	**Yes**	**No**	**Total**	**χ2**	**p**
Low	57 (33.3)	114 (66.7)	171 (100)	10.273	0.002*
High	36 (18.7)	157 (81.3)	193 (100)		

***significant at p<0.05**

4.4.2.3 Association between Self-esteem and Problematic Internet Use

Table 14 reveals that self-esteem was found to be independently associated with problematic Internet use, after adjusting for the socio-demographic factors independently associated with problematic internet use. Participants who had low self-esteem were in excess of two times more likely to be problematic internet users compared to those who had higher self-esteem (OR= 2.242; CI=1.365-3.680; p= 0.001).

Table 14 Multiple Logistic Regression Analysis for the association between Self-esteem and Problematic Internet Use

Variable	Adjusted odds ratio*	95% CI	P
Self-esteem Low vs *High*	2.242	1.365-3.680	0.001

*Adjusted odds ratio for gender, parent's marital status, working to earn money, and person lived with

4.5 Association between Problematic Internet Use and Mental Health Problems

4.5.1 Prevalence of mental health problems on the SDQ subscales among Internet Users

Table 15 reveals that on the strengths and difficulties questionnaire (SDQ), 81 out of 366 (22.1%) study participants who were internet users had scores suggestive of emotional problems, 151 out of 367 (41.1%) study participants had scores suggestive of peer problems, while 106 out of 366 (29%) respondents had total difficulty scores indicative of mental health problems.

Table 15 Prevalence of mental health problems on the SDQ subscales among Internet Users

N= 379

SDQ Subscales	Yes (%)	No (%)	Total (%)
Emotional problems	81 (22.1)	285 (77.9)	366 (100)
Conduct problems	103 (28.1)	264 (71.9)	367 (100)
Hyperactivity problems	53 (14.4)	315 (85.6)	368 (100)
Peer problems	151 (41.1)	216 (58.9)	367 (100)
Total difficulty	106 (29.0)	260 (71.0)	366 (100)

N<379 indicates missing data

4.5.2 Association between Problematic Internet Use and Mental Health Problems on SDQ Subscales among Internet Users

Table 16 reveals that 33 out of 90 (36.7%) participants who were problematic Internet users had symptoms indicative of conduct problems compared with 69 out of 274 (25.2%) participants who were normal Internet users; and the association was statistically significant (χ^2= 4.430; p= 0.042). Twenty-one (21) out of 89 (23.6%) participants who were problematic Internet users reported symptoms suggestive of emotional problems compared to 60 out of 274 (21.9%) respondents who were normal Internet users. The association was, however, not statistically significant (χ^2= 0.112; p= 0.770). Also, 28 out of 90 (31.1%) participants who were problematic Internet users reported symptoms suggestive of total difficulties compared to 77 out of 273 (28.2%) of participants who were normal Internet who reported. The association was, however, not statistically significant (χ^2= 0.278; p= 0.688).

Table 16 Association between Problematic Internet Use and mental health problems on SDQ subscales among Internet Users

N=379

	Problematic Internet Use			
	Yes n (%)	**No n (%)**	**χ^2**	**p**
Emotional problems				
Yes	21 (23.6)	60 (21.9)	0.112	0.738
No	68 (76.4)	214 (78.1)		
Total	89 (100)	274 (100)		
Conduct problems				
Yes	33 (36.7)	69 (25.2)	4.430	0.035*
No	57 (63.3)	205 (74.8)		
Total	90 (100)	274 (100)		
Hyperactivity				
Yes	13 (14.4)	40 (14.5)	0.001	0.981
No	77 (85.6)	235 (85.5)		
Total	90 (100)	275 (100)		
Peer problems				
Yes	31 (34.4)	118 (43.1)	2.083	0.149
No	59 (65.6)	156 (56.9)		
Total	90 (100)	274 (100)		
Total difficulties				
Yes	28 (31.1)	77 (28.2)	0.278	0.598
No	62 (68.9)	196 (71.8)		
Total	90 (100)	273 (100)		

N<379 indicates missing data
***Significant at p<0.0**

4.5.3 Pattern of Internet Use and Problematic Internet Use

4.5.3.1 Association between primary site of internet access and problematic internet use

Table 17 below reveals that 70 out of 260 (26.9%) participants whose primary site of Internet access is their personal mobile phone were problematic Internet users; compared with 11 out of 27 (40.7%) who accessed the Internet primarily through their home computers; 4 out of 42 (9.5%) who accessed the Internet primarily through someone else's phone, and 5 out of 31 (16.1%) participants who accessed the Internet through other means including at school and cyber cafés (χ^2=10.747; p= 0.013).

Table 17 Association between primary site of internet access and problematic internet use

N=379

	Problematic Internet Use		Total	χ^2	p
	Yes n (%)	**No n (%)**			
Major means of internet access					
Personal mobile phone	70 (26.9)	190 (73.1)	260 (100)	10.747	0.013*
Home computer	11 (40.7)	16 (59.3)	27 (100)		
Someone else's mobile phone	4 (9.5)	38 (90.5)	42 (100)		
Others	5 (16.1)	26 (83.9)	31 (100)		

4.5.3.2 Association between cost of internet access and problematic internet use

Table 18 reveals that 32 out of 94 (34%) respondents who had ever lied to get money for Internet subscription were problematic Internet users compared to 61 out of 281 (21.7%) participants who had never lied to obtain money for Internet subscription; and this association was statistically significant (χ^2= 5.746; p=0.017). Eleven (11) out of 32 (34.4%) participants who reported that they had stolen money so they could access the Internet were problematic Internet users compared to 82 out of 343 (23.9%) participants who reported that they had never stolen money so they could access the Internet. The association was, however, not statistically significant (χ^2=1.720; p= 0.190).

Table 18 Association between cost of internet subscription and Problematic Internet Use

N= 379

	Problematic Internet Use		Total	χ^2	p
	Yes n (%)	**No n (%)**			
Do you think you spend too much money to access the Internet?					
Yes	35 (23.6)	113 (76.4)	148 (100)	0.174	0.677
No	58 (25.6)	169 (74.4)	227 (100)		
How much do you spend in a month to subscribe to the Internet?					
<₦500	59 (24.3)	184 (75.7)	243 (100)	4.780	0.180+
₦500–₦1000	15 (18.8)	65 (81.2)	80 (100)		
₦1000–₦5000	5 (45.5)	6 (54.5)	11 (100)		
>₦5000	5 (33.3)	10 (66.7)	15 (100)		
Have you ever lied to get money so you could access the Internet?					
Yes	32 (34.0)	62 (66.0)	94 (100)	5.746	0.017*
No	61 (21.7)	220 (78.3)	281 (100)		
Have you ever stolen money so you could access the Internet?					
Yes	11 (34.4)	21 (65.6)	32 (100)	1.720	0.190
No	82 (23.9)	261 (76.1)	343 (100)		

***significant at p<0.05**
+ Fisher's exact statistic

4.5.3.3 Association between specific Internet activities and Problematic Internet Use

Table 19 reveals that 63 out of 233 (27%) participants who had used the Internet for social networking in the past month were problematic Internet users compared to 30 out of 142 (21.1%) participants who reported not using the Internet for social networking; the association was, however, not statistically significant (χ^2= 1.653; p= 0.198. Fourteen (14) out of 46 (30.4%) participants who accessed sex-oriented information online were problematic Internet users compared with 79 out of 329 (24%) participants who reported not obtaining sex-oriented information online. The association was, however, not statistically significant (χ2= 0.893; p= 0.345). Thirty-eight (38) out of 122 (31.1%) participants who reported using the e-mail in the past month were problematic Internet users compared to 55 out of 253 (21.7%) participants who reported not using the e-mail. The association was statistically significant (χ^2= 3.907; p= 0.048).

Table 19 Association between specific Internet activities and Problematic Internet Use

N=379

Internet applications	Problematic Internet Use		Total	χ^2	p
	Yes n (%)	No n (%)			
Socializing/chatting					
Yes	63 (27.0)	170 (73.0)	233 (100)	1.653	0.198
No	30 (21.1)	112 (78.9)	142 (100)		
Reading News					
Yes	54 (24.9)	163 (75.1)	217 (100)	0.002	0.964
No	39 (24.7)	119 (75.3)	158 (100)		
Getting information for schoolwork					
Yes	71 (25.8)	204 (74.2)	275 (100)	0.573	0.449
No	22 (22.0)	78 (78.0)	100 (100)		
Online gambling					
Yes	12 (27.9)	31 (72.1)	43 (100)	0.251	0.616
No	81 (24.4)	251 (75.6)	332 (100)		
Getting sex-oriented information					
Yes	14 (30.4)	32 (69.6)	46 (100)	0.893	0.345
No	79 (24.0)	250 (76.0)	329 (100)		
Online gaming					
Yes	34 (25.6)	99 (74.4)	133 (100)	0.064	0.800
No	59 (24.4)	183(75.6)	242 (100)		
Online shopping					
Yes	23 (26.1)	65 (73.9)	88 (100)	0.110	0.740
No	70 (24.4)	217 (75.6)	287 (100)		
E-mail					
Yes	38 (31.1)	84 (68.9)	122 (100)	3.907	0.048*
No	55 (21.7)	198 (78.3)	253 (100)		
General surfing					
Yes	41 (26.3)	115 (76.7)	156 (100)	0.315	0.575
No	52 (23.7)	167 (76.3)	219 (100)		
Downloading music, videos, documents etc					
Yes	65 (27.4)	172 (72.6)	237 (100)	2.382	0.123
No	28 (20.3)	110 (79.7)	138 (100)		

N<379 indicates missing data

4.5.4 Association between specific Internet activities and Mental Health Problems among Internet Users

4.5.4.1 Association between Socializing/Chatting and Mental Health Problems among Internet Users

Table 20 below reveals that 61 out 230 (26.5%) participants who reported using the Internet for social networking had symptoms suggestive of emotional problems compared to 20 out of 136 (14.7%) participants who did not report using the Internet for social networking. The association was found to be statistically significant (χ^2= 6.924; p= 0.009. Sixty-two (62) out of 230 (27.%) participants who reported had used the Internet for social networking had symptoms suggestive of total difficulties compared to 44 out of 136 (32.4%) participants who did not use the Internet for social networking. This association was, however, not statistically significant (χ^2= 1.210; p= 0.271).

Table 20 Association between Socializing/Chatting and Mental Health Problems among Internet Users

	N=379			
Mental health problems	**Socializing/chatting**			
	Yes n (%)	**No n (%)**	**χ^2**	**p**
Emotional problems				
Yes	61 (26.5)	20 (14.7)	6.924	0.009*
No	169 (73.5)	116 (85.3)		
Total	230 (100)	136 (100)		
Conduct problems				
Yes	60 (26.1)	43 (31.4)	1.195	0.274
No	170 (73.9)	94 (68.6)		
Total	230 (100)	137 (100)		
Hyperactivity symptoms				
Yes	29 (12.6)	24 (17.4)	1.831	0.206
No	201 (87.4)	114 (82.6)		
Total	230 (100)	138 (100)		
Peer problems				
Yes	91 (39.7)	60 (43.5)	0.497	0.481
No	138 (60.3)	78 (56.5)		
Total	229 (100)	138 (100)		
Total difficulty				
Yes	62 (27.0)	44 (32.4)	1.210	0.271
No	168 (73.0)	92 (67.6)		
Total	230 (100)	136 (100)		

***significant at p<0.05**

4.5.4.2 Association between Reading news and mental health problems among Internet Users

Table 21 below reveals that 48 out of 209 (23%) participants who used the Internet for the purpose of reading news had symptoms indicative of emotional problems compared to 33 out of 157 (21%) participants who did not use the Internet for the purpose of reading news. This association was, however, not statistically significant (χ^2= 0.197; p= 0.657). Fifty-three (53) out of 210 (25.2%) participants who used the Internet for the purpose of reading news had symptoms indicative of conduct problems; the association was, however, not statistically significant (χ^2 = 1.944; p= 0.163). Fifty-seven (57) out of 209 (27.3%) participants who used the Internet for the purpose of reading news had symptoms indicative of total difficulties compared to 49 out of 154 (31.2%) participants who did not use the Internet for the purpose of reading news. This association was, however, not statistically significant (χ^2= 0.676; p= 0.411).

Table 21 Association between Reading news and mental health problems among Internet Users

N= 379

Mental health problems	Reading news		χ^2	p
	Yes n (%)	No n (%)		
Emotional problems				
Yes	48 (23.0)	33 (21.0)	0.197	0.657
No	161 (77.0)	124 (79.0)		
Total	209 (100)	157 (100)		
Conduct problems				
Yes	53 (25.2)	50 (31.8)	1.944	0.163
No	157 (74.8)	107 (68.2)		
Total	210 (100)	157 (100)		
Hyperactivity symptoms				
Yes	35 (16.6)	18 (11.5)	1.916	0.166
No	176 (83.4)	139 (88.5)		
Total	211 (100)	157 (100)		
Peer problems				
Yes	88 (41.7)	63 (40.4)	0.065	0.799
No	123 (58.3)	93 (59.6)		
Total	211 (100)	156 (100)		
Total difficulty				
Yes	57 (27.3)	49 (31.2)	0.676	0.411
No	152 (72.7)	108 (68.8)		
Total	209 (100)	154 (100)		

4.5.4.3 Association between getting information for school work and mental health problems among study participants

Table 22 below reveals that 102 out of 270 (37.8%) participants who used the Internet for academic purposes reported symptoms indicative of peer problems compared to 49 out of 97 (40.5%) participants who did not use the Internet for academic purposes. This association was found to be statistically significant (χ^2= 4.781; p= 0.029). Sixty-nine (69) out of 269 (25.7%) participants who reported using the Internet for schoolwork had symptoms indicative of conduct problems compared to 34 out of 98 (34.7%) participants who did not report using the Internet for schoolwork. This association was, however, not statistically significant (χ^2= 2.910; p= 0.088). Seventy-one (71) out of 268 (26.5%) participants who reported using the Internet for academic purposes had symptoms suggestive of total difficulties compared to 35 out of 98 (35.7%) participants who did not report using the Internet for academic purposes. This association was, however, not statistically significant (χ^2= 2.966; p= 0.085).

Table 22 Association between getting information for school work and mental health problems among study participants

N=379

	Getting information for schoolwork		χ^2	p
	Yes n (%)	**No n (%)**		
Emotional problems				
Yes	64 (23.8)	17 (17.5)	1.624	0.202
No	205 (76.2)	80 (82.5)		
Total	269 (100)	97 (100)		
Conduct problems				
Yes	69 (25.7)	34 (34.7)	2.910	0.088
No	200 (74.3)	64 (65.3)		
Total	269 (100)	98 (100)		
Hyperactivity symptoms				
Yes	35 (13.0)	18 (18.4)	1.704	0.192
No	235 (87.0)	80 (81.6)		
Total	270 (100)	98 (100)		
Peer problems				
Yes	102 (37.8)	49 (50.5)	4.781	0.029*
No	168 (62.2)	48 (49.5)		
Total	270 (100)	97 (100)		
Total difficulty				
Yes	71 (26.5)	35 (35.7)	2.966	0.085
No	197 (73.5)	63 (64.3)		
Total	268 (100)	98 (100)		

***significant at p<0.05**

4.5.4.4 Association between online gambling and mental health problems among study participants

Table 23 below reveals that 24 out of 41 (65.9%) participants who engaged in online gambling reported symptoms indicative of peer problems compared to 124 out of 326 (38%) participants who did not engage in online gambling. This association was found to be statistically significant (χ^2= 11.637; p= 0.001). Five (5) out of 40 (12.5%) participants who gambled online reported symptoms suggestive of emotional problems compared with 76 out 326 (23.3%) participants who did not gamble online. This association was, however, not statistically significant (χ^2= 2.417; p= 0.120).

Table 23 Association between online gambling and mental health problems among study participants

	N= 379			
	Online gambling			
	Yes n (%)	**No n (%)**	**χ^2**	**p**
Emotional problems				
Yes	5 (12.5)	76 (23.3)	2.417	0.120
No	35 (87.5)	250 (76.3)		
Total	40 (100)	326 (100)		
Conduct problems				
Yes	11 (27.5)	92 (28)	0.007	0.933
No	29 (72.5)	235 (72)		
Total	40 (100)	327 (100)		
Hyperactivity symptoms				
Yes	9 (22)	44 (13.5)	2.133	0.144
No	32 (78)	283 (86.5)		
Total	41 (100)	327 (100)		
Peer problems				
Yes	24 (65.9)	124 (38)	11.637	0.001 *
No	17 (34.1)	202 (62)		
Total	41 (100)	326 (100)		
Total difficulty				
Yes	15 (37.5)	91 (27.9)	1.591	0.207
No	25 (62.5)	235 (72.1)		
Total	40 (100)	326 (100)		

***significant at p<0.05**

4.5.4.5 Association between getting sex-oriented information and mental health problems among Internet Users

Table 24 reveals that 18 out of 42 (42.9%) participants who obtained sex-oriented information on the internet reported symptoms of conduct problems compared to 85 out of 325 (26.2%) participants who did not access sex-oriented information online. This difference was found to be statistically significant (χ^2=5.344; p= 0.023). Twenty-seven (27) out of 42 (64.3%) participants who obtained sex-oriented information on the internet reported symptoms indicative of peer problems compared to their 124 out of 325 (37.9%) participants who did not obtain sex-oriented information on the Internet (χ^2=10.488; p= 0.001).

Table 24 Association between getting sex-oriented information and mental health problems among Internet Users

N= 379

Mental health problems	Getting sex-oriented information		χ^2	p
	Yes n (%)	No n (%)		
Emotional problems				
Yes	8 (19.0)	73 (22.5)	0.262	0.609
No	34 (81.0)	251 (77.5)		
Total	42 (100)	324 (100)		
Conduct problems				
Yes	18 (42.9)	85 (26.2)	5.344	*0.023
No	24 (57.1)	240 (73.9)		
Total	42 (100)	325 (100)		
Hyperactivity symptoms				
Yes	11 (26.2)	42 (13)	5.344	0.021*
No	31 (73.8)	282 (87)		
Total	42 (100)	324 (100)		
Peer problems				
Yes	27 (64.3)	124 (37.9)	10.488	0.001*
No	15 (35.7)	201 (62.1)		
Total	42 (100)	325 (100)		
Total difficulty				
Yes	18 (42.9)	88 (27.2)	4.453	0.035*
No	24 (57.1)	236 (72.8)		
Total	42 (100)	324 (100)		

***significant at p<0.05**

4.5.4.6 Association between online gaming and mental health problems among Internet Users

Table 25 below reveals that 34 out of 129 (26.4%) participants who engaged in online gaming reported symptoms suggestive of conduct problems compared to 69 out of 238 (29%) participants who did not engage in online gaming. Fifty-nine (59) out of 130 (45.4%) participants who engaged in online gaming reported symptoms suggestive of peer problems compared to 92 out of 327 (38.8%) participants who did not engage in online gaming. This association was, however, not statistically significant (χ^2= 1.495; p= 0.221).

Table 25 Association between online gaming and mental health problems among Internet Users

N=379

Mental health problems	Online gaming		χ^2	p
	Yes n (%)	No n (%)		
Emotional problems				
Yes	24 (18.6)	57 (24.1)	1.438	0.231
No	105 (81.4)	180 (75.9)		
Total	129 (100)	237 (100)		
Conduct problems				
Yes	34 (26.4)	69 (29)	0.288	0.592
No	95 (73.6)	169 (71)		
Total	129 (100)	238 (100)		
Hyperactivity symptoms				
Yes	18 (13.8)	35 (14.9)	0.050	0.822
No	112 (86.2)	203 (85.1)		
Total	130 (100)	238 (100)		
Peer problems				
Yes	59 (45.4)	92 (38.8)	1.495	0.221
No	71 (54.6)	145 (61.2)		
Total	130 (100)	237 (100)		
Total difficulty				
Yes	37 (28.7)	69 (29.1)	0.008	0.931
No	92 (71.3)	168 (70.9)		
Total	129 (100)	237 (100)		

4.5.4.7 Association between online shopping and mental health problems among Internet Users

Table 26 below reveals that 26 out of 83 (31.3%) participants who engaged in online shopping reported symptoms suggestive of emotional problems compared to 55 out of 283 (19.4%) participants who did not engage in online shopping. This difference was found to be statistically significant (χ^2= 5.265; p= 0.022). Twenty (20) out of 83 (24.1%) participants who engaged in online shopping reported symptoms suggestive of hyperactivity symptoms compared to 33 out of 285 (11.6%) participants who were not did not shop online (χ^2= 8.170; p= 0.004).

Table 26 Association between online shopping and mental health problems among Internet Users

N= 379

	Online shopping			
	Yes n (%)	**No n (%)**	**χ^2**	**p**
Emotional problems				
Yes	26 (31.3)	55 (19.4)	5.265	0.022*
No	57 (68.7)	228 (80.6)		
Total	83 (100)	283 (100)		
Conduct problems				
Yes	29 (34.9)	74 (26.1)	2.551	0.113
No	54 (65.1)	210 (73.9)		
Total	83 (100)	284 (100)		
Hyperactivity symptoms				
Yes	20 (24.1)	33 (11.6)	8.170	0.004 *
No	63 (75.9)	252 (88.4)		
Total	83 (100)	285 (100)		
Peer problems				
Yes	41 (49.4)	110 (38.7)	3.017	0.082
No	42 (50.6)	174 (61.3)		
Total	83 (100)	284 (100)		
Total difficulty				
Yes	31 (37.3)	75 (26.4)	3.671	0.055
No	52 (62.7)	208 (73.6)		
Total	83 (100)	283 (100)		

***significant at p<0.05**

4.5.4.8 Association between e-mail and mental health problems among Internet Users

Table 27 below reveals that 33 out of 117 (28.2%) participants who engaged in e-mailing activities reported symptoms suggestive of hyperactivity compared to 20 out of 251 (8%) participants who did not engage in e-mailing (χ^2= 26.510; p= <0.001). Forty-three (43) out of 117 (36.8%) participants who used e-mails reported symptoms suggestive of total difficulties compared to 63 out of 249 (25.3%) participants who did not use e-mails. This association was statistically significant (χ^2= 5.073; p= 0.024).

Table 27 Association between e-mail and mental health problems among study participants

N= 379

	E-mail			
	Yes n (%)	**No n (%)**	**χ^2**	**p**
Emotional problems				
Yes	29 (24.8)	52 (20.9)	0.704	0.402
No	88 (75.2)	197 (79.1)		
Total	117 (100)	249 (100)		
Conduct problems				
Yes	34 (29.1)	69 (27.5)	0.084	0.772
No	83 (70.9)	181 (72.5)		
Total	117 (100)	250 (100)		
Hyperactivity symptoms				
Yes	33 (28.2)	20 (8)	26.510	<0.001*
No	84 (71.8)	231 (92)		
Total	117 (100)	251 (100)		
Peer problems				
Yes	48 (41)	103 (41.2)	0.001	0.975
No	69 (59)	147 (58.8)		
Total	117 (100)	250 (100)		
Total difficulty				
Yes	43 (36.8)	63 (25.3)	5.073	0.024*
No	74 (63.2)	186 (74.7)		
Total	117 (100)	249 (100)		

***significant at p<0.05**

4.5.4.9 Association between general surfing and mental health among Internet Users

Table 28 below reveals that 55 out of 152 (35.8%) study participants who engaged in general surfing/browsing reported symptoms of peer problems compared to 96 out of 215 (44.7%) participants who did not engage in general surfing. This difference was, however, not found to be statistically significant (χ^2= 2.636; p= 0.104). Thirty-five (35) out of 151 (22.7%) who engaged in general surfing reported symptoms of conduct problems compared to 68 out of 216 (31.8%) participants who did not engage in general surfing. The association was, however, not statistically significant (χ^2= 3.035; p= 0.082).

Table 28 Association between general surfing and mental health among Internet Users

N=379

	General surfing			
	Yes n (%)	**No n (%)**	**χ^2**	**p**
Emotional problems				
Yes	32 (21.3)	49 (22.9)	0.094	0.759
No	118 (78.7)	167 (77.1)		
Total	150 (100)	216 (100)		
Conduct problems				
Yes	35 (22.7)	68 (31.8)	3.035	0.082
No	116 (77.3)	148 (68.2)		
Total	151 (100)	216 (100)		
Hyperactivity symptoms				
Yes	26 (17.1)	27 (12.6)	1.535	0.215
No	126 (82.9)	189 (87.4)		
Total	152 (100)	216 (100)		
Peer problems				
Yes	55 (35.8)	96 (44.7)	2.636	0.104
No	97 (64.2)	119 (55.3)		
Total	152 (100)	215 (100)		
Total difficulty				
Yes	40 (26.5)	66 (30.7)	0.763	0.382
No	111 (73.5)	149 (69.3)		
Total	151 (100)	215 (100)		

4.5.4.10 Association between downloading music, videos, documents etc. and mental health among Internet Users

Table 29 A lesser proportion of adolescents who downloaded music, videos and other documents on the internet had significant total difficulties, compared with those who did not engage in downloading on the Internet (25.9% vs 34.3%; χ^2= 2.959). This difference was, however, not statistically significant (p= 0.085). See details in table 4.5.4.10 below.

Table 29 Association between downloading music, videos, documents etc. and mental health among Internet Users

N=379

	Downloading music, videos, documents etc.			
	Yes n (%)	**No n (%)**	**χ^2**	**p**
Emotional problems				
Yes	51 (22)	30 (22.4)	0.008	0.928
No	181 (78)	104 (77.6)		
Total	232 (100)	134 (100)		
Conduct problems				
Yes	62 (26.6)	41 (31.1)	0.670	0.413
No	171 (73.4)	93 (68.9)		
Total	233 (100)	134 (100)		
Hyperactivity symptoms				
Yes	34 (14.5)	19 (14.2)	0.009	0.927
No	200 (85.5)	115 (85.8)		
Total	234 (100)	134 (100)		
Peer problems				
Yes	92 (39.5)	59 (44)	0.726	0.394
No	141 (60.5)	75 (56)		
Total	232 (100)	134 (100)		
Total difficulty				
Yes	60 (25.9)	46 (34.3)	2.959	0.085
No	172 (74.1)	88 (65.7)		
Total	232 (100)	134 (100)		

4.6 Association between self-perception of Problematic Internet use and Internet use status on the Internet Addiction Test

Table 30 below reveals that 62 out of 165 (37.6%) respondents who perceived that they were "addicted to the Internet" were found to be problematic Internet users on the Internet Addiction Test, compared to 31 out of 210 (14.8%) respondents who did not perceive themselves "addicted to the Internet". This association was found to be significant (χ^2=25.787; p= <0.001)

Table 30 Association between self-perception of Problematic Internet use and Internet use status on the Internet Addiction Test

Do you think you are addicted to the Internet	Problematic Internet Use		Total	χ^2	p
	Yes n (%)	No n (%)			
Yes	62 (37.6)	103 (62.4)	165 (100)	25.787	<0.001
No	31 (14.8)	179 (85.2)	210 (100)		

Word count: 2,868

Chapter Five

Discussion of Findings, Conclusion and Recommendations

5.1 Discussion

5.1.1 Socio-demographic Characteristics of Study Participants

This study investigated the prevalence and pattern of Internet use, as well as the correlates of problematic Internet use among in-school adolescents in Ibadan, South-west Nigeria. Participants were selected from four schools in two urban local government areas in Ibadan city.

Girls accounted for 55.6% of study participants while boys, on the other hand, accounted for the remaining 44.4%. This preponderance of girls is consistent with findings from Osinubi (2018), in a recent school study in Ibadan, where 54.4% and 45.4% of participants were females and males respectively. This is in contrast to the 48.2% for girls and 51.8% for boys found by Omigbodun *et al.*,(2010) in a school study in Southwest Nigeria. Since 2013, the senior secondary school enrolment rate in the Oyo state has consistently been in the favour of girls, and as of 2016, females accounted for 51% of senior secondary school enrolment (Federal Ministry of Education, 2016). This female dominance may be seen as a result of the efforts of government and other stakeholders at achieving the sustainable development goal 5 (building upon the millennium development goal 3), which is aimed at achieving gender equality and empowering girls. This may also be reflective of the higher senior secondary school completion rate that has been reported among girls in the state compared to boys (44% vs 40.85%) (Federal Ministry of Education, 2016). This trend also points to a need for empowerment programmes for boys, as it appears that more boys are dropping out of school.

Study participants ranged from 12 to 19 years old, with the mean age being 15.76 years. The mean age found in this study is slightly higher than the mean age of 15 years found by Omigbodun *et al.*, (2010), in a study which comprised 2000 adolescents in 20 junior and senior secondary schools in rural and urban areas in greater Ibadan. The lower limit of the age range in this study was selected at twelve (12) years because it was expected that students in senior secondary class one (SS1)— are typically not younger than 12 years. Also there was an attempt in this study to select students who would typically access the Internet for assignments and schoolwork hence the older mean age in this study.

A 5.8% prevalence of orphan-hood was found in this study, which is also lower than 10.1% obtained among ,youths in rural and urban areas in South-West Nigeria reported by Omigbodun (2006). Since the aforementioned study included youths in both rural and urban areas, the higher rate found may have been due to the lower life expectancy known to exist in rural areas where there are problems of access to healthcare Another explanation for the lower orphan-hood rate found in this study might be that orphans generally have poor school attendance rate and are more likely to drop out of school and not make it as far as the senior secondary classes (Monasch & Boerma, 2004).

About 3 out of 10 participants reported working to earn money before or after school. This figure is significantly higher than the 10% found by Osinubi (2018) in a study among adolescents in secondary schools in an urban local government area in Ibadan. This variation could most likely be explained by the fact that, whereas, the Osinubi (2018) study was conducted in a rather affluent local government area, the same could not be said about Ibadan North West LGA, one of the participating local governments in this study. This finding is, however, comparable to similar

studies among secondary school adolescents in Ibadan, where it was found that 20-25% of school children hawked before or after school hours (Omigbodun *et al.,* 2010; Ejigbo, 2003).

5.1.2 Prevalence and Pattern of Internet use among Study Participants

5.1.2.1 Prevalence of Internet Use among study participants

A remarkably high prevalence of Internet usage was found among the study participants, with almost 98% of respondents reporting to be Internet users. This finding further affirms the increasing pervasiveness of the Internet in the lives of young people, even in the developing world.

5.1.2.2 Prevalence of Problematic Internet Use

On the Internet Addiction Test (IAT), over two-thirds (67%) of the studied adolescents were mild, moderate or severe problematic Internet users. The prevalence rate obtained for mild Internet use (44%) is much higher than the 28.5% found by Okwaraji *et al.,* (2015b) among in-school adolescents in Enugu, Nigeria. It could be that, due to certain cultural differences, adolescents in the South-western part of the country are more likely to exhibit lower levels of problematic Internet use compared to those from the South-eastern part of the country where the Okwaraji *et al.*, study was carried out. Future studies may want to explore the mediating role of culture in the development of PIU amongst adolescents. Although what seems to be more likely the reason for the difference is the rapid rise in access to the Internet in the last 2 to 3 years. The Okwaraji *et al.,* (2015b) was published in 2015, four years ago and since then access to Internet for young and old in Nigeria has risen astronomically.

The majority (43.7%) of adolescents in this study fell into the mild problematic Internet use category, thus being a departure from findings from Nigerian studies by Adiele and Olatokun (2014) and Okwaraji *et al.,* (2015b), where the majority of the studied adolescents fell within the

normal Internet users category. It should, however, be noted that in a 2014 study by Adiele and Olatokun (2014), 76.4% of the studied adolescents were classified as normal Internet users; while a 2015 study by Okwaraji *et al.,* found 36.9% of the studied adolescents to be normal Internet users. Extrapolating the findings from the aforementioned studies, which were conducted some 5 years before this current study, one might have some valid ground to expect that the prevalence of abnormal adolescent Internet users would rise. Could the shift in the majority prevalence (from normal Internet to mild problematic Internet use) discovered in this study suggest to us that a lot more adolescents are engaging the Internet in excess (even though they may yet be experiencing subliminal difficulties)? Another possible explanation for this finding could be. The 23.7% prevalence rate for moderate PIU obtained in this study is, however, comparable to the 23.5% found by Okwaraji *et al.,* (2015b). Again the increase in access is a strong factor to consider.

One in every 100 adolescents (1.1%) in this study had severe PIU, significantly lower than 1 in every 10 (11%) adolescents obtained by Okwaraji *et al.,* (2015b) in Southeast Nigeria, but comparable to what was found among Chinese high school adolescents (0.96%) Xin *et al.,* (2018). Marked variances have been known to exist in the prevalence rates of PIU the world over due to a lack of consensus on the criteria for assessing problematic Internet use (Aboujaoude, 2010) could be a factor. Further studies are required in this emerging field of Internet use and its consequences.

Overall, 1 in 4 (24.8%) of the respondents (those with moderate PIU and severe PIU) were categorised as problematic Internet users. This rate is similar to that reported by Xin *et al.,* (2018) among high school adolescents in urban and rural areas of China. Interestingly this rate of problematic Internet use is not to distant from the prevalence of mental health problems among

adolescents in children and adolescents, which reveals a rate of about 20% worldwide. Could there be some overlap?

Association between self-perception of Internet addiction and PIU

Another noteworthy finding from this study is the association that was found between adolescents' self-perception of their "Internet addiction" and Internet use status as measured by the Internet Addiction Test (IAT). About 4 out of every 10 adolescents who perceived that they were addicted to the Internet were classified as problematic Internet users on the IAT, as opposed to 2 out of 10 who were classified as problematic Internet users but who did not perceive themselves addicted to the Internet. This finding corroborates the finding of Widyanto *et al.*, (2010), who reported a direct correlation between participants' perception of their "Internet addiction" and their performance on two different measures of Internet addiction. The aforementioned study was carried out online, among self-selected individuals who had participated in a previous study conducted in the United Kingdom (UK). In spite of the bias inherent in the method employed in the online study, a similar result was obtained as this current study, which is an offline one, which employed probability selection techniques.. This seems to support earlier assertions that individuals are quite able to correctly assess their own level of Internet usage, and that it is the individual who ultimately determines their extent of Internet use— whether problematic or not (Widyanto *et al.*, 2010; Davis, 2001).

5.1.2.2.3 Pattern of Internet Use among study participants

The mobile phone was the most used medium for accessing the Internet, with 4 out of 5 (84%) Internet users noting it as their primary means of accessing the Internet. Seven out of 10

respondents, who were Internet users, reported accessing the Internet primarily through their personal mobile phones, while approximately 1 in 10 (13%) claimed accessing the Internet through someone else's mobile phone. This finding is not far-fetched, when one takes into consideration the on-going proliferation of internet-enabled mobile phones, which range from very cheap phones to costly smartphones and other devices. With this development, one may safely assert that the Internet is fast becoming much less of a luxury. It was interesting to find that Internet cafés which once served as the staple of internet access in the city have now been driven to the background (probably only at the verge of extinction), as only one participant reported accessing the Internet primarily from a cyber café. This is in sharp contrast to what was found only a decade ago by Olatokun (2007), whose study found that cyber cafés were the most utilised site of Internet access, as 7 out of 10 adolescent participants had learnt to browse the Internet from a cyber café.

The specific Internet activities most engaged in by adolescents in this study was: obtaining academic information (72.6%), downloading music, videos and other documents (63.1%), and socialising/chatting (61.5%). About 3 in 10 adolescents used e-mails, roughly 1 in 10 gambled online, and 1 in 10 accessed sexually explicit content online. Knowing that more school-going adolescents engage the Internet for the purpose of obtaining academic information— even more than using the social media— is at a first glance encouraging. The proportion of adolescents in this study who reported using the internet for academic purposes which is a marked increase from that obtained by Olatokun (2007) could be a result of increased awareness about the tremendous learning opportunities available online. On a second thought, however, one may want to query whether a good number of participants indicated that they used the Internet for this purpose merely because they considered it a socially desirable response and not because they truly engaged in the practice. One would have also expected that a lot more adolescents than was found engaged in

chatting and social networking, given current assertions that social networking is now the main means of communication among adolescents (Xin *et al.*, 2018).

Seven out of 10 adolescent Internet users reported spending less than ₦500 (>$2) on Internet subscription in a month. This is quite expected, as adolescents are typically dependent on their parents and guardians, and so may not be able to spend any more on Internet access, even if they wanted to. It is, however, noteworthy, that fewer than 1 in 10 (3.1% and 4.2%) of the adolescent Internet users reported spending between ₦1,000 ($3) and ₦5,000 ($15), and ₦5,000 ($15) respectively on Internet subscription per month. One may want to further inquire about what could warrant adolescents to spend such significant amounts on Internet access, and investigate whether this may be a risk factor for current or future maladaptive Internet use. Also salient is the finding that 1 in 4 adolescents studied had ever lied to obtain money for Internet access while just less than 1 in 10 (8.4%) had at one time or the other stolen money in order to be able to afford Internet access. This may well be an ominous portent and an indication that adolescents are experiencing probably irresistible urges to get online at whatever cost.

5.1.4 Socio-demographic Correlates of Problematic Internet Use among Internet Users

In this study, problematic Internet use was significantly associated with gender, with more males (29%) than females (21.4%) being problematic Internet users. Male adolescents were found to be almost twice more likely than females to be problematic Internet use. This finding is in line with findings in majority of problematic Internet use studies where the male gender had been found to be a major risk factor for problematic Internet use (Anderson *et al.*, 2017). A school study in Greece, which included 866 adolescents found that male adolescents were twice likely than females to be problematic Internet users (Kormas *et al.*, 2011). Studies among in-school adolescents in Nigeria and Jordan also found that a significantly greater proportion of males were

problematic Internet users (Okwaraji *et al.,* 2015; Al-Shdayfat *et al.*, 2016). Males have generally been found to have a predilection for technology use and therefore use the Internet more frequently than females, which may subsequently result in excessive use (Padilla-Walker *et al,* 2010). Also, given that it is commonplace to find girls being expected to be busy with house chores and other related activities, and as a result they may have much less time to spend on the Internet, compared to boys who may be indulged by parents to go about playing; this relatively greater latitude available to boys might predispose them to more frequent use of the Internet (particular for non-work related purposes) and subsequently use the medium to excessive levels.

Attending a private school or a public school was not significantly associated with problematic Internet use, although problematic Internet use was found to be more prevalent amongst adolescents in public schools than those in private schools (26.5% and 17.8% respectively). One would have probably expected the figures to emerge the other way round, as private schools are traditionally patronised by the more affluent parents, who subsequently would be more able to provide their children/wards with opportunities for internet access. It is more likely that the issue here is poorer parental supervision of adolescent's Internet use among public school students (who are usually of a relatively lower socioeconomic class), as parents belonging to this social class may be more likely of lower educational status and with less understanding of the need for supervision especially as it pertains to Internet use of their children.

Problematic Internet use was more prevalent among older adolescents (16-19 years old) as opposed to younger adolescents (12-15 years old) (18.8% vs 26.6%), even though not significantly so. This finding is in contrast to the report of Okwaraji *et al.,* (2015), who reported that a significantly greater proportion of older adolescents in a South-eastern city in Nigeria, compared to the younger

ones, were problematic internet users. The findings in this study are, however, similar to that found by Widyanto *et al.,* (2010), in China whose results suggested that age is not a factor in problematic Internet use. An explanation for this finding may be that, as the internet becomes increasingly available to all and sundry, gaps in internet usage which once existed (e.g among age groups) are being narrowed, and consequently reducing the differences in the prevalence of maladaptive internet usage which were once thought to be peculiar to certain demographic groups. Notwithstanding, this finding demonstrates that more older adolescents than younger ones are using the Internet problematically.

An association between problematic Internet use and parent's marital status was not established in this study, although a greater prevalence of problematic Internet use was found among adolescents who came from polygamous homes when compared with those from monogamous homes (31.3% vs 23.2%). Adolescents from polygamous homes are known to be more exposed to conflicts stemming from rivalry issues in the family. These adolescents may, therefore, turn to the Internet for respite from the troubles at the home front; and this may consequently lead to a dependence on certain Internet activities.

Adolescents whose parents were divorced, separated or dead were found to be about 70% less likely to develop problematic Internet use compared with their counterparts whose parents were married. This finding seems to be antithetical to the finding that having divorced or less positively related parents has been associated with problematic Internet use (Willoughby, 2008). A possible explanation for this contrasting finding might be that adolescents who are orphaned (singly or doubly) are more likely to live with other people asides from their parents. Living away from their parents, having to work to earn a living and a number of other socioeconomic disadvantages, which

are commoner amongst orphaned adolescents (Omigbodun, 2006) might make accessing the Internet more challenging for these adolescents, and consequently putting them at a lower risk of using the medium excessively. Also, closer adolescent-parent relationships have been found to be a protective factor for the development of PIU (Choo *et al.*, 2015). Therefore, in spite of having parents who are separated or divorced, adolescents who have a cohesive relationship with the parent they live with might be shielded from developing a maladaptive Internet use pattern.

Working to earn money before or after school was found to be inversely associated with problematic Internet use in the studied adolescents, with those who reported working to earn money being twice less likely than their counterparts who do not work to develop problematic Internet use. Adolescents who work are likely to be from the lower rungs of the social ladder, and therefore may not have as much access to the Internet as their non-working counterparts whose parents are more affluent. The significantly lower prevalence of PIU in working adolescents might also be connected to the fact that adolescents who work tend to have much less spare time than their non-working counterparts and consequently, much less time to spend on the Internet. This however contradicts the finding of higher problematic Internet use among public school adolescents in this study because attending public school is associated with lower social class, lesser parental supervision and having to work to earn money before or after school (Omigbodun *et al.*, 2010). This requires further study.

5.1.5 Association between Self-esteem and Problematic Internet Use among Internet Users

This study was able to demonstrate a significant association between self-esteem and problematic internet use, with significantly greater proportion of respondents who had low self-esteem being problematic internet users when compared with those participants who had higher self-esteem (33.3% vs 18.7%). Adolescents who had low self-esteem were found to be almost three times more

likely to be problematic internet users than their counterparts who had higher self-esteem. This is a contrasting finding to that obtained in a German study by Kowert *et al.*, (2015), while it upholds findings from studies conducted among Korean and Taiwanese adolescents, where high and low self-esteem were found to be protective factor and risk factor respectively for problematic internet use in adolescents. Secondary school students found to be "internet addicts" have been shown to exhibit weaker self-esteem, self-expression, and willingness to express one's viewpoints. Low self-esteem has been linked to addictive behaviours, as the affected individual tends to engage addictive substances to evade their poor self-perceptions (Craig, 1995). As with other associations found in this study, however, low self-esteem could be both a risk factor and an outcome of problematic Internet use in adolescents.

5.1.6 Problematic Internet Use, Pattern of Internet Use and Mental Health Problems

5.1.6.1 Association between Problematic Internet Use and Mental Health Problems

5.1.6.1.1 Prevalence of mental health problems on the SDQ subscales among Internet Users

Using the Strengths and Difficulties Questionnaire to screen for mental health problems among the study population, 22.1%, 28.1%, 14.4%, 41.1% of the adolescent internet users in the study were classified as reporting significant symptoms of emotional problems, conduct problems, hyperactivity problems and peer problems respectively. About 3 out of 10 respondents had significant total difficulty scores.

5.1.6.1.2 Association between Problematic Internet Use and Mental Health Problems on SDQ Subscales among Internet Users

In this study, the presence of emotional problems as measured by the Strengths and Difficulties Questionnaire, was not significantly associated with problematic Internet use; a finding which

corroborates that of Kormas *et al.,* (2011). This finding is a departure from typical findings from problematic Internet use studies where emotional problems such as anxiety and depression have been consistently linked to problematic Internet use (Aboujaoude, 2010). It is possible that the association between PIU and emotional problems is not obvious except in individuals with clinically significant problems. The use of a screening tool, as opposed to a diagnostic tool, in this study, might have been responsible for the lack of association found. It may also be that adolescents in this study are scarcely affected by experiences of online victimization and cyber-bullying, which have been implicated in the development of Internet-related depression and other internalizing problems (Kelly *et al.,* 2019). Noteworthy, however, is that a slightly higher proportion of adolescents with PIU compared to those without PIU reported emotional problems (23.6% vs 21.9%).

A significantly higher proportion of adolescents with problematic Internet use reported conduct problems (36.7%) compared with those who were normal Internet users (25.2%). In a similar vein, a relationship between problematic internet use and behavioural maladjustment was found by Kormas *et al.,* (2011) among Greek school-going adolescents, as adolescents who were found to be maladaptive internet users were twice more likely than their normal internet users to report conduct problems. Hostility and aggression have been found to be major predictors of problematic Internet use among Asian and European adolescents (Ko, Liu, *et al.,* 2009; Stavropoulos *et al.,* 2015). It is possible that adolescents find the Internet as a form of hide-out for expressing their conduct tendencies, which more often than not are unacceptable in face-to-face interactions (Ko, Liu, *et al.,* 2009; Stavropoulos *et al.,* 2015). Adolescents, given their propensity for experimentation and escapades, may also exploit the Internet to express their hostility without having to suffer physical consequences for their actions (Ko *et al.,* 2007). It is also possible that

adolescents develop conduct tendencies secondary to Internet use, as a number of mental health problems have been found to be outcomes of PIU (Gentile *et al.,* 2011). Exposure to specific Internet activities such as playing of violent games, online betting, may also in some ways contribute to the increased likelihood of developing conduct problems in adolescent problematic Internet users.

Contrary to findings among Greek high school adolescents (Kormas *et al.*, 2011), hyperactivity symptoms (as measured by the SDQ) were not significantly associated with PIU among participants in this study. This may suggest cultural variations in adolescents' manifestations of behavioural difficulties associated with Internet use. Future studies may find this an important area to explore.

Peer problems, as measured by the SDQ, was not significantly associated with PIU among the study participants, thus corroborating the finding of Kormas *et al.,* (2011). Given the myriad of opportunities available to adolescents on the Internet for social networking and interactions today, adolescents' social adjustments may even be helped by social media use rather than it worsening (Xin *et al.*, 2017) (the prevalence of peer problems was actually found in this study to be lower in adolescents who had problematic Internet use, even though not statistically so).

Impairment in overall emotional and psychosocial well-being was not found to be significantly linked with PIU in this study, although a greater proportion of participants who were problematic Internet users reported having total difficulties (31.1% vs 28.2%). Korma *et al.*, (2011) reported a significant association between problematic Internet use and global emotional and psychosocial well-being as measured by the Strengths and Difficulties Questionnaire (SDQ) among Greek

adolescents. Similarly, Okwaraji *et al.*, (2015), in their study among secondary school adolescents in Enugu, Nigeria, also found that adolescents who had PIU reported significantly greater psychological distress. The Okwaraji study made use of a different instrument in assessing psychological distress— namely the General Health Questionnaire (GHQ-12)— which might, in turn, have been responsible for the differing finding. It is also possible that certain cultural and environmental factors (which future studies would do well to explore) mediate the development of PIU-related psychosocial difficulties in adolescents. In spite of the absence of a statistically significant association between PIU and total difficulties, however, the higher prevalence of overall psychological impairment found amongst problematic Internet users in this study may be seen as an allusion to earlier assertions that excessive Internet use may have attendant significant psychosocial difficulties in adolescents.

5.1.6.2 Association between Pattern of Internet Use and Problematic Internet Use

5.1.6.2.1 Association between Primary site of Internet access and Problematic Internet Use

The site where adolescents primarily accessed the Internet was found in this study to be associated with problematic Internet use. Participants who accessed the Internet primarily via home computers had the highest proportion of problematic Internet users, followed by those who accessed the Internet through their personal mobile phone. This is similar to what was reported by Kormas *et al.*, (2011), who found a greatest prevalence of problematic Internet use amongst adolescents who accessed the Internet mainly from their homes. A possible explanation for this finding is that, adolescents who have computers connected to the Internet at home have a greater proximity to the Internet and, this proximity may increase when there is inadequate supervision from parents and caregivers on their wards' Internet usage. Those participants who used the Internet from other people's mobile phones had the least proportion of problematic Internet users.

This is not surprising, seeing that someone who has to borrow someone else's phone to browse the Internet apparently has a lot more restricted access to the Internet and as a result may be more goal-directed in their internet use compared to someone who can use their mobile phones at will.

5.1.6.2.2 Association between cost and sources of finance for Internet Use and Problematic Internet Use

No significant association was found between how much adolescents spent on monthly Internet subscription and problematic Internet use, even though adolescents who spent between ₦1000 and ₦5,000, and above ₦5,000 per month on monthly subscription, recorded higher prevalence of problematic Internet use— 45.5% and 33.3% respectively— compared with 24.3% and 18.8% found among participants who spent less than ₦500, and ₦500-₦1,000 respectively. Young (1998) in her seminal work on "internet addicts", found that problematic Internet use takes its toll on the individual's finances, as the affected individual may continue to incur costs related to internet subscription until they experience bankruptcy. It should, however, be noted that Young's work was conducted amongst adults and not school-going adolescents: financial problems associated with PIU may not be easily visible (or even be so significant) as it would be in adults, seeing adolescents are typically dependent on parents, older siblings and relatives, who may serve as cushion for any financial burden; this may not be so for adults. Also, given the fact that it is not uncommon today to find mobile networks providing their customers with competitive data bonuses (and even free access to certain social networking sites); and, as noted by Young (1998), this development may be a subtle maintaining factor for problematic Internet use. Therefore, financial problems may actually not be a significant correlate to look for among problematic Internet users today.

Another noteworthy finding from this study is the association that was found between having ever lied to get money for Internet subscription and problematic Internet use among the studied adolescents. A significantly higher proportion (34%) of adolescents who had one time or the other lied to obtain money for internet subscription had problematic internet use when compared with those who had never lied to obtain money for internet access (21.7%). Lying about the extent of one's Internet use has been found to be a common trait of excessive Internet users (Young, 1998; Beard *et al.,* 2001), and as this study has shown, this lying may also be with the aim of deceiving others to obtain money for internet access. This may also be another credence to the link between symptoms of conduct problems and problematic Internet use (which was further established in this study), as lying is a known characteristic trait of individuals with conduct problems. About 3 out of 10 adolescents who had ever stolen so they could access the Internet were problematic Internet users, as opposed to about 2 out of 10 who had never stolen to access the Internet. Albeit a statistically significant association was not found between PIU and stealing money for the purpose of accessing the Internet, the higher prevalence of PIU among adolescents who reported stealing money for this purpose is quite instructive, as it

5.1.6.2.3 Association between specific Internet activities and Problematic Internet Use

Despite a higher prevalence of problematic Internet use found among adolescents who engaged in social networking (27% vs 21.1%), a significant association was not found between PIU and that particular Internet activity. This contrasts the finding by Kormas *et al.,* (2011) who reported that adolescents who used the Internet for the purpose of socializing (including chat room use) were about two times more likely to be problematic Internet users. Xin *et al.,* (2017) in a study among Chinese adolescents, also found a significant association between use of social networking sites and problematic Internet use. It has been posited that the relationship between social network use

on the Internet and excessive Internet use (and psychosocial wellbeing) is not yet clear, thus requiring further inquiry. A possible explanation for this finding could also be that to have a true picture of the relationship between PIU and social networking sites (or any other internet activity at that), the amount of time spent on the activity should be compared with Internet use status. This finding may also be due to the fact that the positive aspects of social networking (whether offline or online), such as maintenance of communication with peers, which is known to foster adolescents' development, is mitigating the risks of developing PIU in adolescents (Xin *et al.*, 2017).

E-mailing was found in this study to be associated with problematic Internet use, with a greater proportion of adolescents who reported using e-mails were found to be problematic Internet users when compared with the non-e-mail users (31.1% vs 21.7%). This finding is in tandem with results found among Greek high school adolescents, where adolescents who engaged in e-mailing were found to be about 3 times more likely to develop problematic Internet use (Kormas *et. al*, 2011). E-mail use has been said to be associated with the development of generalized PIU, and it usually stems from a desire for the social contact and reinforcement enjoyed by the user online, which consequently leads to a dependence on that aspect of virtual life. Given the heightened need for social connectedness typical of the adolescent stage of development, they, therefore, become at an increased risk of excessively engaging the Internet activity.

5.1.6.2.4 Association between specific Internet activities and mental health problems

A significantly higher proportion of adolescents who engaged in online socializing/chatting on Facebook, WhatsApp etc. reported significant emotional symptoms. This finding corroborates findings from a recent study, which made use of data from the United Kingdom (UK) Millennium

Cohort study, where social media use for long hours was associated with depressive symptoms amongst adolescents (Kelly *et al.,* 2019). As social networking continues to occupy an integral part of adolescents' life today, there is growing evidence demonstrating a link between excessive social media use and mental health problems in young people, with poor sleep, online harassment, poor body image and low self-esteem all serving as mediating factors for this association (Sampasa-Kanyinga & Hamilton, 2015; Kelly *et al.,* 2018). An adolescent's experience of online harassment, for example, may lead to low self-esteem, poor sleep and subsequently emotional problems.

One in 2 adolescents who did not use the Internet to obtain academic information were found to be problematic Internet users compared to about 4 in 10 adolescents who obtained academic information online. Similarly, Kormas *et al.,* (2011) found that adolescents who used the Internet for academic purposes were twice less likely to develop problematic Internet use. Extrapolating from this finding, one could assert that adolescents who use the Internet for academic purposes are more likely to be better adjusted and less vulnerable to the attendant psychosocial impairments associated with excessive Internet use. Adolescents who use the Internet for the purpose of obtaining academic information are also likely to have a more positive academic disposition, and consequently, may be more goal-oriented in using the Internet and less likely to use it to excessive levels (Anderson *et al.,* 2017).

The prevalence of peer problems as reported by the study participants was significantly higher in adolescents who gambled online than in those who did not engage in online gambling (65.9% vs 38%). This finding further demonstrates the adverse influence of gambling on adolescents' mental health. Indeed, online gambling is not necessarily synonymous to problematic Internet use, and it could exist in the absence of the Internet. However, given the current glamourisation of online

betting in the media— particularly sports betting— one may safely assert that adolescents' increasing access to the Internet might aid both the initiation and maintenance of gambling and its associated mental health problems in this critical age group.

Obtaining sex-oriented information emerged as the online activity associated with the most mental health problems as measured by the Strengths and Difficulties Questionnaire (SDQ). Compared with those who did not obtain sex-oriented information on the Internet, a greater proportion of adolescents who obtained sex-oriented information online reported conduct problems, hyperactivity symptoms, peer problems, and total difficulty. Consumption of sexually explicit content has been linked with alcohol problems, peer difficulties, psychological distress—indeed, a diminished mental health— in adolescents (especially males). Adolescents' consumption of pornographic materials may also have consequences extending to others beyond the individual as it may result in sexual harassment, sexual aggression against others in school and in the community at large (Matteboa *et al.*, 2018).

A significant association between online shopping and emotional symptoms was found in this study. A significantly higher proportion of adolescents who engaged in online shopping reported emotional symptoms compared to their counterparts who did not engage in that Internet activity. A possible explanation for this finding may be that adolescents may buy what they later discover they did not really need (or they feel disappointed in the quality of the product), which may subsequently place a significant strain on their emotional well-being. The presence of emotional problems may predispose them to buying things probably as a way of making them feel good (the thought of having something new), in order to help them cope with unpleasant feelings. Could this also be a function of low self-esteem (which is usually associated with mood problems)— as adolescents with low self-esteem may find it hard to walk into conventional shops to select goods

of their choice; they may not feel so confident about asserting themselves to select what they really want. They may, therefore, find online shopping platforms perfect media to compensate for their social inadequacies. And what if all they do is really window-shopping and they never really buy? The frustration and disappointments that may accompany the adolescent's inability to purchase a choice good (probably due to lack of funds) may also take its toll on the emotional health of such a one.

Online shopping was also found to be significantly associated with hyperactivity symptoms in the studied adolescents. The online advertising mechanism employed today is typically via intrusive, unsolicited pop-up messages, aided by highly alluring graphics. This marketing ploy may readily appeal to an adolescent (more so when such a one possesses hyperactive/impulsive traits), leading to excessive online shopping activities. This may be an explanation for the association that was found in this study between online shopping and hyperactivity symptoms.

Adolescent E-mail use was associated with hyperactivity, with about 3 in 10 of adolescents who reported using the e-mail reporting hyperactivity symptoms, as opposed to just 8% prevalence of hyperactivity symptoms found among those who reported not using the e-mail. This finding is corroborated by Korma *et al.*, (2011) who found that adolescent e-mail users were about 2 times more likely than non-users to be problematic Internet users. Indeed the relationship found here between PIU and e-mail (as with other findings earlier discussed) could as well be said to be bi-directional, and only prospective longitudinal studies can ascertain the exact direction of causality. However, given the short attention span of individuals with hyperactivity/impulsivity traits, it is possible that adolescents who possess such traits tend to constantly check their e-mails when their attention and concentration on a certain task seem to be waning. And since this would happen

many times in a day for such a one, such adolescents may begin to experience some form of dependence on e-mail checking, even when they know that they are not likely to have any mail.

Adolescent e-mail use was also associated with significant total difficulties on the Strengths and Difficulties Questionnaire (SDQ), with about 4 out of 10 email users reporting significant overall difficulties as opposed to about 1 out 4 adolescents who were not e-mail users and who reported significant overall psychosocial difficulties. The link between adolescent e-mail use and mental health problems, which this study has reinforced, may be seen as a prompt to further explore the peculiarities of adolescent-e-mail interactions, which should help to further understand why this link exists.

5.2 Conclusion

In conclusion, this study was able to demonstrate that an appreciable rate of problematic Internet use exists among in-school adolescents in the study area, and that it has a significant association with conduct problems among the studied adolescents. It was also demonstrated that lower self-esteem is associated with increased likelihood of problematic Internet use in adolescents. In addition, this study was also able to demonstrate significant associations between specific Internet activities and different mental health problems on the Strengths and Difficulties Questionnaire.

5.3 Strengths of the study

This study is one of the very few studies in Nigeria and, indeed, on the African continent to explore this emerging child and adolescent mental health theme.

Also, amongst other things, this study explored further the association between self-esteem and PIU which, to the researcher's best knowledge, had hitherto been studied by no more than 5 previous studies— none of which was done on the African continent.

This study also investigated the relationship between adolescents' self-perception of problematic Internet use and their actual ratings on the Internet Addiction Test; as well as associations between problematic Internet use, patterns of Internet use (including cost of internet access and specific online activities) and mental health problems.

5.4 Limitations of the Study

The time spent on each Internet activity was not obtained from study participants. However, this may be difficult to estimate, hence the recommendation of some authors that subsequent studies should endeavour to adopt electronic means of tracking participants' time spent on specific online activities.

Also, this study was cross-sectional in nature, and as such, the nature of associations (cause, effect or independent) could not be determined.

In this study, mental health problems were assessed using a screening tool, as opposed to a diagnostic one. This, therefore, implies that, the associations found between PIU and mental health problems, and specific Internet activities and mental health problems cannot be said to be conclusive.

Finally, adolescents who fall within the age range studied but who are out of school were not included in this study. Therefore, some caution would have to be exercised in generalizing findings from this study to the general adolescent population in the study area.

5.5 Recommendations

1. There is a need for a harmonised instrument, which takes into account the current trends in Internet technology, to allow for more accurate measurement across the Internet use-problematic Internet use continuum, and consequently, better comparable findings across studies.
2. Future studies should leverage on the growing benefits of Internet-based research to help in obtaining more accurate and objective information (as well as gaining broader perspectives) about respondents' online behaviours.
3. Relevant authorities— in the educational, health, information and communication sectors etc. — should implement mechanisms to regulate adolescents' Internet activities, as is the current practice in countries like South Korea and China, where problematic Internet is currently been tackled as a public health issue.
4. Programmes aimed at promoting mental health among adolescent populations should include healthy Internet use as a major component; and, as the findings from this study reveal, the content of such initiatives should pay particular attention to certain internet activities such as e-mailing, obtaining sex-oriented information online social media use etc.
5. Parents, teachers and the community as a whole should be deliberate about ensuring that their deeds and words do not compromise the self-esteem of budding adolescents, as a low self-esteem would predispose adolescents to using the Internet in excessive levels.
6. Therapists in Asia are currently taught to screen for "Internet addiction" in patients. In this light, Child and Adolescent Mental Health professionals in our setting (in addition to

their routine assessment procedures) might also want to consider asking clients about their Internet usage, as this may provide some more insight into the patient's presentation.

Word count: 6,922

REFERENCES

Adedire, A., & Olofinlua T. (2017). The meaning of living in a religious space: The *Sabon Gari* Example. Ifra Nigeria Working Paper Series N^{o}43 3/10.

Adeniyi, Y. & Omigbodun O. (2017). Psychometric Properties of the Self-report Strengths and Difficulties Questionnaire (SDQ) in a Nigerian Adolescents Sample. *INDJ, 10(2): 1-9, 2017; Article no.INDJ.37760*

Al-Shdayfat, N., Hawi, N., Hamadneh, S., Albnian, F., Alzyoud., S, & Logue, T. (2016). Internet Addiction among School Adolescents in Northeastern Jordan. World Journal of Medical Sciences 13 (4): 218-224

Amichai-Hamburger Y, Ben-Artzi E (2003). Loneliness and Internet use. Computers in Human Behavior; 19(1): 71-80.

Amichai-Hamburger, Y., Wainapel, G., & Fox, S. (2002). On the Internet no one knows I'm an introvert: extroversion, neuroticism, and Internet interaction. CyberPyschology & Behavior 5:125–128.

Bakken IJ, Wenzel HG, Götestam KG et al (2009). Internet addiction among Norwegian adults: a stratified probability sample study. Scand J Psychol;50:121-7.

Balhara YP, Gupta R, Atilola O, Knez R, Mohorović T, Gajdhar W, Javed AO, Lal R. (2015). Problematic Internet Use and Its Correlates Among Students from Three Medical Schools Across Three Countries. Acad Psychiatry. 2015 Dec;39(6):634-8. doi: 10.1007/s40596-015-0379-9. EpubJul 1.

Beard K.W., Wolf E.M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology Behavior*; 4:377-383.

Beard KW (2005). Internet addiction: a review of current assessment techniques and potential assessment questions. *Cyberpsychology Behavior*; 8:7-14.

Bell, V. (2007) Online information, extreme communities and internet therapy: Is the internet good for our mental health? Journal of Mental Health;16(4):445-457

Block JJ (2008). Issues for DSM-V: internet addiction. *American Journal of Psychiatry*; 165: 306-307.

Block, JJ (2007): Pathological computer use in the USA, in 2007 International Symposium on the Counseling and Treatment of Youth Internet Addiction. Seoul, Korea, National Youth Commission, p 433.

Breakthrough Youth Research Archives. (2000). Online. Available: www.breakthrough.org.hk/ir/researchlog.htm.

Caplan, S.E. (2002). Problematic Internet use and psychosocial well-being: development of a theory-based cognitive-behavioral measurement instrument. Computers in Human Behavior 18:553–575.

Carducci, B.J., & Zimbardo, P.G. (1995). Are you shy? Psychology Today 28:34–45, 64–70, 78–82.

Chang, J P-C & Hung, C-C (2012). 'Problematic internet use.' In Rey JM (ed), IACAPAP e-Textbook of Child and Adolescent Mental Health. Geneva: International Association for Child and Adolescent Psychiatry and Allied Professions

Chen, Y. L., Chen, S. H., &Gau, S. F. S. (2014). ADHD and autistic traits, family function, parenting style, and social adjustment for Internet addiction among children and adolescents in Taiwan: A longitudinal study. *Research in Developmental Disabilities, 39,* 20–31. doi:10.1016/j.ridd.12.025

Chérif L, Ayedi H, Hadjkacem I, Khemekhem K, Khemekhem S, Walha A, Kossentini I, Moalla Y, Ghribi F (2015). Problematic Internet use among teenagers in Sfax, Tunisia Encephale. 2015 Dec;41(6):487-92. doi: 10.1016/j.encep.04.001. Epub 2015 Jun.].

Choi YH (2007). Advancement of IT and seriousness of youth Internet addiction. In *2007 International Symposium on the Counseling and Treatment of Youth Internet Addiction*. Seoul, South Korea: National Youth Commission 2007:20.

Choo, H., Sim, T., Liau, A. K. F., Gentile, D. A., & Khoo, A. (2015). Parental influences on pathological symptoms of videogaming among children and adolescents: A prospective study. *Journal of Child and Family Studies, 24*, 1429–1441.doi:10.1007/s10826-014-9949-9

Christensen, H., Grifiths, K . M., & K orten, A. (2002). Web-based cognitive behavior therapy: Analysis of site usage and changes in depression and anxiety scores. Journal of Medical Internet Research, 4(1), e3.

Christensen, H., Grifiths, K.M., Korten, A. E., Brittliffe, K ., & Groves, C. (2004). A comparison of changes in anxiety and depression symptoms of spontaneous users and trial participants of a cognitive behavior therapy website. Journal of Medical Internet Research, 6(4), e46 .

Cooper A, Putnam DE, Planchon LA, Boies SC (1999). Online sexual compulsivity: getting tangled in the net. Sexual Addiction & Compulsivity; 6(2): 79-104.

Craig, R.J. (1995). The role of personality in understanding substance abuse. *Alcoholism Treatment Quarterly* 13:17–27.

Coyne, S. M., Dyer, W. J., Densley, R., Money, N. M., Day, R. D., & Harper, J. M. (2015). Physiological indicators of pathologic video game use in adolescence. *Journal of Adolescent Health, 56*, 307–313. doi:10.1016/j.jadohealth.10.271

Davis RA (2001). A cognitive behavioral model of pathological internet use (PIU). Computers in Human Behavior; 17(2): 187-95

Dong G, Huang J, Du X (2011a). Enhanced reward sensitivity and decreased loss sensitivity in Internet addicts: An fMRI study during a guessing task. *Journal of Psychiatric Research*; 45(11): 1525-1529.

Dong G, Zhou H, Zhao X (2011b). Male Internet addicts show impaired executive control ability: evidence from a color-word Stroop task.*Neuroscience Letter*; 499:114-118.

Ejigbo (2003). Street children: the core of child abuse and neglect in Nigeria. *Children and youth and Environments.* 13, 22-31.

Flisher, C (2010). Getting plugged in: an overview of internet addiction. *Journal of Paediatric Child Health*;46:557-559.

Gentile, D. A., Choo, H., Liau, A., Sim, T., Li, D., Fung, D., & Khoo, A. (2011). Pathological video game use among youths: A two-year longitudinal study. *Pediatrics, 127,* e319–e329. doi:10.1542/peds.-1353

Gámez-Guadix, M. (2014). Depressive symptoms and problematic Internet use among adolescents: Analysis of the Longitudinal relationships from the cognitive–behavioral model. *CyberPsychology, Behavior, and Social Networking, 17*, 714–719. doi:10.1089/cyber.2014.0226

Google Consumer Barometer

Goulet, N. (2002). The effect of Internet use and Internet dependency on shyness, loneliness, and selfconsciousness in college students. DAI 63(5-B):2650

Griffiths M, Wood RT (2000). Risk factors in adolescence: The case of gambling, videogame playing, and the internet. *Journal of Gambling Studies*, 2000; 16:199-225.

Grohol JM (1999). Internet addiction guide. Available from: http: //psychcentral.com/netaddiction/.

Hilarie, C, Cosette, DR, Ann, HS & Alexander, W (2012). 'Internet Addiction: A Brief Summary of Research and Practice.' *Current Psychiatry Reviews*, Vol. 8, No. 4 293

Hong, S., You, S., Kim, E., & No, U. (2014). A group-based modeling approach to estimating longitudinal trajectories ofKorean adolescents' on-line game time. *Personality and Individual Differences, 59,* 9–15. doi:10.1016/j.paid.2013.10.018 *Int. J. Ment. Health Addict., 10*, 278–296.

International Telecommunication Union (2017). ITU World Telecommunications/ICT Indicators database. www.itu.int/ict

Ioannidis, K., Treder, M., Chamberlain, S., Kiraly, F., Redden, S., Stein, D., Lochner, C., Grant, J. (2018). Problematic internet use as an age-related multifaceted problem: Evidence from a two-site survey. *Addictive Behaviors 81 157–166*

Jackson, L. A., von Eye, A., Biocca, F., Barbatsis, G., Fitzgerald, H., & Zhao, Y. (2003). Personality, cognitive style, demographic characteristics and Internet use: Findings from the HomeNetToo. *Swiss Journal of Psychology, 62,* 79–90. doi:10.1024//1421-0185.62.2.79

Jaworska, N. and MacQueen,G. (2015). Adolescence as a unique developmental period. J Psychiatry Neurosciv.40 (5);Sep PMC4543091.

Joanna, S., Melinda, S., Lawrence, R., & Jeanne, S (2014). 'Internet and computer addiction signs, symptoms and treatment.' Retrieved from http://www.helpguid.org/articles/addiction/Internet-and-computer-addiction.htm.

Katherine, C. and Louis L. (2004). Cyberpsychology & Behavior. Volume 7, Number 5.

Kelly, K., Zilanawala, A., Booker, C., Sacker, A. (2018). Social Media Use and Adolescent Mental Health: Findings From the UK Millennium Cohort Study. EClinicalMedicine 6 59–68

King VL, Stoller KB, Kidorf M et al (2009). Assessing the effectiveness of an Internet-based videoconferencing platform for delivering intensified substance abuse counseling. *Journal of Substance Abuse Treatment*; 36:331-338.

Kirkwood, Betty R. Essential medical statistics/Betty R. Kirkwood,Jonathan A.C. Sterne.—2nd ed. p. ; cm. Rev. ed. of: Essentials of medical statistics/Betty R. Kirkwood. 1988. Includes bibliographical references and index. ISBN 0–86542–871–9*

Ko CH, Liu GC, Hsiao S et al (2009). Brain activities associated with gaming urge of online gaming addiction. *Journal of Psychiatric Research*; 43: 739-747.

Koh, YS (2007). Development and application of K-Scale as diagnostic scale for Korean Internet addiction. In *2007 International Symposium on the Counseling and Treatment of Youth Internet Addiction*. Seoul, South Korea: National Youth Commissions: 294.

Ko, C. H., Yen, J. Y., Yen, C. F., Lin, H. C., & Yang, M. J. (2007). Factors predictive for incidence and remission of Internet addiction in young adolescents: A prospective study. CyberPsychology & Behavior, 10, 545–551. doi:10.1089/cpb.9992

Ko, C. H., Yen, J. Y., Chen, C. S., Yeh, Y. C., & Yen, C. F. (2009). Predictive values of psychiatric symptoms for Internet addiction in adolescents: A 2-year prospective study. *Archives of Pediatric and Adolescent Medical, 163*, 937–943. doi:10.1001/archpediatrics.2009.159

Kormas, G., Critselis, E., Janikian, M., Kafetzis, D., & Tsitsika, A (2011). Risk factors and psychosocial characteristics of potential problematic and problematic internet use among adolescents: A cross-sectional study. Kormas et al. BMC Public Health, 11:595.http://www.biomedcentral.com/1471-2458/11/595

Kowert, R., Vogelgesang, J., Festl, R., & Quandt, T. (2015). Psychosocial causes and consequences of online video game play. Computers in Human Behavior, 45, 51–58. doi:10.1016/j.chb.11.074

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S ., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox. A social technology that reduces social involvement and psychological well-being? American Psychologist, 53, 1017-1031

Kuss, D.J.; Griffiths, M.D (2012). Internet gaming addiction: A systematic review of empirical research.*Brain Sci*, *2*, 347-374; doi:10.3390/brainsci2030347

LaRose, R., Eastin, M.S., & Gregg, J. (2001). Reformulating the Internet Paradox: social cognitive explanations of Internet use and depression. *Journal of Online Behavior* [On-line]. Available: <www.behavior.net/JOB/v1n1/paradox.html>.

Lin SSJ, Tsai CC (2002). Sensation seeking and Internet dependence of Taiwanese high school adolescents. *Computers in Human Behavior*; 18:411-426.

Liu T, Potenza MN (2009). Problematic Internet use: clinical aspects. In: Aboujaoude E, Koran LM (eds). Impulse control disorders. Cambridge: Cambridge University Press (in press).

Mattebo M, , Tydén, T., Häggström-Nordin, E., Nilsson, K.W., and Larsson, M. (2018). Pornography consumption and psychosomatic and depressive symptoms among Swedish adolescents: a longitudinal study. Upsala journal of medical sciences, vol. 123, no. 4, 237–246 https://doi.org/10.1080/03009734.1534907

Meerkerk, G. J., Van Den Eijnden, R. J., Vermulst, A. A., & Garretsen, H. F. (2009). The compulsive Internet use scale (CIUS): Some psychometric properties. *CyberPsychology & Behavior*, *12*(1), 1–6. doi:10.1089/cpb.2008.0181

Monasch R, Boerma JT. (2004). Orphanhood and childcare patterns in sub-Saharan Africa: an analysis of national surveys from 40 countries. *AIDS*; 18: S55-65.

Müller, K. W., Dreier, M., Beutel, M. E., Duven, E., Giralt, S., & Wolfing, K. (2016). A hidden type of internet addiction? Intense and addictive use of social networking sites in adolescents. Computers in Human Behavior, 55, 172e177. http://dx.doi.org/10.1016/j.chb.2015.09.007.

National Bureau of Statistics (2017). Telecoms Data: Active Voice and Internet per State, Porting and Tariff Information (Q4 2017).

Niemz, K., Griffiths, M., and Banyard, P. (2005). Prevalence of Pathological Internet Use among University Students and Correlations with Self-Esteem, the General Health Questionnaire (GHQ), and Disinhibition. Cyberpsychology & behavior Volume 8, Number 6

Nolen-Hoeksema, S. (1991).Responses to depression and their effects on the duration of depressive episodes.Journal of Abnormal Psychology, 100(4), 569-582.

Nolte, I., Jones, R., Taiyari. K., & Occhiali, G. (2016) Research note exploring survey data for historical and anthropological research: muslim–christian relations in south-west nigeria. *African Affairs*, 115/460, 541–561 doi: 10.1093/afraf/adw035

Norris, M.L (2007). HEADSS up: Adolescents and the Internet. Paediatr Child Health;12(3):211-216.

Nurcombe B (2014). Diagnosis and treatment planning in child and adolescent mental health problems. In Rey JM (ed), *IACAPAP e-Textbook of Child and Adolescent Mental Health*. Geneva: International Association for Child and Adolescent Psychiatry and Allied Professions.

Ofosu, H.B. (2001). Heavy Internet use: a proxy for social interaction. DAI 61(9-B):5058.

Ogbomo MO, Ivwighreghweta O (2016). Internet Addiction among Undergraduates in Universities in Delta State, Nigeria. Inter. J. Acad. Lib. Info. Sci. 4(4): 110-116.

Okwaraji, F.E., Aguwa, E.N., Onyebueke, G.C., and Shiweobi-Eze, C. (2015a). Assessment of Internet Addiction and Depression in a Sample of Nigerian University Undergraduates*; INDJ, 4(3): 114-122; Article no.INDJ.033*

Okwaraji, F.E., Aguwa, E.N., Onyebueke, G.C., Arinze-Onyia, S.U., and Shiweobi-Eze, C (2015b). Gender, Age and Class in School Differences in Internet Addiction and Psychological Distress among Adolescents in a Nigerian Urban City *INDJ, 4(3): xxx-xxx, 2015; Article no.INDJ.034*

Olatokun, W. M . (2008). Internet access and usage by secondary school students in a Nigerian Municipality. *SAJnl Libs* & *Info* Sci, 74(2)

Omigbodun, O.O. (2006). Psychosocial Attributes of Orphaned Youths in Ibadan Metropolis: Implications for Reproductive Health. *Trop J Obstet Gynaecol, 23 (1).*

Omigbodun O.O., Adediran, K.I., Akinyemi, J.I., Omigbodun, A.O., Adedokun, B.O., Esan, O. (2010). Gender And Rural–Urban Differences In The Nutritional Status Of In-School

Adolescents In South-Western Nigeria. *J. Biosoc. Sci.* **42**, 653–676, _ Cambridge University Press.doi:10.1017/S0021932010000234

Osinubi, O. (2018). Adverse childhood experiences, resilience and mental health problems among secondary school adolescents in Ibadan, South West Nigeria. Masters dissertation, Centre for Child and Adolescent Mental Health, University of Ibadan.

Padilla-Walker LM, Nelson LJ, Carroll JS et al (2010). More than a just a game: video game and internet use during emerging adulthood. *Journal of Youth and Adolescence*, 2010;39:103-113.

People's Daily Online. The more they play, the more they lose. April 10, 2007.

Perron, B. (2002). Online support for caregivers of people with a mental illness. Psychiatric Rehabilitation Journal, 26, 70-77

Pridgen B. (2010). Navigating the internet safely: recommendations for residential programs targeting at-risk adolescents. *Harvard Review of Psychiatry*; 18:131-138.

Quas, J.A. (2014). Adolescence: A unique period of challenge and opportunity for positive development.https://www.apa.org/index.aspx?_ga=2.264562639.1984031001.1541516356-2044068995.1541516356. Acessed on 29/10/2018.

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Scharer, K . (2005). An Internet discussion board for parents of mentally ill young children. Journal of Child & Adolescent Psychiatric Nursing, 18, 17-25 .

Shapira, NA, Goldsmith TD, Keck P Jr et al (2000). Psychiatric features of individuals with problematic internet use. Journal of Affective Disorders; 57: 267-272

Stavropoulos, V., Alexandraki, K., & Motti-Stefanidi, F. (2013). Recognizing Internet addiction: Prevalence and relationship to academic achievement in adolescents enrolled in urban and rural Greek high schools. Journal of Adolescence, 36, 565–576.

Stavropoulos, V., Kuss, D. J., Griffiths, M. D., Wilson, P., & Motti-Stefanidi, F. (2015). MMORPG gaming and hostility predict Internet addiction symptoms in adolescents: An empirical multilevel longitudinal study. *Addictive Behaviours*.doi:10.1016/j.addbeh.2015.09.001

Subrahmanyam, K, Kraut, R. E., Greenfield, P., & Gross, E. (2001). New forms of electronic media: The impact of interactive games and the Internet on cognition, socialization, and behavior. In D. Singer & J. Singer (Eds.), *Handbook of Children and the Media* (pp. 73-99). Los Angeles, CA: Sage.

Sampasa-Kanyinga, H., & Hamilton, H. A. (2015). Social networking sites and mental health problems in adolescents: The mediating role of cyberbullying victimization. European Psychiatry, 30(8), 1021–1027. http://dx.doi.org/10.1016/j.eurpsy.2015.09.011

van den Eijnden, R. J., Spijkerman, R., Vermulst, A. A., van Rooij, T. J., & Engels, R. C. (2010). Compulsive Internet use among adolescents: Bidirectional parent–child relationships. *Journal of Abnormal Child Psychology, 38*, 77–89. doi:10.1007/s10802-009-9347-8

Willoughby, T. (2008). A short-term longitudinal study of Internet and computer game use by adolescent boys and girls: Prevalence, frequency of use, and psychosocial predictors. Developmental Psychology, 44, 195–204. doi:10.1037/0012-1649.44.1.195

Winkler A, Dörsing B (2011). Treatment of internet addiction disorder: a first meta-analysis [Diploma thesis]. Marburg: University of Marburg.

World Health Organization (1993). *The health of young people: A challenge and a promise.* Geneva

World Health Organization (2018). Maternal, newborn, child and adolescent health (2018).http://www.who.int/maternal_child_adolescent/topics/adolescence/development/en/. Accessed on 29/10/2018.

Ybarra, M. L., & Eaton, W . W . (2005). Internet-based mental health interventions. Mental Health Services Research, 7, 75-8 7 .

Young KS, Griffin-Shelley E, Cooper A, O'Mara J, Buchanan J (2000). Online infidelity: A new dimension in couple relationships with implications for evaluation and treatment. Sexual Addiction & Compulsivity. 2000; 7(1-2): 59-74

Xin, M., Xing J., Pengfei W., Hourua 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.* https://doi.org/10.1016/j.abrep.2017.10.003

Widyanto, L., Griffiths M.D. & Brunsden, V. (2010). A Psychometric Comparison of theInternet Addiction Test, the Internet-Related Problem Scale, and Self-Diagnosis. Cyberpsychology, Behavior, and Social Networking Volume 00, doi: 10.1089/cyber.2010.0151

Young, K. (1996). Internet Addiction: The Emergence of a new clinical disorder. CyberPsychology and Behavior, Vol. 1 No. 3., pages 237-244

Young, KS (1996). 'Psychology of computer use: XL. Addictive use of the Internet: a case that breaks the stereotype.' *Psychol Rep*;79:899-902.

Young, K., Griffin-Shelley, E., Cooper, A., et al. (2000). Online infidelity: a new dimension in couple relationships with implications for evaluation and treatment. Sexual Addiction and

Compulsivity 7:59–74.

Young KS, Nabuco de Abreu C (2011). Internet Addiction: A handbook and guide to evaluation and treatment. New Jersey: John Wiley &Sons, Inc.

Yu, L., & Shek, D. T. (2013). Internet addiction in Hong Kong adolescents: A three-year longitudinal study. *Journal of Pediatric& Adolescent Gynecology*, *26*(3 Suppl), S10–S17. doi:10.1016/j.jpag.03.010

Yu, L., & Shek, D. T. (2013). Internet addiction in Hong Kong adolescents: A three-year longitudinal study. *Journal of Pediatric & Adolescent Gynecology*, *26*(3 Suppl), S10–S17. doi:10.1016/j.jpag.03.010

Appendix I (Informed Consent form for Participant)

My name is _____. I am a student of the Centre for Child and Adolescent Mental Health, University of Ibadan. I am carrying out a study which seeks to help mental health professionals identify the existence of excessive internet use among in-school adolescents, as well as those behavioural and social problems which may be associated with such patterns of Internet use. The study would also help us to identify some factors that may be responsible for excessive use of various internet applications among school-going adolescents. The information provided by you will be treated with utmost confidentiality and will be used strictly for research purposes. Neither your name nor any other identifier would be requested of you. Findings from this study should help mental health professionals better understand the ways school-going adolescents' internet use interacts with their psychological and social wellbeing; and will subsequently assist them in developing programmes that would help to protect and promote the mental health of adolescents even as they continue to live in the internet age.

By participating in this study, you would be required to fill in a questionnaire which seeks to get some information about you, and this will cost you some time. However, we would ensure that this does not interrupt your academic activities and that it takes place at a venue that is conducive enough. As a way of compensating you for your time spent, light refreshment and school supplies will be offered to you after the interview. Your participation in this study will be by sheer freewill. Should you choose not to participate in the study, be assured that you would not on such grounds be discriminated against in anyway─ not in school or anywhere else. You are free to withdraw your participation from the study at any point should you choose to do so, and this would not expose you to any form of ill-treatment as a result of your withdrawal from this study.

Consent

Now that the study has been well explained to me and I fully understand the content of the process,

I will be willing to take part in the programme.

……. …….
Signature/Thumbprint of participant Interview date

……
Signature/Thumbprint of witness (Date if necessary)

Appendix II: Study Instruments (English)

Please write the answers to the questions or draw a circle where it applies to you. Please, this is not an examination and so there are no right or wrong answers. Therefore, kindly respond to the items as honestly as possible.

SECTION I: Modified Socio-demographic questionnaire

Personal Information

1. Name of School: 2.Class:

3. Where do you live? (Address of Present Abode):

4. What is your date of birth? DOB: _____ _____ _____ 5. How old are you? ____
Day Month Year

6. Are you a boy or a girl? (a) boy (b) girl

7. Do you practise any religion? No Yes

8. Please write down the exact place you attend for worship

_____

(a) Islam (b) Orthodox Christian (c) Pentecostal Christian (d) Traditional religion (e) Other

Family Information

9. Family Type:

(a) Monogamous (b) Polygamous (c) Widowed Father (d) Widowed Mother

10. Marital Status of Parents:

(a) Married (b) Separated/Divorced (d) Widowed Mother (d) Widowed Father

11. Who do you live with presently?

(a) Parents (b) Mother (c) Father (d) Grandparents (e) Grandmother (f) Grandfather

(g) Other [please specify] _____

12. Do you do any kind of work to earn money before or after school? Yes No

13. If yes, please describe what you do _____

14. Level of Father's Education

(a) No Formal Education (b) Koranic School (c) Primary School (d) Secondary School

(e) Post-Secondary (Non-University) (f) University Degree and above (e) I do not know

15. Occupation of Father: [Write the exact occupation] _____/ I do not know

(a) Unskilled (b) Semi-skilled (c) Professional [Not University] (d) Professional and University

(e) Others (Specify)_____

16. Level of Mother's Education

(a) No Formal Education (b) Koranic School (c) Primary School (d) Secondary School

(e) Post-Secondary (Non-University) (f) University Degree and above (e) I do not know

17. Occupation of Mother: [Write in the exact occupation] _____/ I do not know

(a) Unskilled (b) Semi-skilled (c) Professional [Not University] (d) Professional and University

(f) Others (Specify)_____

18. Do you like your family? Yes No

19a. If Yes, Why? _____

19b. If No, Why? _____

School-Related Questions

20. Do you like your school? Yes No

21. Do you do well academically? Yes No

22a. If Yes, explain_____

22b. If No, explain_____

23. Are you having difficulties with your teachers? Yes No

24. If yes, what sort of difficulties? _____

Section II: Internet-related factors

Internet access

25. What is your major means of accessing the Internet?

(a) Your personal mobile phone (b) Computer at home (c) Cyber café (d) At school

(e) Someone else's mobile phone (f) Someone else's computer

(g) Others (please specify) _____

Cost and sources of funding for Internet access

26. Do you think you spend too much money to access the Internet? Yes No

27. How much do you (personally) spend in a month to subscribe to the Internet?

(a) I don't spend money (b) less than ₦500 (c) ₦500-₦1000 (d) ₦1000-₦5000 (e) above ₦5000

28. How do you usually get the money to subscribe to the Internet?

_____

29. Have you ever lied to get money so you could access the Internet? Yes No

25. Have you ever stolen money so you could access the Internet? Yes No

Section III: Young's Internet Addiction Test

The following questions are to help us understand how you feel most of the time during the past month. Tick the option that best describes your situation.							
		Never	**Rarely**	**Occasionally**	**Frequently**	**Often**	**Always**
1.	How often do you find that you stay online longer than you intended?						
2.	How often do you neglect household chores to spend more time online?						
3.	How often do you prefer the excitement of the Internet to intimacy with your family and friends?						
4.	How often do you form new relationships with fellow online users?						
5	How often do others in your life complain to you about the amount of time you spend online?						
6	How often do your grades or school work suffer because of the amount of time you spend online?						
7	How often do you check your email, Facebook account, or other internet application before something else that you need to do?						
8	How often does your job performance or productivity suffer because of the Internet?						
9	How often do you become defensive or secretive when anyone asks you what you do online?						
10	How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?						
11	How often do you find yourself anticipating when you will go online again?						
12	How often do you fear that life without the Internet would be boring, empty, and joyless?						
13	How often do you snap, yell, or act annoyed if someone bothers you while you are online?						
14	How often do you lose sleep due to being online?						

15	How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?						
16	How often do you find yourself saying "just a few more minutes" when online?						
17	How often do you try to cut down the amount of time you spend online and fail?						
18	How often do you try to hide how long you've been online?						
19	How often do you choose to spend more time online over going out with others?						
20	How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online?						

21. What activities have you performed regularly on the Internet **over the past month**? *(Tick as many boxes as apply to you)*

Socializing/chatting using Facebook, Twitter, WhatsApp etc.	
Reading news	
Getting information for school work	
Online Gambling	
Getting sex-oriented information	
Online Gaming	
Online Shopping	
E-mail	
General browsing/surfing	
Downloading music, videos, documents etc.	

Section III: Self-diagnostic Question

Do you think you are addicted to the internet (that is, do you think you use the internet too much)?

Yes☐ No ☐

Section IV: Rosenberg Self-esteem Scale

Below is a list of statements dealing with your general feelings about yourself. Let us know how well you agree or disagree with each of the statements (tick your response).					
		Strongly Agree	**Agree**	**Disagree**	**Strongly Disagree**
1	I feel that I am a person of worth, at least on an equal plane with others				
2	I feel that I have a number of good qualities				
3	All in all, I am inclined to feel that I am a failure				
4	I am able to do things as well as most people				
5	I feel I do not have much to be proud of				
6	I take a positive attitude toward myself				
7	On the whole, I am satisfied with myself				

8	I wish I could have more respect for myself				
9	I certainly feel useless at times				
10	At times I think that I am no good at all				

Section V: The Strengths and Difficulties Questionnaire

	For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of how things have been for you over the last **six months**.	**Not True**	**Somewhat True**	**Certainly True**
1.	I try to be nice to other people. I care about their feelings			
2.	I am restless, I cannot stay still for long			
3.	I get a lot of headaches, stomach-aches, or sickness			
4.	I usually share with others, for example CDs, games, food			
5	I get very angry and often lose my temper			
6	I would rather be alone than with people of my age			
7	I usually do as I am told			
8	I worry a lot			
9	I am helpful if someone is hurt, upset or feeling ill			
10	I am constantly fidgeting or squirming			
11	I have one good friend or more			
12	I fight a lot. I can make other people do what I want			
13	I am often unhappy, depressed or tearful			
14	Other people my age generally like me			
15	I am easily distracted, I find it difficult to concentrate			
16	I am nervous in new situations. I easily lose confidence			
17	I am kind to younger children			
18	I am often accused of lying or cheating			
19	Other children or young people pick on me or bully me			
20	I often volunteer to help others (parents, teachers, children)			
21	I think before I do things			
22	I take things that are not mine from home, school or elsewhere			
23	I get along better with adults than with people my own age			
24	I have many fears, I am easily scared			
25	I finish the work I'm doing. My attention is good			

	No	**Yes- minor difficulties**	**Yes- definite difficulties**	**Yes- severe difficulties**
26. Overall, do you think that you have difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get along with other people?				

If you have answered yes, please answer the following questions about these difficulties

	Less than a month	1-5 months	6-12 months	Over a year
27. How long have these difficulties been present?				

	Not at all	Only a little	Quite a lot	A great deal
28. Do the difficulties upset or distress you?				

29. Do the difficulties interfere with your everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
a) getting along with the people you are closest to (e.g. family, partner)				
b) making and keeping friends				
c) work or study				
d) hobbies, sports or other leisure activities				

	Not at all	Only a little	Quite a lot	A great deal
30. Do the difficulties make it harder for those around you (family, friends, etc.)?				

You have finished!

Appendix III: Study Instruments- Yoruba

Please write the answers to the questions or draw a circle where it applies to you. Please, this is not an examination and so there are no right or wrong answers. So, kindly respond to the items as honestly as possible.

SECTION I

Personal Information

1. Orukọ ile-iwe: 2.Kílàsì:

3. Nibo ni o n gbe? (Ibugbe):

4. Kini ọjọ ibi rẹ? Ọjọ ibi: _____ _____ _____ 5. Ọmọ ọdun melo ni ọ? ____

ọjọ oşu ọdun

6. Şe ọkunrin tabi obinrin? (a) Ọkunrin (b) Obinrin

7. Nje ẹ manse ẹsin kankan? Bẹẹkọ Bẹẹni

8. Kọ ibi ti o ti maa njọsin

_____

(a) Islam (b) Orthodox Christian (c) Pentecostal Christian (d) Traditional religion (e) Other

Family Information

9. Iru ẹbi:

(a) Oniyawo kan (b) Oniyawo meji tabi ju bẹẹlọ (c) Ẹni ti iyawo rẹ ti ku (d) Opo

10. Ibagbepọ awon obi rẹ:

(a) Şe wọn gbe pọ? (b) Şe wọn ti kọ ra wọn silẹ? (d) Baba ti ku (d) Iya ti ku

11. Tani o n gbe pẹlu lọwọlọwọ?

(a) Awọn obi (b) Iya nikan (c) Baba nikan (d) Iya ati Baba Agba (e) Iya Agba nikan

(f) Baba Agba nikan (g) Awọn Iyoku [Jọwọ sọ nipato] _____

12. Nje o maa nşişẹ lati ri owo lẹhin tabi saaju ki o to lọ si ile iwe? (Bẹẹni tabi bẹẹkọ)

13. 23. Ti o ba je bẹẹni, şe alaaye ohun ti o şe

_____

14 Iwe melo ni baba rẹ ka?

(a) Ko kawe rara (b) Ile-keu (c) Ile-Iwe Alakọbẹrẹ (d) Ile iwe girama

(e) Ile-iwe agba (f) Yunifasiti ati ju bẹẹ lọ (e) Nko mo

15. Işẹ wo ni Baba rẹ n şe: [Kọ işẹ ti wọn nşe pato lẹkunrẹrẹ] _____/Nko mo

(a) Unskilled (b) Semi-skilled (c) Professional [Not University] (d) Professional and University

(e) Others (Specify)_____

16. Iwe melo ni iya rẹ ka

(a) Ko kawe rara (b) Ile-keu (c) Ile-Iwe Alakọbẹrẹ (d) Ile iwe girama

(e) Ile-iwe agba (f) Yunifasiti ati ju bẹẹ lọ

17. Isẹ wo ni iya rẹ nşe: [Kọ işẹ ti wọn nşe pato lẹkunrẹrẹ] _____

(a) Unskilled (b) Semi-skilled (c) Professional [Not University] (d) Professional and University

(e) Others (Specify)_____

18. Şe o fẹran ẹbi rẹ? Bẹẹni/Bẹẹkọ

19a. Bẹẹni, Şe alaye? _____

19b. Bẹẹkọ, Şe alaye? _____

School-Related Questions

30. Şe o fẹran ile-iwe rẹ? Bẹẹni Bẹẹkọ

31. Akẹkọọ melo ni o wa ni kilaasi rẹ?_____

32. Njẹ o nşe daada ninu ẹkọ rẹ? Bẹẹni/ Bẹẹkọ

33a. Bẹẹni, Şe alaye_____

33b. Bẹẹkọ, Şe alaye_____

34. Njẹ o ni işoro kankan pẹlu awọn olukọ rẹ? Bẹẹni Bẹẹkọ

35. Ti o ba jẹ bẹẹni, iru işoro wo ni? _____

Section II: Internet access

20. Kíni ọnà kan gbòógì tí o máá n lò lati lo ẹrọ ayélujára?

(a) Ẹrọ ìbáraẹnisọ̀rọ̀ rẹ (b) Kọ̀mpútà tí ó wà ní'lé yín (c) Cyber café (d) Ní ilé-ìwé (e) Ẹrọ ìbáraẹnisọ̀rọ̀ ẹlòmíràn (f) Kọ̀mpútà ẹlomiran (g) àwọn ohun mìrán (jọ̀wọ́ sọ ní pàtó)_____

Cost and sources of funding for Internet access

21. Njẹ́ o lérò wípé owó tí o n ná lati lè lo ẹ̀rọ ayélujára ti pọ̀jù? Bẹ́ẹ̀ni Bẹ́ẹ̀kọ́

22. Èló ni o maa n ná l'ósoosù lati lè lo ẹ̀rọ ayélujára?

(a) È mi kìí n ná owó rárá (b) N kìí ná tó ₦500 (c) ₦500-₦1000 (d) ₦1000-₦5000 (e)Mó n ná ju ₦5000 lọ

23. Ọ̀nà wo ni o máá n gbá lati rí owó ti o n lo fún ẹ̀rọ ayélujára?

_____

24. Njẹ́ o ti p'arọ́ gba owó rí lati le lo ẹ̀rọ ayélujára? Bẹ́ẹ̀ni Bẹ́ẹ̀kọ́

25. Njẹ́ ọ ti jí owó rí lati fi lè lo ẹ̀rọ ayélujára? Bẹ́ẹ̀ni Bẹ́ẹ̀kọ́

Section III: The Internet Addiction Test

Àwọn ìbéèrè wọ̀nyí wà lati ràn wá lọ́wọ́ lati lè ní òye nípa ìmọ̀láraà rẹ ní ọ̀pọ̀lọpọ̀ ìgbà láàrin osù kan sẹ́yìn. Fa igi si abẹ́ ìdáhùn tí ó bá jẹ mọ́ ọ.							
		Rárá	**Kìí sábà ṣẹlẹ̀**	**Lẹ́ẹ̀kànkan**	**Lemọ́l emọ́**	**Dáadáa**	**Gbogbo ìgbà**
1.	Ó maá n tó ìgbà melo tí o maá n lo ẹ̀rọ ayélujára ju bí o ti l'éro lati lò lọ?						
2.	Ó maá n tó ìgbà melo tí o maá n kọ̀ lati se isẹ́-ilé nítorí à ti lè lo ẹ̀rọ ayélujára?						
3.	Ó maá n tó ìgbà melo tí o maá n fẹ́ràn ìdùnú tí o máá n rí l'órí ẹ̀rọ ayélujára ju ìbáṣepọ̀ pèlú ẹbí ati ọ̀rẹ́?						
4.	Ó maá n tó ìgbà melo tí o maá n ní ìbáṣepọ̀ tuntun pèlú àwọn ẹlòmíràn l'órí ẹ̀rọ ayélujára?						
5	Ó maá n tó ìgbà melo tí àwọn ènìyàn tí ó súnmọ́ ọ maá n ṣ'àròyé l'órí àkókó tí ò n lò l'órí ẹ̀rọ ayélujára?						

6	Ó maá n tó ìgbà melo tí máàkì rẹ tàbí iṣẹ́ ile-iwe rẹ maá n ní ípalára nítorí àkókò tí ò n lò l'órí ẹ̀rọ ayélujára?						
7	Ó maá n tó ìgbà melo tí o máá n wo email, àkáúntì Facebook re, tàbí ohun èlò orí ẹ̀rọ ayélujára mìíràn, kí o tó bẹ̀rẹ̀ ohun-kóhun?						
8	Ó maá n tó ìgbà melo tí ìsisẹ́sí tàbí ìjáfàfà re máá n ní ìpalára nítorí ẹ̀rọ ayélujára?						
9	Ó maá n tó ìgbà melo tí o máá n fi ara pa mó tàbí gbìyànjú lati fi ohun tí ò n se bò, n'ígbà tí ẹnikẹ́ni ba bèrè ohun tí ò n se l'órí ẹ̀rọ ayélujára?						
10	Ó maá n tó ìgbà melo tí o máá n fi érò ìdùnú tí ò n rí l'órí ẹ̀rọ ayélujára dènà àwọn èrò to n dàámú ọkàn rẹ?						
11	Ó maá n tó ìgbà melo tí o máá n fojúsánà sí àkókò tí o o tún lo ẹ̀rọ ayélujára lẹẹ̀kan si?						
12	Ó maá n tó ìgbà melo tí o máá n bẹ̀rù wípé láìsí ẹ̀rọ ayélujára ayé rẹ yóò wà láìní ìgbádùn kan, yóò jẹ́ òfìfo àti àíláyọ̀ pẹ̀lú?						
13	Ó maá n tó ìgbà melo tí o máá n jágbe, pariwo, tàbí bínú n'ígbà tí ẹnikẹ́ni bá dí ọ lọ́wọ́ n'ígbà tí o bá wà l'órí ẹ̀rọ ayélujára?						
14	Ó maá n tó ìgbà melo tí o máá n kọ̀ pàdánù orun rẹ nítorí pé ò n lo ẹ̀rọ ayélujára?						
15	Ó maá n tó ìgbà melo tí ọkàn rẹ́ máá n kún fún èrò nìpa ẹ̀rọ ayélujára n'ígbà tí o kò lò ó, tàbí Ó maá n tó ìgbà melo tí o máá n láàlá nípa lílo ẹ̀rọ ayélujára?						

16	Ó maá n tó ìgbà melo tí o máá n ri wípé ò n sọ pe “ó kù díè”, n’ígbà tí o bá wà l’órí ẹ̀rọ ayélujára?						
17	Ó maá n tó ìgbà melo tí o máá n gbìyànjú lati dín àkókò to n lò l’órí ẹ̀rọ ayélujára kù?						
18	Ó maá n tó ìgbà melo tí o máá n gbìyànjú lati fi iye àkòkò tí o ti lò l’órí ẹ̀rọ ayélujára pamọ́?						
19	Ó maá n tó ìgbà melo tí o máá n yàn lati lo àkókò si l’ori ẹ̀rọ ayélujára dípò kí o tẹ̀lé àwọn ẹlòmíràn jade?						
20	Ó tó ìgbà melo ni ìrẹ̀wẹ̀sì-ọkàn, àìní ìdùnú, tàbí ìjayà máá n ṣe ọ́ nígbà ti o kò bá wà l’órí ẹ̀rọ ayélujára, èyí tí yóó sì kúrò n’ígbà tí o bá ti padà s’órí ẹ̀rọ ayélujára?						

26. Àwọn isẹ́ wo ni o máá n ṣe lóòrèkóòrè l’órí *ẹ̀rọ ayélujára* laarin oṣù t’ókọjá (fa ìlà sí inú gbogbo àwọn àpótí ọ̀rọ̀ tí ó bá níṣe pẹ̀lú rẹ)

Bíbánidọ́ọ̀rẹ́ tàbí bíbánisọ̀rọ̀-ọlọ̀resọ̀rẹ́ l’órí Facebook, Twitter, WhatsApp àti bẹ́ẹ̀bẹ́ẹ̀lọ	
Ìróyìn kíkà	
Gbígba ìmọ̀ nípa isẹ́ ilé-ìwé	
Tẹ́tẹ́ orí *ẹ̀rọ ayélujára*	
Wíwá ohun tí ó níṣe pẹ̀lú ìbálòpọ̀ ọkùnrin s’óbìnrin	
Eré ìdárayá orí *ẹ̀rọ ayélujára*	
Kárakátà l’órí *ẹ̀rọ ayélujára*	
E-mail	
Ṣíṣe orisirisi nkan l’akoko kan náà, tabi laini ohun kan pato ti o n ṣe l’ori ẹ̀rọ ayelujara	

Gbígba orin, fídíò, àti àwọn nkan mìrán lati orí *ẹ̀rọ ayélujára* sí orí fóònù tabi kòmpútà rẹ.	

Section III: Self-diagnostic Question

Njé ìwọ́ l'érò wípé ò n lo *ẹ̀rọ ayélujára* l'ápọ̀jù

Bẹ́ẹ̀ni ☐ Bẹ́ẹ̀kọ́ ☐

Section IV: Rosenberg Self-esteem Scale

N'ísàlẹ̀ o o rí àwọn gbólòhùn tí ó níṣe pèlú èrò rẹ sí ara rẹ. Jẹ́ kí á mọ̀ bí o ṣe faramọ́ (tàbí bí o ò ṣe faramọ́) ọ̀kànkan nínú àwọn gbólòhùn náà sí (fa igi si idahiun rẹ).

		Mo gbà bẹ́ẹ̀ gidi gan ni	**Mo gbà bẹ́ẹ̀**	**Mi o gbà bẹẹ**	**Mi o gbà bẹ́ẹ̀ rárá**
1	Mo lérò wípé mo jé ẹni tí ó ṣe pàtàkì/wúlò gégé bíi àwọn ẹlòmíràn				
2	Mo lérò wípé mo ni àwọn ohun àmúyẹ ti o pọ̀ díẹ̀				
3	L'ápàapọ̀, o rọrùn fún mi lati rò wípé mo jẹ́ ẹni ìjákulẹ̀				
4	Mo máá n lè ṣe nkàn bí ó ti yẹ gégé bíi àwọn ẹlòmíràn				
5	Mi ò rò wípé mo ní ọ̀pọ̀lopọ̀ nkan tí ó n wúni lórí				
6	Mo ní èrò tí ó dára nípa ara mi				
7	L'ápàapọ̀, bí mo ti rí yìí tẹ́ mi l'ọ́run				
8	Kò bá dára bí mo bá lè bọ̀wọ́ fún ara mi jù bayi lọ				
9	Nítòòtọ́, lẹ́ẹ́kànkan mo máá n rò wípé mi ò ní ìwúlò kankan				
10	N'ígbà míràn mo máá n rò wípé mí ò já mọ́ nkànkan				

		Kìíṣe òótọ́	Òótọ́ níwọ̀nba	Dájú-dájú òótọ́ ni
1.	Mó gbìyànjú látí ṣe dáradára sí àwọn ẹlòmíràn. Mó máa n bojútó ìmọ̀lára wọ́ń			
2.	Ara mí kìì n bálẹ̀, mí ò sì lè dúró lojú kan fún ìgbà pípẹ́			
3.	Mó máa n sáàbà ní ori-fifọ́, inú rirùn tàbí éébì			
4.	Mó máa n sáàbà pín àwôn ñnkan pẹ̀lú àwọn ẹlòmíràn (oúnjẹ, ìdáráyá, ohun ìkọ̀wé)			
5	Mó máa n bínú gán mó sì máa n bínú ìrunú lọ́pọ̀ ìgbà			
6	Mó máa n sáàbà dá wà, mó sì máa n dá ṣeré fún raà mi			
7	Mó máa n sáàbà ṣe ohun tí a sọ fún mì pé kí n ṣe			
8	Mo máa n ní àníyàn púpọ̀			
9	Mo máa n ṣe ìrànlọ́wọ́ tí ẹnìkan bá fí ara pa; bínú, tàbí tí ó bá ṣe àìlera			
10	Mo máa n mi ara nígbà gbogbo, bí ó tilẹ̀ jẹ́ wípé mo wà ní ìjókòó (bii ki n máa ju ẹsẹ̀, ki n máa mi ọwọ́ àti kí n máa yí ara síhìn-ín sọ́hùn-ún)			
11	Mó ní ọ̀rẹ́ tímọ́tímọ́ kan tàbí jù bẹ́ẹ̀ lọ			
12	Mó máa n jà gan. Mo lè jẹ́ kí àwọn ènìyàn mííràn ṣe ohun tí mó bá fẹ́			
13	Mó máa n ni àidùnnú, ìrẹ̀wẹ̀sì-ọkàn tàbí kí omijé lé sí mi lójú lọ́pọ̀ ìgbà			
14	àwọn ẹlẹgbẹ́ mi lákòópọ̀ fẹ́ràn mi			
15	ọkàn mi máa n tètè kúrò nínú nkan tí mo n se. Ó maá n nira fún mi lati fi ọkàn sí nnkan ti mo n ṣe			
16	Mo máa n ní ìbẹ̀rù-bojo tàbí kí n ma so mọ́ àwọn tí mo bá mọ̀ nìkan nígbà tí mo bá wà ní agbègbè tuntun. Mo tètè máa n ṣe àìní-ìdára-ẹni-lójú nínú ara mi			

17	Mo máa n fẹ́ràn àwọn ọmọdé tí ó tó mi lójọ́ orí			
18	Á máa n fìsùn kàn mí wípé mo n paró tàbí yan énìà jẹ lópọ̀ ìgbà			
19	Awọn ọmọ yòókù máa n fi ojú sí mi lára látí kó mi láyà jẹ			
20	Mo máa n fi ara mi sílẹ̀ lati ran àwọn ẹlòmíràn lọ́wọ́ (òbí, olùkọ́ àti àwọn ọmọ yòókù) lópọ̀ ìgbà			
21	Mo máa n ronú ki n tó ṣe ohunkóhun			
22	Mó máa n mú ñnkan tí kì n ṣe temi nínú ilé, ilé ìwé, àti ibòmíràn			
23	Mo máa n ní ìbáṣepọ̀ tí ó gùn mánrán pẹ̀lú àgbàlagbà ju ọmọdé ẹgbẹ́ mi lọ			
24	Mó ni ìfòyà púpọ̀, mo sì máa n tètè bẹ̀rù			
25	Mó máa n parí iṣẹ́ tí mo n ṣe. ìfọkànsí nkan mí dára púpọ̀			

	Rárá	**Bẹ́ẹ̀ni- ìṣòro díẹ̀**	**Bẹ́ẹ̀ni- ìṣòro tí ó dájú**	**Bẹ́ẹ̀ni- ìṣòro tí ó le gan**
26. L'ákòópọ̀, njẹ́ o rò wípé o ní ìṣòro nínú ọ̀kan tàbí jù bẹ́ẹ́ lo nínú àwọn agbègbè wònyí:				

	O dín ní oṣù kan	**Oṣù kan sí màrún**	**Oṣù mẹ́fà sí méjìlá**	**ó lé ní ọdún kan**
27. Ìgbà wo ni àwọn ìṣòro wọ̀nyí ti wà níbẹ̀?				

	Rárá	**Díẹ̀ lásán ni**	**O pẹ díẹ̀**	**O pọ̀ gidi gan ni**
28. Njẹ́ àwọn ìṣòro wọ̀nyí maá n yọ ó lẹ́nu?				

29. Njé àwọn ìṣòro náà máa n ṣe ìpalára fún ìgbé-ayé ojoojúmọ́ rẹ ní àwọn agbègbè wọ̀nyí?

	Rárá	**Díẹ̀ lásán ni**	**ó pọ díẹ̀**	**ó pọ̀ gidi gan ni**
(a) ìbáṣepọ̀ pẹ̀lú àwọn ènìyàn tí o súnmọ́ jùlọ (fún àpẹẹrẹ, ẹbí, olólùfẹ́)				

b) ọ̀ré níní àti bíbá ẹni dọ̀ọ̀rẹ́ títí				
c) iṣé tàbí ẹ̀kọ́				
d) àwọn ohun tí o fẹ́ràn lati máa se, eré ìdárayá àti àwọn ohun afẹ́ miran				

	Rárá	**Díẹ̀ lásán ni**	**ó pọ díẹ̀**	**ó pọ̀ gidi gan ni**
30) Njé àwọn ìṣòro náà maá n mú nkan le fún àwọn tí ó yí ọ ká (ẹbí, ọ̀rẹ́, àti bẹ̀ẹ̀bẹ̀ẹ̀lọ)?				

O ti parí!