

**PROBLEMATIC INTERNET USE, DEPRESSION, ANXIETY AND STRESS AMONG
UNIVERSITY OF NAIROBI STUDENTS.**

**DISSERTATION SUBMITTED TO THE UNIVERSITY OF NAIROBI FOR THE
REQUIREMENT OF MASTER OF SCIENCE DEGREE IN CLINICAL PSYCHOLOGY. BY**

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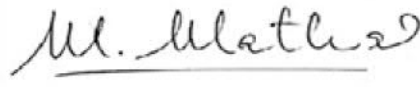
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LIST OF ABBREVIATIONS

CIUS- Compulsive Internet Use Scale

DASS- Depression Anxiety Stress Scale

PIU- Problematic internet use

SNS- Social network sites

UGT- Users and Gratifications theory

UON-University of Nairobi

NACOSTI- National Commission for Science, Technology & Innovation

KNH-UoN ERC- Kenyatta National Hospital UON Ethics and Research Committee

CHSS- College of Humanities and Social Sciences

CAE- College of Architecture and Engineering

CHS-College of Health Science

OPERATIONAL DEFINITIONS

Problematic internet use -Problematic internet use is the inability to control the use of internet that affects psychological, social and biological functioning.

Depression-Depression is a mental disorder that is characterized by feelings of hopelessness, loss of pleasure in activities previously done, feelings of hopelessness and sadness.

Anxiety -Anxiety is a mental disorder that is characterized by excessive, persistent and intense worry and fear that can cause distress in one's psychological, social and functioning.

Stress-Stress is defined as psychological and physiological imbalance resulting from the disparity between situational demand and an individual's ability and motivation to meet those needs. Stress is a perceived concept, meaning that it can be caused by anything that one feels unbalances the harmony in his or her life.

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ABSTRACT

Internet use among university students has risen worldwide. Despite its many advantages, there are rising concerns about the risks and negative consequences accrued from continued internet use especially around one's psychological well-being.

This study sought to determine the prevalence of problematic internet use among the students of The University of Nairobi and find out the relationship it has with the distress conditions anxiety, stress and depression among the students.

The study involved descriptive cross-sectional research design. The 190 study participants were randomly sampled from three stratified UON schools. The study used C.I.U.S, DASS-21 and a socio-demographic questionnaire as instruments of data collection that were approved by (NACOSTI) and (KNH-UoN ERC).

The study showed that a greater number of the respondents were from the CHSS (50%), in 2nd year of schooling (31.6%) and were females (54%) with mean age of 23years. Anxiety was most prevalent, at 132(69.5%), depression 126(66.3%) and stress 71(37.4%). Most respondents had moderate and severe levels of PIU at 100(52.6) % and 66(34.7%). On the relationship between PIU and depression was ($p=0.000$, AOR=4.941, 95% CI 2.078-11.752), stress ($p=0.071$, AOR= 3.342, 95% CI 1.624-6.878) and anxiety ($p=0.001$, AOR=3.798, 95% CI 0.957-15.068). On relationship between PIU and respondents characteristics, Year of study ($p=0.019$) and college belonging (0.032) showed significant association with PIU with no significant relationship with sex/gender ($p=0.882$) and age ($p=0.493$). Relationship between PIU and significant respondents factors being (CAE; AOR=1.659, 95% CI 0.753-3.653); (CHS; AOR=0.547, 95% CI 0.217-1.375); (1st year AOR=0.770, 95% CI 0.130-4.557); (2nd year AOR=0.311, 95% CI 0.087-1.113); (3rd year AOR=0.589, 95% CI 0.161-2.163); (4th year AOR=0.469, 95% CI 0.132-1.663).The study ascertains there being significantly high levels of PIU and a strong association of the problem with similarly significantly high conditions of depression, anxiety and stress.

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.0 Introduction

Internet use is arguably the center of human interaction in our society today. Despite the numerous advantages of the Internet, it poses a high risk of addiction, personality disorders, depression and social anxiety among other types of mental disorders. The vulnerability of University students to Internet addiction is particularly high due to their wide usage of the technology for various reasons including studying, entertainment, socializing and communicating. Social anxiety is seemingly the primary reason why university students tend to turn to the internet and this is due to "F.O.M.O"-Fear of Missing Out (Kross et al., 2013). According to Hong et al (2012) a research done on female Taiwanese university students found they were extroverted, addicted to their mobile phones, experienced high anxiety levels and had low self-esteem. Continuous exposure to the Internet, therefore, increases the risk of addiction.

Research on internet addiction has proliferated globally and is limited regionally and locally despite the rise of internet usage and addiction rates. Some mental health professionals to date negate internet addiction as a disorder citing the lack of clinical proof to show that it meets the threshold of behavioral addiction. Moreover, there is a disagreement on whether people are addicted to the content or the Internet platforms (Kumar & Mondal, 2018). Therefore, Internet addiction is not well understood posing a significant problem in the development of effective behavioral and cognitive interventions.

The prevalence of Internet addiction varies globally. Recent reviews show that Italy has the lowest incidence of Internet addiction of 0.8%, whereas in the UK (United Kingdom) the incidence rate was as high as 18%. Conversely, 5% of female students and 12% of male students in China showed signs of internet addiction (King et al., 2011). This study focuses on internet addiction to better understand how it comes about, its prevalence and its impact on university students to facilitate the creation of tailor-made programs to assist those in need.

1.1 Background

Internet use is a broad term that explains the use of virtual platforms to connect and share content. According to Kaplan & Heinlein (2010) students access the internet through social news networking sites, such as; Facebook and Snap-Chat; communities such as YouTube; micro-blogs and blogs, for instance, Twitter; virtual social worlds like second life; virtual game-worlds such as temple run. Internet usage is potent and various influential computer-based communication tools such as mobile phones are used by the general population in developed and developing countries including Kenya. The term internet addiction was first coined by Dr. Kimberly Young in 1996. Dr. Young researched on Internet control use involving 600 participants who had problems controlling their impulses. The study found that the term internet addiction encompasses five subtypes including net compulsions, cyber sexual addictions, information overloads, cyber relationship addiction and computer addictions. However, there are a lot of controversies among scientists surrounding the term Internet addiction and it as a disorder (Bloggers Association of Kenya, 2018).

Internet addiction is a broad term that is yet to be formally recognized as a disorder in DSM V. Internet addiction is a disease that leads to mental malfunctioning. Two main diagnostic classification systems that are used by mental health providers to determine Internet addiction are DSM (Diagnostic and Statistical Manual) V and ICD-10(International Classification of Disease tenth Edition) (American Psychiatric Association, 2013). Both classification systems are similar with regards to the diagnostic criteria of Internet addiction albeit the DSM V diagnostic criterion is more complex.

A recent review with regards to anatomy showed that young boys addicted to the internet had the thickness of the cortex in the orbital frontal region reduced (Hong et al., 2013). The results are consistent with presentations of individuals with gambling disorders that are listed under the heading “Substance-Related and Addictive Disorder” in the DSM V. Internet addiction affects the pleasure pathways of the brain, which is what compels individuals to spend most of their time on the Internet.

There is ignorance in the medical field regarding the relevance and inherent risks of internet use by an out-sized number of professionals including mental health care providers, general health care providers, lecturers, and administrators among others. Meanwhile, the prevalence of Internet addiction has significantly risen, and the situation worsens with each passing day. Therefore, it is important to understand Internet addiction and the extent to which university students are affected.

According to Wallace (2014) the primary challenge of establishing the prevalence rates of Internet usage is the use of different assessment tools for measuring addictive behavior. The Internet Addiction Test is an example of such a test. Internet Addiction Test is a 20-item questionnaire that assesses Internet addiction. The questions are like the substance addiction instruments as internet use and substance use tend to affect individuals in similar ways. The other challenge concerning the use of these questionnaires is to fit these instruments into the different cultures found all over the world. This makes the prevalence rates in different places vary significantly. One can be diagnosed as having internet addiction using one instrument in one setting while in another it could show the individual being normal using a different addiction instrument.

1.2 Problem statement

The emergence of the internet has greatly changed the way people live and interact with one another locally and globally. This makes it easy for users to communicate by disseminating and retrieving information. Contributions of the internet have been felt across all aspects of life including institutions of higher learning. The internet has enabled students to communicate with one another and to share ideas, knowledge, experiences and cultural practices which has enhanced the students' skills and assisted them in their studies as well as professional lives (Waithaka, 2013).

According to Ogachi (2015) the availability and the use of the Internet among university students allows students in Kenya to interact, access academic materials as well as improved communication. However, students' access to the internet increases the likelihood of some of them developing pathological and problematic internet use as they have free and unlimited access to the internet. University students face a higher risk of getting addicted to internet use because of the free and unlimited access to the internet through mobile phones, laptops or university computer laboratories and hotspot areas. This unlimited access to the internet within universities makes students highly dependent on the internet in their daily lives emphasizing the fact that they are at a high risk of becoming pathological users of the internet (Chak & Leung, 2004).

Despite the many advantages of using the internet, there are increasing concerns about the risks and negative effects it has on its users where some internet users may develop symptoms similar to addictive behaviors and disorders. According to Park et al (2017) a research was done in the general Korean population on the association of PIU and Internet addiction (IA) with different psychiatric disorders more so among young adults at different levels. The results showed disorders to include depressive disorders

(36.8%), any anxiety disorder (39.5%) and generalized disorders (18.4%). The study also found alcohol use disorder among problematic Internet users to be 28.9% compared to 15.5% among normal Internet users.

A study done among University of Nairobi students internet users revealed that 35.7% of the students were moderately depressed while 5.6% were severely depressed. These statistics emphasize the fact that PIU has far-reaching effects on a society's growth and can affect everyone directly as victims or indirectly through our relationships with the victims. However, university students are at a high risk of getting addicted to the Internet as they have easy and free access to the Internet through Wi-Fi within their colleges and use it for many reasons including entertainment, socialization, source of information, and relaxation. This exposes them to PIU and the psychiatric disorders associated with it (Ogachi , 2015).

Problematic Internet use deprives victims of enough sleep, affects their dietary habits as well as their general physical growth (Dinesh et al., 2016). This has a great potential to affect the sustainable growth and development of the areas or countries with a high prevalence of PIU as it leads to many cases of depressive, anxiety and drug abuse disorders without the capacity to be productive. Resources that would have otherwise been used to drive development programs are therefore directed at curbing these social challenges of PIU.

It is therefore paramount to conduct this study to establish the prevalence of PIU among the students of The University of Nairobi. The findings will help different stakeholders not just to understand addictions related to internet use, but will also help psychotherapists to come up with the best online addiction treatment strategies as suggested by some researchers in their review of the clinical research on problematic internet use (Kuss et al., 2016). According to King et al (2011) the treatment approaches include the use of CBT (Cognitive behavioral therapy), Internet controlling activities such as alarm clocks on desktops, goals setting apps for example 'nomophobia' are promising tools that are assisting with regard to internet addiction. These interventions help in controlling Internet use. However, much more needs to be done with regards to research on problematic internet use. Some clinicians are using other addiction treatments to help solve internet addiction disorder due to limited research done. Regionally and locally little or no research has been done with regards to internet addiction and setting up treatment centers to help solve the problem. This study also seeks to bridge this gap by establishing the prevalence of PIU among students at The University of Nairobi to help in the development of tailor-made programs to address the burgeoning health problem in the country.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter will look at the broader extent of Internet addiction literature including the nature and extent of internet addiction, research definitions and prevalence, Internet addiction symptoms and classifications.

2.1 Review of nature and the extent of Problematic Internet Use.

There is no consensus on the definition of the term Internet addiction. According to Hossain (2016) Internet addiction is the inability to control the use of the Internet that affects psychological, social and biological functioning. The widespread usage of interactive screen media causes psychopathological symptoms that resemble addictive disorders including headache, dry eyes, neglect of family, sleep disturbance, problems with job or school (Asam, 2012). Therefore, Internet addiction can be defined as the problematic use of the computer that causes distress to an individual as well as impairment in terms of normal functioning in day-to-day activities. In addition, Internet addiction is time-consuming and can disrupt studies for university students.

Different terms are used to describe the pathological use of the Internet. Some of the terminologies are pathological internet use, problematic internet use, internet use disorder, online addiction among others. The most common terminologies that are used to describe pathological internet use are Internet Addiction Disorder (IAD) or Problematic Internet Use(PIU). However, Internet addiction is not included as a disorder by itself in the DSM V because the diagnostic criterion for IAD is rather complicated since 86% of the affected subjects have other underlying mental health problems (Block, 2008). Therefore, clinicians are unaware of how to approach and treat the Internet addiction problem affecting patients today.

2.2 The Prevalence of Problematic Internet Use among University Students.

The heterogeneity of varying samples and assessment instruments has made the comparison of prevalence rates of problematic Internet use across the globe rather difficult. Most studies use questionnaires like the Internet Addiction Test to recruit people online, as opposed to random clinical interviews that provide a comprehensive view of the whole population (Kuss et al., 2014).

It is important to note that the numbers presented in this section only have a provisional significance, validated questionnaires and representations of offline samples that are required to come up with comparable and accurate problematic internet use rates. Global prevalence rates of Internet addiction have vast variance depending on the target population and the measurement method. A study that was carried in aid of the German health ministry showed that global prevalence rates for problematic internet use ranges from 1.5% to 8.2% (Petersen et al., 2009). Another major cross-sectional survey among college students revealed that the overall prevalence rate of problematic Internet use is 4.4% (Durkee et al., 2012). The table below provides a more detailed overview of Internet addiction.

Table 1: Global Prevalence Rates of Problematic Internet Use

Country	Age Group	Prevalence Rates
United States	Adult	0.7-6%
	College	4-25%
Italy	College	5%
United Kingdom	College	18.3%
India	College	0.7%
Qatar	College	17.3%
China	College	6.4%
Taiwan	College	17.9%

Source: Durkee et al., (2012)

Regionally, two broad studies have been conducted to investigate problematic Internet use among university students. According to Smita & Azhar (2018) a recent study done showed that 5.1% of all the university students in Mauritius had severe internet addiction and they spent approximately 4.9 hours a day browsing through the web. Forty-two-point five percent (42.5 %) of those who perceived themselves as having Internet addiction do not have the problem as opposed to those who did not perceive themselves as Internet addicts.

The main online activities that the students engaged in were mainly information searching (94.9%), downloading content (87.9%) communicating and or chatting (90.6%). According to Nath et al (2013) a study done among Namibian students found that 34.3% of them were regular Internet users compared to

25% of students in Uganda. For both countries, 5- 6 % of university students had significant problematic internet use.

Locally, there are no studies done yet with regards to problematic internet use. However, it has been noted that there is an increase in the number of internet users in Kenya particularly university students. Undoubtedly, the trend increases the likelihood of problematic internet use in the country (BAKE, 2018).

2.3 Relationship between Problematic Internet Use and Depression.

Problematic internet use has been associated with different psychological disorders such as depression in different studies. According to Seifi (2014) university students who are enrolled in a Master's program tend to use a lot of the internet leading to the development of psychological depression. The same study found a positive correlation between depression and problematic internet use. A similar study done at Eskisehir Osmangazi University in Turkey showed there is a positive correlation between problematic internet use and depression among university students' (Orsal & Ozalp, 2013).

Understanding how depression manifests is critical in finding out how it relates to problematic internet use. The features of depression as per the DSM V are insomnia, unpleasant mood, poor appetite, suicidal tendencies, irritability, self-dislike, deep grief or sorrow and hopelessness (APA, 2013). Poor self-image, low self-esteem, rejection anxiety, low motivation, and the dire need for confirmation and affirmation from others are additional symptoms that are commonly seen among depressed people, and thereafter could lead to problematic use of the internet. According to Tsai & Lin (2003) social isolation is a depressive feature that can cause problematic Internet use. Many university students in Africa use the Internet for "mood modification" and the trend is higher than students in Western universities (Nath et al., 2013). However, it is important to note that the relationship between depression and problematic Internet use is not clear due to the limited number of studies on the issue. Therefore, this study will investigate the correlation between the two variables contributing to the development of new knowledge.

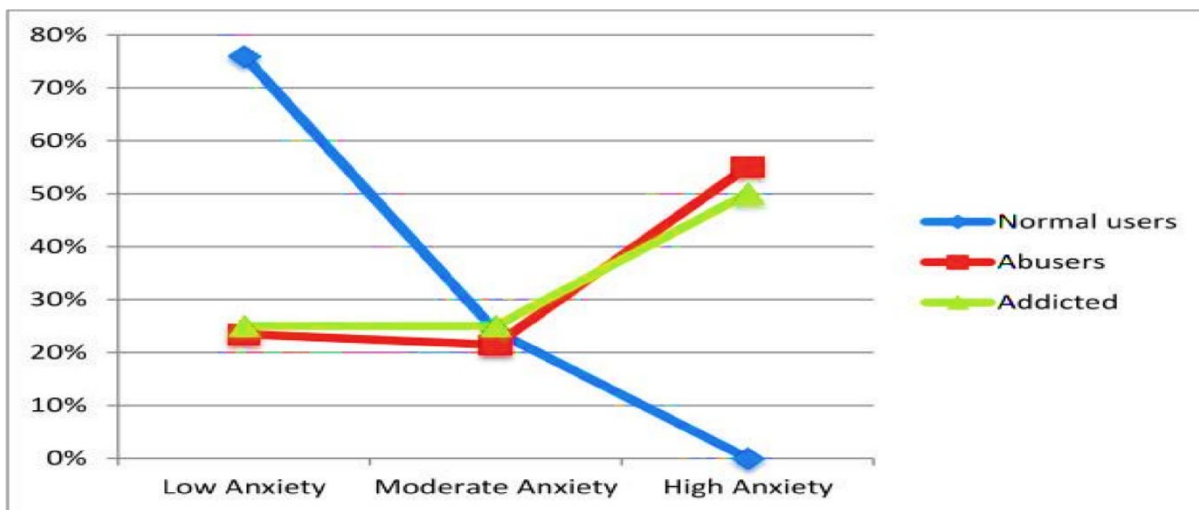
2.4 Relationship between Problematic Internet Use, Anxiety and Stress.

Anxiety disorders in DSM V include agoraphobia, panic disorder, social phobia, separation anxiety disorder, selective mutism, generalized anxiety disorder and specific phobia. The main symptoms that cut across all of them include excessive worry, excessive fear, insomnia, palpitations, general body fatigue, poor concentration and trembling. Anxiety disorder patients become irritable or hyper-vigilant. People with an anxiety disorder also experience racing thoughts (Yeh & Johansen, 2018).

Several studies have shown a relationship between PIU and anxiety. A study done on 332 Californian students in different schools regarding the association between personality traits, impulsiveness and addiction showed that problematic internet use is one of the main predictors of anxiety and impulsivity (Meerkerk et al., 2010) According to Nima (2012) there is a significant and positive correlation between problematic Internet use and anxiety. Problems such as social fears and avoidance of face-to-face interactions can be escalated by problematic internet usage (Lee & Stapinski, 2012). According to Chuo & Shin (2013) there is a profound relationship between depression and anxiety in childhood with problematic internet use in adolescence.

The best way for clinicians to prevent problematic Internet use is considering childhood-related anxiety. This concluded that there is a significant relationship between problematic internet use and anxiety

Figure 1: Levels of Problematic Internet Use and the Level of Anxiety



Source: Hasmujaj (2016)

Figure 2: Percentage of Connection between the Level of Anxiety and Problematic Internet Use among University Students of Tirana.



Source: Hasmuajaj (2016)

From the above figures 1 and 2, it is clear that there is a significant relationship between problematic internet use and anxiety. According to Seifi (2014) there is a positive but mild ($\gamma = .308, p < .001$) co-relation between problematic internet use and anxiety. The study showed that impulsive and excessive use of the internet eventually leads to addiction as students begin exhibiting the signs and symptoms of anxiety and stress. Therefore, this study concurred with other previous studies done and in conclusion confirms there is a positive correlation between problematic internet use, anxiety and stress. In conclusion, there is clear evidence that there is a relationship between problematic internet use and anxiety.

2.5 Relationship between Problematic Internet Use and Socio-demographic Factors

There are several socio-demographic risk factors of problematic internet use. The first risk factor is personality traits such as low agreeableness and high neuroticism (Kuss et al., 2013). Secondly, poor sleeping habits as well as sensation seeking (Durkee et al., 2016). Interfamilial factors such as parental support, quality and type of communication, family conflict or cohesion and academic achievement have been linked to problematic internet use (Lam, 2014). Lastly, gender plays a vital role, especially to problematic internet use. It has been found that both males and females are affected by problematic internet use (Smita & Azhar, 2018).

2.6 Social Network Sites

Social network sites (SNS) are common applications that are used on the internet. SNS that are commonly used by university students include Facebook, Instagram, Snapchat, Twitter among others. Facebook is however the most used SNS among university students (Lenhart et al., 2010).

According to Yafi et al (2018) in Qatar, SNS have both negative and positive impact on academic life. The positive aspect of SNS is that it enables the learners and improves the academic performance whereas, on the other hand, it causes problematic internet use and hence poor academic performance.

According to Moreno et.al (2011) a study was done on college students who use Facebook to show the prevalence of depression among them through the use of Facebook. The study found that college students who seek approval from online friends are more likely to develop depression and depressive symptoms. A similar study was done equally showed that people who refrained from using Facebook had lower cortisol levels as compared to those who continued to use Facebook. This means that those who refrained from using Facebook had lower stress levels as compared to those who continued to use Facebook. High stress levels are associated with depression (Vanman et al., 2018).

Research has also found that there is a connection between the overuse of SNS and negative mental health. Excessive time spent on SNS eventually leads to the development of mental disorders such as PIU depression, anxiety and stress. Not only does distracted attention occur due to multiple SNS but also negative emotional experiences online leading to a decline in the well-being and mood of a young adult (Primack et al., 2017).

Regionally, a study done at the University of Nigeria showed that almost all university students use SNS. The students were not well conversant with the detrimental effects of excessive use of the internet and how it affects their academic performance as well their daily functioning, (Eke &Odoh 2014). Locally, a study done in The University of Nairobi revealed that 56% of the students use SNS at least four times a day. The students use SNS for both academic and recreational purposes (Waithaka, 2013). The study did not look into the effects of SNS use on the students.

2.7 Theoretical framework

(UGT) is arguably the best framework for understanding problematic Internet use among university students. The theory was developed in the 1940's to explain the reasons why people used mass media specifically radio and television stations. UGT diverts from other theories by adopting an approach that is centered on the audience by focusing on understanding what drives people to use the media instead of

concentrating on what the media does for the people. The theory posits that people hold the power over media sources as they decide on the type of materials, they should consume to gratify their needs (Kesmodel 2018).

According to Katz et al (1994) Uses and Gratifications Theory is based on several assumptions. This theory stands on the audience's point of view, based on these basic dramatic and practical assumptions: The audience is dynamic and goal-oriented and taking an active role in deciding how to use media in their lives, the audience knows their needs and is choosing the media to meet their own needs by linking their need to a specific medium the media is competing with other resources for satisfaction needs, the audience is well-aware of their usage, interests and value judgments. Social media platforms serve all four gratifications. Which are the four basic needs of UGT: Information, Entertainment, Personal Identity and Personal Relationship. Unlike the old web- surfing, users can now express themselves on their status and receive online responses including likes and comments from their group of friends. Often enough, users find their sense of humor by following social media pages that have funny quotes and pictures that amuse them. Since there are Facebook pages to subscribe and it is practically online twenty-four hours a day (Warat 2013)

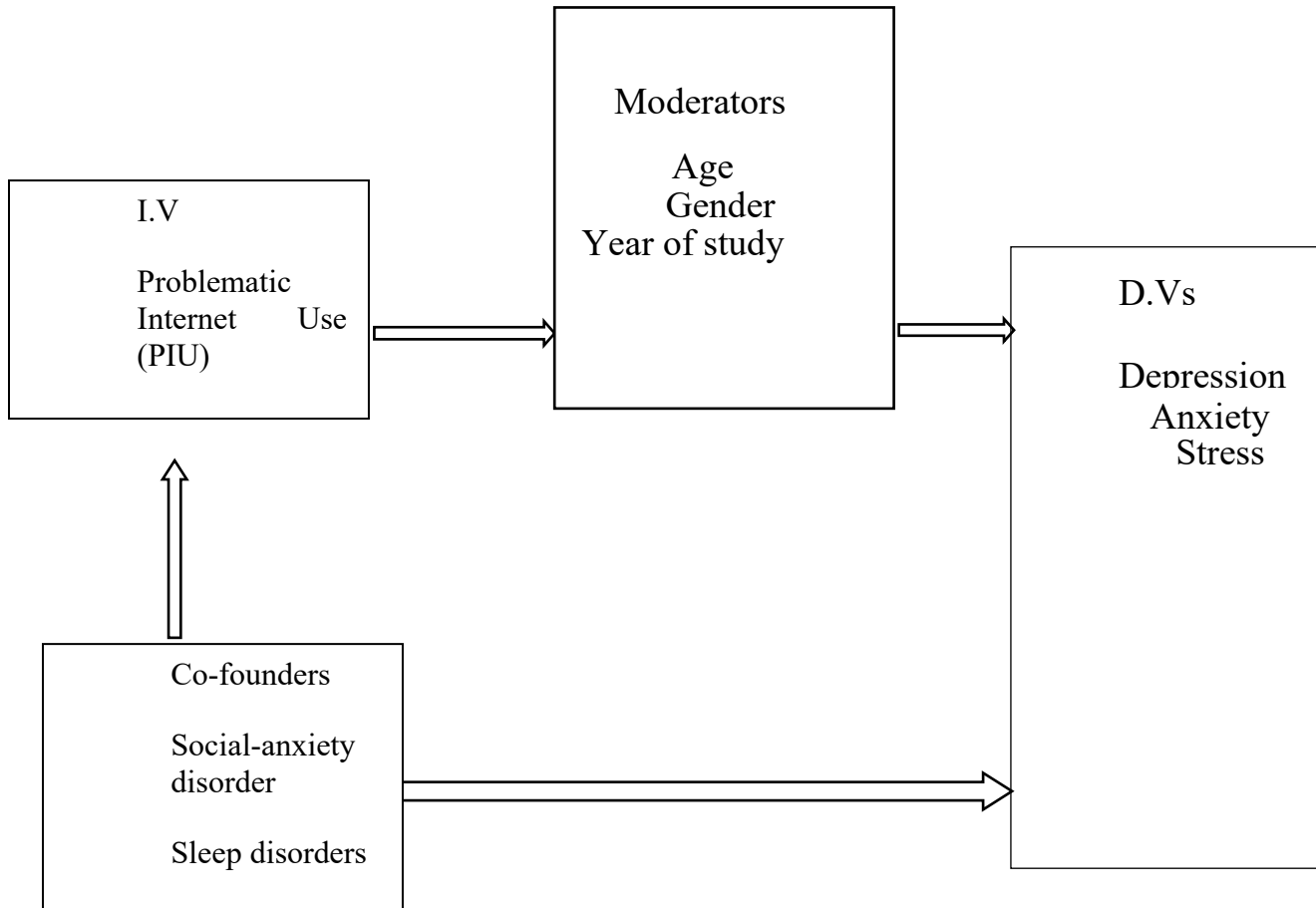
According to Katz et al (1994) there are types of gratifications that motivate people to use the media i.e. to meet people's psycho-social needs by providing people with information, taking care of their emotional needs, focusing on personal needs like self-actualization and self-confidence, providing a bearing on integration needs by supporting family instructions and providing the opportunity for escapism that is leaving or forgetting bad events in personal life. Gratifications incorporated in the UGT can be divided into three broad classes namely content, process, and social gratification. Essentially, content gratifications focus on access to entertainment materials and information, while process gratification focuses on the type of pleasure experienced when using the Internet. Conversely, social gratification is related to using the Internet to communicate with other people in the community. Experiencing such types of gratification makes one vulnerable to psychological issues (Kesmodel 2018).

Over the years, UGT has grown in popularity and it is widely used in studies of problematic internet use. According to Whiting & Williams (2013) people use social media to gratify needs such as social interaction, information seeking, pass time, entertainment, relaxation, communicatory utility, convenience utility, expression of opinion, information sharing, and surveillance/knowledge. Adolescents use Facebook and other social media platforms to gratify the need of interacting with other persons particularly peers, who commonly use the same platforms, and as a source of information (Tanta et al., 2014). According to Roy (2008) the types of gratifications derived from mass media and the Internet include arousal, education, information guidance, diversion, entertainment, relaxation, competence, habit, content, and social pressure.

Therefore, it is important to establish the type of gratification that pushes the students of the University of Nairobi to use the Internet that often culminates in addiction.

2.8 Conceptual Framework

Figure 3: Conceptual Framework



The conceptual framework as per the topic of study gives the researcher an understanding of the topic by explaining the interrelationship between various variables of the study. The independent variable in this study was problematic internet use while the dependent variables depression, anxiety and stress. Anxiety, stress and depression were considered as symptoms of problematic internet use thus gave a direct association.

The study used age, gender and year of study as moderating variables. Existing studies have indicated that the prevalence of PIU depends on gender whereby females are less affected compared to their male counterparts. Among university students, the year of study dictates gratification for using the internet.

Students in the first year will mostly use the internet for entertainment, seeking affirmation as well as spend most of their time on social networking sites while those in their final years of study will mostly use the internet for research and accessing academic material. Thus, first- and second-year students are most likely to be vulnerable to PIU. Social anxiety disorder and sleep disorders were confounding variables as they could cause PIU or increase the probability of getting depression, anxiety and stress.

2.9 Significance and Rationale of the Study

The proliferation of the internet in our society today has led to a wide range of consequences among its users. On the positive side, Internet has several advantages including better communication, information sharing, and social interactions while the negative aspect is addiction. Concerning this study, excessive and compulsive internet use has become a major problem among internet users leading to problematic internet use (earlier known as internet addiction). Problematic internet use is associated with psychological disorders such as depression, anxiety and stress.

The study will help to identify the risk factors of problematic Internet use among university students leading to the development of effective prevention strategies. Moreover, the research findings will justify the creation of Internet addiction treatment centers in the country.

Understanding the correlation between Internet addiction and psychological disorders among are several studies done globally as evidenced above in the literature review but there is a huge gap in terms of research and interventions in Africa at large as a region as well as locally. Therefore, there is a dire need to bridge this gap by conducting this study that focuses on University of Nairobi students.

2.10 Research Questions

- What is the prevalence rate of internet addiction among students in the University of Nairobi?
- Is there a relationship between internet addiction and depression and anxiety?
- Are there associated socio-demographic factors?

2.11 Hypothesis

Null Hypothesis

There is no correlation between problematic use of the internet and anxiety, depression and stress.

2.12 Broad Objectives of the Study

To determine the association between problematic internet use, depression, anxiety and stress among students of the University of Nairobi.

2.13 Specific Objectives of the Study

- To determine the prevalence of PIU.
- To determine the relationship between PIU and depression
- To determine the relationship between PIU and anxiety
- To determine the relationship between PIU and stress
- To determine the association between PIU and socio-demographic factors.

CHAPTER THREE

RESEARCH AND METHODOLOGY

3.0 Introduction

In this chapter, the areas covered include study research design, a description of the study site, the study population, inclusion and exclusion criteria, sample size, sampling methods, data collection design and instruments, data analysis, quality assurance, ethical considerations and the limitations of the study.

3.1 Study Design

The study adopted the analytical cross-sectional research design. Analytical cross-sectional design involves collecting population information at a single point in time to establish the relationship between exposure and outcome variables (Lavrakas, 2017). During the analytical cross-sectional study, the exposure and outcome variables are measured simultaneously leading to the identification of prevalence rates in clinical studies (Kesmodel, 2018). Therefore, an analytical design was delved suitable for the current research because it was presumed to help to establish the association between problematic Internet use and depression, anxiety, and stress by testing the study hypothesis. Besides, there are several advantages of using the analytical cross-sectional design including randomization of data sources, cost-effectiveness, ease, and generation of prevalence ratio.

3.2 Study Site Description

The site of this study is The University of Nairobi which has a population of roughly over 80,000 students who represent different diversities and backgrounds. The institution was founded in the year 1947 by the British colonial government in Nairobi, Kenya and is among the universities with very developed infrastructure including internet connectivity across the institution. Hot-spots for WI-FI are strategically distributed in key areas which attract large students' population such as computer laboratories, libraries, tuckshops and even around students' hostels.

By the year 1949, The University of Nairobi aimed to provide East Africa with higher technical education for all the territories. In 1951, the institute received a Royal charter under the name Royal Technical College of East Africa, and in April 1952 with the help of the colonial government and welfare fund grants, Sir Philip Mitchell laid the foundation for the institution (University of Nairobi 2009). Since then, the University has grown to comprise the following colleges

- College of Biological and Physical Sciences
- College of Health Sciences
- College of Education and External Studies
- College of Agriculture and Veterinary Sciences
- College of Humanities and Social Sciences
- College of Architecture and Engineering

3.3 Study Population

This study targeted University of Nairobi students from different campuses and departments who used Internet in their daily activities.

3.4 Inclusion Criteria

Firstly, the participants should have been a University of Nairobi student. Lastly, the participant should have been willing to give consent.

3.5 Exclusion Criteria

Firstly, was if the participant had not been in use of the internet for less than a year. Secondly, if the participant was not willing to give valid consent

3.6 Sample Size calculation

In this study the sample size was calculated using the formula by (Cochran, 1977)

Calculated at 95% confidence level, for an alpha level prior at .05(error of 5%)

$$N = \frac{t^2 * P(1-P)}{d^2}$$

2 d

The average prevalence of daily internet users among university students being 85% according to (Waithaka, 2013) was 81% and 90% according to (Akoth, 2017).

$$\text{The minimum sample size is } 1.96 \times \frac{(0.85(.15))^2}{(0.05)^2}$$

$$= \frac{1.96^2 \times 3.8416}{0.0025}$$

$$= 173$$

= **173** participants

With the expected **attrition rate** of **10%**= $N_2 = 173(110/100) = \mathbf{190}$ participants.

3.7 Sampling Method

The study used a stratified random sampling method to determine the first strata by selecting three different schools: College of humanities and social sciences, college of health Sciences and college of architecture and engineering.

Stratified sampling is an approach that involves dividing the total study population into groups and picking respondents from each group. The research used the stratified sampling method to ensure that the participants reflect the characteristics of the general population.

Stratified random sampling allowed the researcher to exercise some control over the selection of the samples. Given that the researcher had already purposely selected the first three strata, the next step was to take small samples of equal size from the proposed strata. The researcher then examined the variances within and also among the possible stratification (Kothari, 2004).

Out of the university structure a total number of roughly 80000 students, the sample size as per the above calculation is equal to say 190 and that can be labeled as(N). In each college, there are first years, second years and so on with many students. Below is an illustration of how the 190 participants were selected from each college using a list from the various departments.

$N_1 = 40000$, $N_2 = 24000$ and $N_3 = 16000$

For the strata with $N_1 = 40000$ we have $P_1 = 40000/80000 \times 190 = 95$

For the strata with N_2 , we have $P_2 = 24000/80000 \times 190 = 57$

For the strata with N_3 , we have $P_3 = 16000/80000 \times 190 = 38$

Therefore, the sample size for the different randomized strata was chosen in the ratio 15:9:6 respectively for the proposed colleges to get the targeted sample size of 190 participants.

Following the above example, the sample size for the different colleges was:

$N_1 = \text{College of humanities and social sciences} = 15/30 \times 190 = 95$ participants

$N_2 = \text{College of Health Sciences} = 9/30 \times 190 = 57$ participants

$N_3 = \text{College of Architecture and Engineering} = 6/30 \times 190 = 38$ Participants.

3.8 Recruitment and Consenting Procedure

Stratified random sampling was used to select three colleges out of the six colleges. The researcher randomly sampled the classes in which the data collection was done.

After getting the three classes, the researcher liaised with the heads of department in the respective schools to get class representatives from each of the three classes. Through the class Whats App group, the class representatives were able to share the link to the Google form containing the questionnaires. Those who

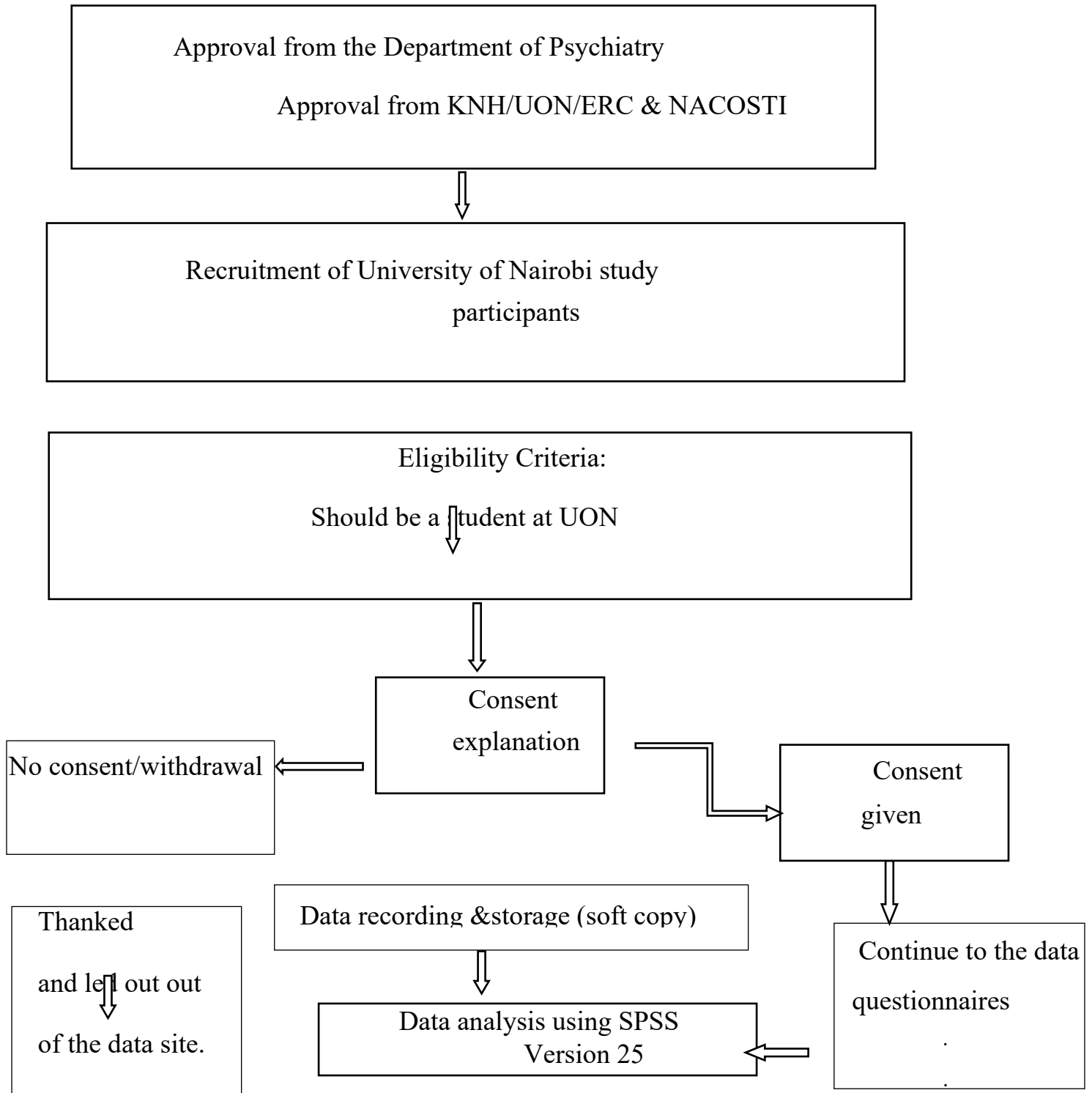
consented were able to follow through with filling the form, those who did not were automatically led to the end of the form where they were thanked for their time.

The respondents were able to answer and click submit at the end of the form meaning they had completed the questionnaires which included socio-demographic questionnaires, DASS and CIUS. All submitted data was automatically saved in code form in the computer so anonymity was adhered to.

The answered and submitted questionnaires of the 190 targeted study participants were consolidated for analysis. Data quality was handled by ensuring questionnaire completeness. This was done by placing a no submission error on questionnaires that were not fully filled. At the end of data collection period, data was entered in Microsoft Access database. The safety of the data was protected using a protected database and backup files were kept in an external hard drive

3.9 Study Flow Chart

Figure 4: *Study Flow Chart*



3.10 Data Collection Instruments

The tools used in the study were well known for their validity and reliability for screening depression, anxiety and stress. These tools had been successfully used in similar researches globally, regionally and locally.

1. Compulsive Internet Use Scale (CIUS)

Compulsive Internet Use Scale (CIUS) is a specially designed tool used to assess problematic Internet use in the population. It was developed in the 2000s during the rise of Internet use and it contains 14 questions with a 5- point Likert scale of 4- very often, 3-often; 2-sometimes, 1-seldom, 0- never (Meerkerk et al., 2009). The total value range of the CIUS is 0-56 and the reliability rate is high ($\alpha=0.89$). Noteworthy, CIUS focuses on the five dimensions of addiction that are included in DSM V including loss of control, withdrawal, preoccupation, conflict, and mood modifications. The core advantage of CIUS is brevity.

2. Depression Anxiety Stress Scale-21 Items (DASS-21)

Depression Anxiety Stress Scale-21 Items (DASS-21) is arguably the most widely used tool of measuring mental disorders (Tran & Fisher, 2013). The tool is the shorter version of DASS-42; it is divided into three subscales measuring depression, anxiety, and stress (Meerkerk et al., 2009). Each subscale comprises of seven items that are ranked using a 4-point Likert scale including 0,-did not apply to me at all, 1-applied to me to some degree, 2- applied to me to a considerable degree, 3-applied to me very much (Coker & Sanni, 2018). The depression subscale measures inertia, self-depreciation, lack of trust, discouragement, devaluation of life, dysphoria, anhedonia, and lack of interest. The anxiety scale assesses subjectivity anxiety, situational anxiety, musculoskeletal effects, and excitation of autonomous nervous system. Lastly, is the stress scale that evaluates difficulty to relax, irritability, easy agitation and nervous excitement.

3. Socio-demographic questionnaire

A socio-demographic questionnaire was used to capture key information about the study participants on related to problematic Internet use. The socio-demographic questionnaire incorporated personal data, including: The age, sex, education level, marital information and behavioral risk factors namely physical activity, smoking and sleep duration.

3.11 Ethical Considerations

The study was reviewed by University of Nairobi Ethical Review Committee and all study instruments were approved by National Commission for Science, Technology & Innovation (NACOSTI), Kenyatta National Hospital UON Ethics and Research Committee (KNH-UoN ERC). The participants had access to the study consent and questionnaire link through their class WhatsApp group. The questionnaires were anonymized and the data collected was safely stored with identification codes. The researcher first obtained consent from the research participants before proceeding with the study.

The benefits accrued were that the information obtained from this research would be valuable material to stakeholders and will help in policy-making with regards to different sectors such as the education system, technology system, medical system. There were no risks to participant's health or wellbeing on choosing to participate in the study. Participation in the study was entirely voluntary and one's participation choice did not affect how the University would continue to treat one. Any information given by the participant was only to be used for the study and confidentiality and anonymity was upheld during and after the study. The expected time for participation was 10 minutes and the data collection instruments that one was required to fill were three.

3.12 Data Management and Presentation

The received soft-copy questionnaires were evaluated to ensure their completeness and accuracy. The data was cleaned to identify and correct any error that may adversely affect the interpretation of the research results. The data was coded and entered into the Statistical Package for the Social Sciences (SPSS) version 25. The researcher used tables and charts to present and explain the relationship between problematic internet use and stress, anxiety and depression for easy understanding. This was done by determining the frequency, chi square and logistic regression of all variables. Variables with a P-value less than 0.05 were considered for analysis.

3.13 Study limitations

- The study was a cross-sectional study that only focused on a small sample size and hence the results were only based on that. It would be better if a longitudinal study was done to come up with better interventions. Moreover, given that the study is cross-sectional, then it is not possible to know the cause-effect between the factors and problematic internet use.
- Online questionnaires face the challenge of low response which may be attributed to having poorly designed long questionnaires that can cause exhaustion among the respondents. Additionally, lack of

incentives may have caused low response level. Finally, ensuring participants first consent before proceeding with the study also may have to pose highly as a challenge. Respectively, these challenges were tackled by having the questionnaires constantly reviewed by experts to ensure they are well designed and comprehensive. The questionnaires were also based on a study context of individuals in the same institution hence the respondents were be able to comprehend the benefits of being involved in the study without necessarily needing incentives. Google forms allow for blocking further involvement in the study when the questionnaires are structured to yes or no answers which limit proceeding with answering the other items in the questionnaire in case one does not consent.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter entails data analysis, results and presentation. The returned questionnaires were evaluated to ensure their completeness and accuracy. The data was cleaned to identify and correct any errors that may adversely affect the interpretation of the research results. The data was coded and entered into the Statistical Package for the Social Sciences (SPSS) version 25. The researcher used tables and charts to present and explain the relationship between problematic internet use and stress, anxiety, and depression for easy understanding. Descriptive statistics on frequencies was used to describe the general characteristics of the participants. Inferential statistics used include chi-square, odds ratio and logistic regression analysis to find out the associations of all variables i.e., with depression, anxiety, stress, PIU and socio-demographic characteristics.

4.1 Response rate

The respondents who agreed to take part in the study were 190 participants. Once the data was collected online from participants in the different schools, the site was locked to prevent more and excess participants from responding to the online questionnaires.

4.2 Socio-demographic Characteristics

Table 2: Socio-demographic Characteristics

	Category	Frequency (N)	Percentage (%)
College	CAE	38	20.0
	CHS	57	30.0
	CHSS	95	50.0
	Total	190	100.0
Year Of Study	1 st Year	8	4.2
	2 nd Year	60	31.6
	3 rd Year	48	25.3
	4 th Year	41	21.6
	5 th Year	19	10.0
	6 th Year	14	7.4

	Total	190	100.0
Sex/Gender	Female	103	54.2
	Male	87	45.8
	Total	190	100.0
Age	19 To 21 Yrs	58	30.5
	22 To 24 Yrs	101	53.2
	25 To 27 Yrs	28	14.7
	28 To 30 Yrs	2	1.1
	Over 31 Yrs	1	0.5
	Total	190	100.0

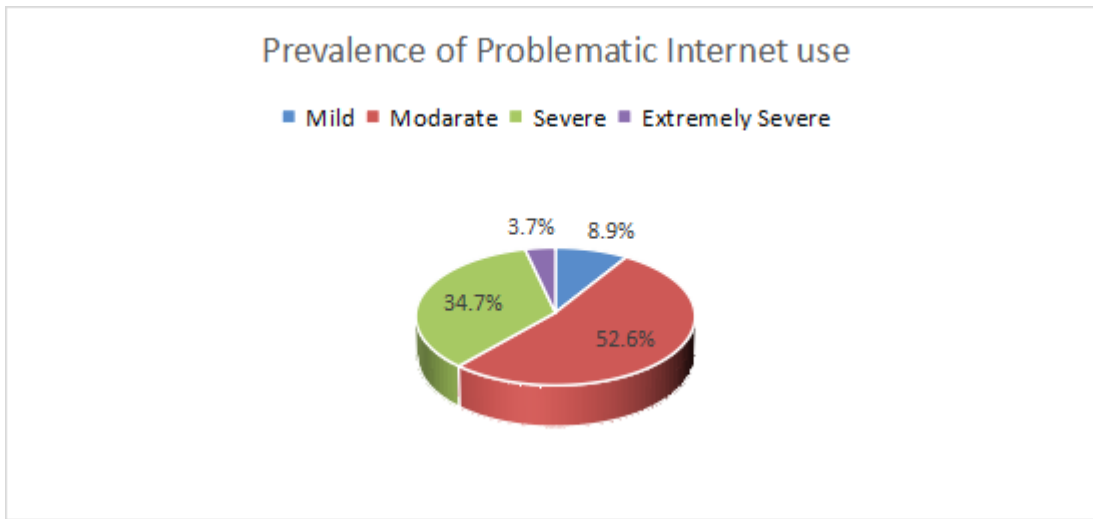
Socio-demographic characteristics of the study were analyzed based on the study objectives. The researcher interviewed students from different colleges of the University of Nairobi (UON), year of study, gender and age. The researcher found out that half of the respondents came from CHSS 95(50.0%), followed by CHS 57(30.0%) and lastly by 38(20.0%). On educational level, the researcher interviewed the respondents on their year of study ranging from 1st year to 6th year in the university. The study revealed that those on their 1st year of study were 8(4.2%), 2nd year 60(31.6%), 3rd year 48(25.3%), followed by 4th year 41(21.6%), then for 5th year 19(10.0%) and lastly those in their 6th year were 14 (7.4%).

The researcher found out that the population interviewed consisted of more females at 103(54.2%) than males 87 (45.8%) making a total of 190 respondents which represented 100% of the entire population. The study revealed that the mean age of the respondents was 23 years with a frequency of 101 (53.2 %), followed by mean age 20 years in a range of 19 to 21 years with a frequency of 58(30.5%), followed by a mean of 26 years within a range of 25 to 27 years at a frequency of 28 (14.7 %, followed by a mean of 29 years within a range of 28 to 30 years at a frequency of 2(1.1%) and above 30 years at a frequency of 1(0.5%)) respectively. This is in accordance to table two.

4.3 Prevalence of PIU

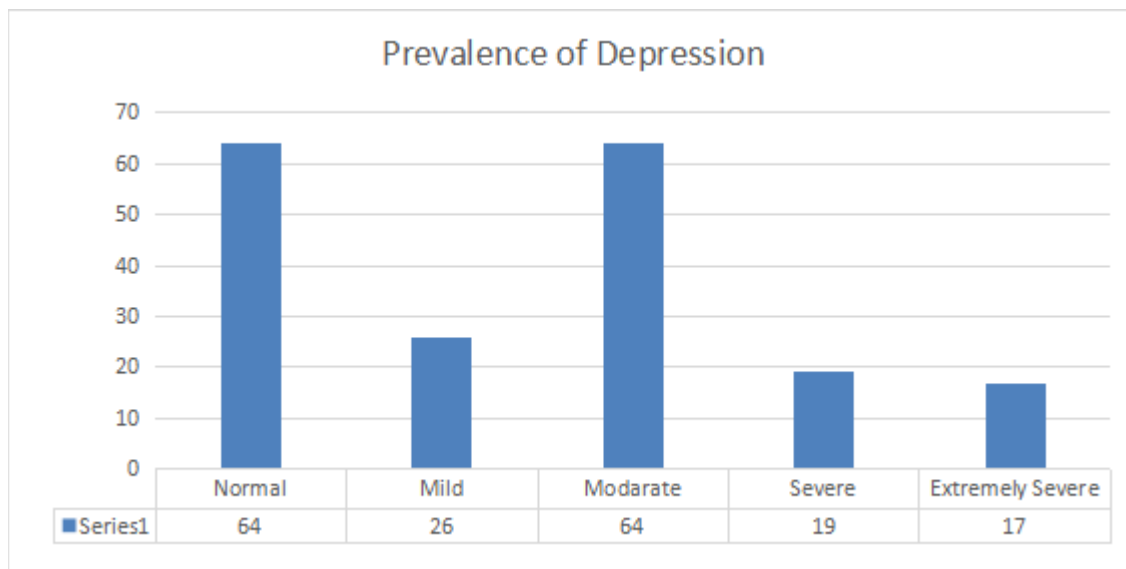
The researcher found that majority of the respondents had moderate and severe levels of problematic internet use (PIU). Firstly, moderate levels of PIU was at a frequency of 100(52.6%), followed by severe levels of PIU at a frequency of 66(34.7%), mild levels of PIU was at a frequency of 17(8.9%) and lastly extremely severe at a frequency of 7(3.7%) totaling to 190 respondents (100%). This meant that all respondents had been affected by internet use. This is as shown in figure 5 below.

Figure 5: Prevalence of Problematic Internet Use



4.4 Prevalence of Depression

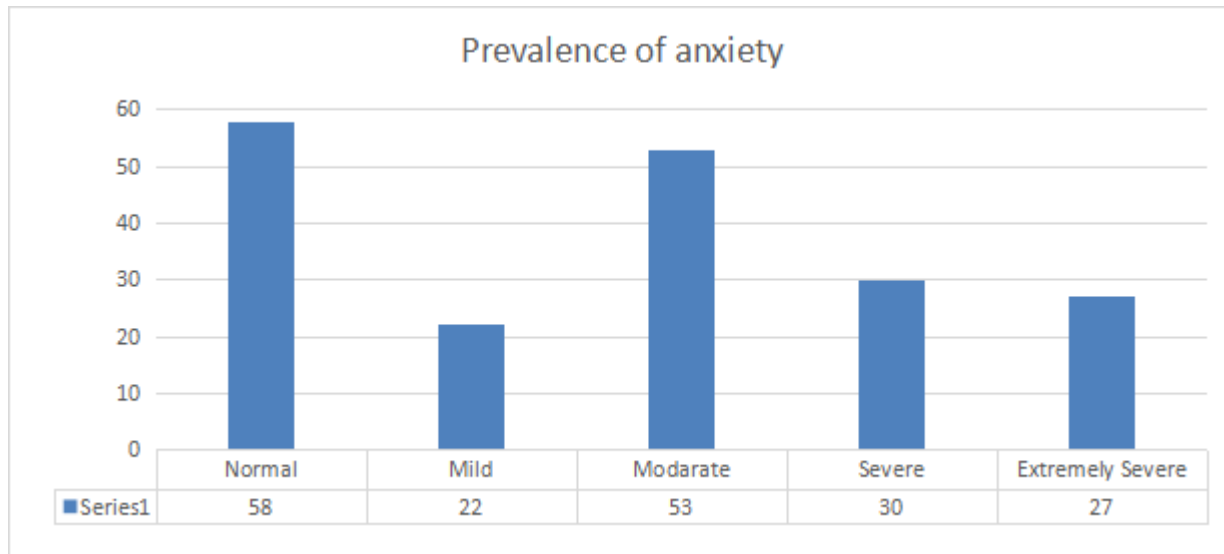
Figure 6: Prevalence of depression



According to figure 6 above, the researcher found that 64(33.7%) respondents did not have depression, followed by moderate levels of depression at a frequency of 64(33.7%). Thirdly, mild levels of depression at a frequency of 26(13.7%) followed by severe levels of depression at a frequency of 19(10%) and lastly extremely severe at a frequency of 17(8.9%). The researcher noted majority of the respondents were affected by depression at different degrees.

4.5 Prevalence of Anxiety

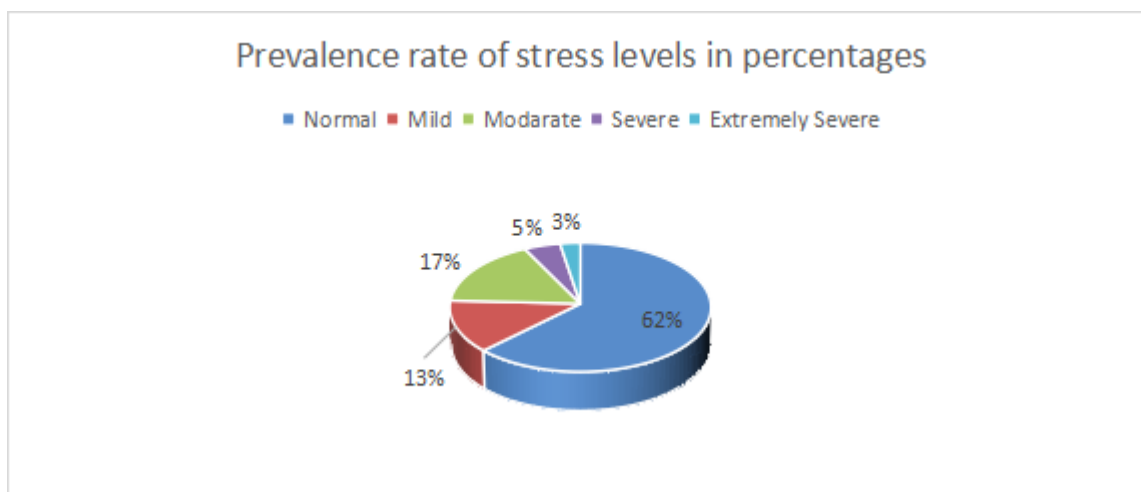
Figure 7: Prevalence of Anxiety



According to figure 7 above, the researcher found that 58 respondents (30.5%) did not have anxiety, followed by moderate levels of anxiety at a frequency of 53(27.9%). Thirdly, severe levels of anxiety at a frequency of 30(15.8), followed by extremely severe levels of anxiety at a frequency of 27(14.2%) 19(10%) and lastly mild levels at a frequency of 22(11.6%). The researcher noted that majority of the respondents were affected by anxiety at different degrees.

4.6 Prevalence of Stress

Figure 8: Prevalence of Stress



According to figure 8 above, the researcher found that 119 respondents (62.6%) did not have stress, followed by moderate levels of stress at a frequency of 32(16.8%). Thirdly, mild levels of stress at a frequency of 25(13.2%), followed by severe levels of stress at a frequency of 9(4.7%) and lastly mild levels at a frequency of 5(2.6%). The researcher noted that majority of the respondents were not affected by stress at different degrees according to DASS.

4.7 Relationship Between PIU, Depression, Anxiety and Stress.

Table 3: Relationship between PIU, Depression, Anxiety and Stress

Distress Condition	Level of Distress	PIU		N	p	AOR	95% CI
		Mild to Moderate	Severe				
Depression	Mild to Moderate	56(44.4%)	34(27%)	90	14.265	4.941	2.078-11.752
	Severe	9(7.1%)	27(21.4%)	36	(0.000)		
Anxiety	Mild to Moderate	52(39.4%)	23(17.4%)	75	11.088	3.342	1.624-6.878
	Severe	23(17.4%)	34(25.0%)	57	(0.001)		
Stress	Mild to moderate	29(40.8%)	28(39.4%)	57	3.937	3.798	0.957-15.068
	Severe	3(4.2%)	11(15.5%)	14	(0.071)		

According to table 3 above, there is a significant relationship between PIU and the distress conditions depression, anxiety and stress; depression ($p=0.000$, $AOR=4.941$, 95% CI 2.078-11.752), stress ($p=0.071$, $AOR= 3.342$, 95% CI 1.624-6.878) and anxiety ($p=0.001$, $AOR=3.798$, 95% CI 0.957-15.068). The odds ratio is also above 1.0 which means that there is a strong association between PIU and depression, anxiety and stress. The likelihood of PIU co-occurring with depression is high followed by PIU and anxiety and lastly with stress

4.8 Relationship Between PIU and Socio-demographic factors

Table 4: Relationship between PIU and Socio-demographic Factors

Socio-Demographic Characteristic	Pearson Chi- Square P-Value
Year of Study	0.019
Age	0.493
College of Belonging	0.032
Sex/Gender	0.882

The results obtained in table 4 revealed that there is a significant relationship between the problematic internet use and socio-demographic factors; Year of study ($p=0.019$ which is <0.050 and college belonging ($p=0.032$ which is <0.05). However, there was no significant relationship with sex/gender that was significant ($p=0.882$ which is >0.05) as well as age ($p=0.493$ which is >0.05)

Table 5: Odds Ratio for College Belonging and Year of study

Socio-Demographic Characteristics		AOR	95% CI
College	CAE	1.659	0.753-3.653
	CHS	0.547	0.217-1.375
Year of Study	1st Year	0.770	0.130-4.557
	2nd Year	0.311	0.087-1.113
	3rd Year	0.589	0.161-2.163
	4th Year	0.469	0.132-1.663

The table 5 above shows the relationship between PIU and Socio-demographic factors that were significant for the study. Firstly, there is a strong association between students from CAE (College of Architectural studies and engineering followed by CHS(College of Health Sciences).The likelihood of CAE(College of Architectural Studies) having PIU is higher than those in CHS: (CAE; AOR=1.659, 95% CI 0.753-3.653); (CHS; AOR=0.547, 95% CI 0.217-1.375). Secondly, in terms of the year of study, there is an association between PIU and the year of study as depicted in the table above. The odds ratio of the year of study reduces as the year of study increases. The adjusted odds ratio for 1st years is the highest which means they are the most prone to getting PIU. (1st year AOR=0.770, 95% CI 0.130-4.557; 2nd year AOR=0.311, 95% CI 0.087-1.113; 3rd year AOR=0.589, 95% CI 0.161-2.163; 4th year AOR=0.469, 95% CI 0.132-1.663).

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATION

5.0 Introduction

The discussions will be made as per the study objectives: The prevalence of problematic internet use among university students; the relationship between problematic internet use and depression; the relationship between problematic Internet use, anxiety and stress and relationship between problematic internet use and socio-demographic factors

5.1 The Prevalence of Problematic Internet Use among University Students

The researcher found that majority of the respondents had moderate and severe levels of problematic internet use (PIU). Firstly, moderate levels of PIU was at a frequency of 100(52.6%), followed by severe levels of PIU at a frequency of 66(34.7%), mild levels of PIU was at a frequency of 17(8.9%) and lastly extremely severe at a frequency of 7(3.7%) totaling to 190 respondents (100%). This meant that all respondents had been affected by internet use. This shows a significantly high prevalence rate of PIU among the University of Nairobi students. Other studies ranged from low to high prevalence rates of PIU both globally and regionally.

Global prevalence rates of problematic have vast variance depending on the target population and the measurement method. For instance ,in this study, CIUS(Compulsive Internet Use Scale) was used to determine the prevalence of problematic internet use and the target population was university of Nairobi students. A study done by (Hasmujaj,2016),showed that the prevalence of problematic internet use was determined using Internet addiction Test(IAT) and the target population was University of Tirana students in Albania .In addition to that, a study done by Zenebe et al.,2020,pg 3, showed that they used Young's Internet addiction Test(YIAT) to determine the prevalence rate of problematic internet use. This study was done among undergraduate students across North Eastern Ethiopia.

According to Fantaw, C. (2021), a more recent study in Ethiopia, showed that 28.2 % students in University of Addis Ababa have problematic internet use. In addition to that, according to Smita & Azhar (2018) a recent study showed 5.1% of all the university students in Mauritius had severe internet addiction and 42.5 % of those who perceived themselves as having Internet addiction do not have the problem as opposed to those who did not perceive themselves as Internet addicts. A research study among Namibian students

found that 34.3% of the students were regular Internet users compared to 25% of students in Uganda. For both countries, 5- 6 % of university students had significant problematic internet use (Nath et al., 2013). Further, a study that was carried in aid of the German health ministry shows that global prevalence rates for problematic internet use ranged from 1.5% to 8.2% (Petersen et al., 2009).

5.2 Relationship between Problematic Internet Use and Depression, Anxiety and Stress

The widespread usage of interactive screen media causes psycho-pathological symptoms that resemble addictive disorders including. The widespread usage of interactive screen media has led to some of the users having psychopathological symptoms that pretty much resemble that of addictive disorders including headache, dry eyes, neglect of family, sleep disturbance, problems with job or school (Rehbein, 2013). According to the study, there is a significance in the relationship between PIU, depression, anxiety and stress among the university students According to Seifi (2014) university students who are enrolled in a Master's program tend to use a lot of the internet leading to the development of psychological depression. The same study found a positive correlation between depression and problematic internet use. A similar study done at Eskisehir Osmangazi University in Turkey showed there is a positive correlation between problematic internet use and depression among university students' (Orsal & Ozalp, 2013).

According to Tsai & Lin (2003) social isolation is a depressive feature that can cause problematic Internet use. A study among university students in Africa showed many of them use the Internet for mood modification and the trend is higher than students in Western universities. The study showed that impulsive and excessive use of the internet eventually leads to malfunctions as students begin exhibiting the signs and symptoms of anxiety and stress (Nath et al., 2013). Therefore, this study concurs with other previous studies done where the researches have shown there is a significant and positive correlation between problematic Internet use and anxiety. Furthermore, problems such as social fears and avoidance of face-to-face interactions can be escalated by problematic internet usage (Lee & Stapinski, 2012).

5.3 Relationship between Problematic Internet Use and Socio-demographic Factors

The results obtained revealed that there is no significant relationship between the problematic internet use and socio-demographic factors age and sex/gender except for year of study and the college one belonged in that showed significance in the relationship. This confirms the study's literature review that shows there being socio-demographic risk factors of problematic internet use. Gender plays a vital role especially concerning problematic internet use. It has been found that both males and females are affected by problematic internet use (Smita & Azhar, 2018). The view that PIU affects each gender agrees with the findings of this study. The null hypothesis states that is no significant relationship between problematic

internet use and gender. This means that in this case the null hypothesis is accepted. In addition to this, according to

5.4 Conclusion

This study ascertains there being significant association between PIU and psychological distresses depression, anxiety and stress. According to the study, a greater number of the respondents were from the college of Humanities and Social Sciences, in 2nd year of schooling and were females. There was a higher prevalence of anxiety than depression and stress among the students at the university with more than half of the students having anxiety. Majority of the students had moderate and severe levels of PIU and the association between PIU and the distress conditions was strong with the likelihood of PIU occurring with depression being higher followed by anxiety then stress. Students from CAE had higher likelihood of having PIU than those in CHS and that the more years one spent in school the less likelihood to develop PIU. The study in general clarifies the strong need to consider steps towards curbing the shortcomings that come with PIU in the university in line with handling psychological distress conditions of depression, anxiety and distress among the students. This should also be in strong consideration of the different schools and year of study.

5.5 Recommendations

1. The study recommends that there should be a team of experts in every university set to help manage PIU as it has been associated with depression, anxiety and stress among users.
2. The study also recommends the study to further investigate the impact of PIU on other psychiatric disorders other than the ones covered in the study.
3. The study recommends further assessment of other socio-demographic factors that may be associated with PIU among students in the university.

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APPENDICES

Appendix 1: Research Work Plan

Month/ Activity	March 2019	Dec 2019	Jan 2020	April 2020	Oct 2020	Nov 2020	Jan to May 2021	June 2021	July 2021	August 2021
	Nov S019									
Developing the project proposal										
Proposal submission, approval and ethical clearance										
Data Collection										
Data cleaning, data entry and analysis										
Writing and										

submission									
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Appendix 2 : Research Budget

Budget Grand Total: Ksh 100000

Item	Quantity	Price per Unit	Total
Preparation of data collection tools	190 questionnaires	@100	19000
	Writing materials	@4000	4000
Data collection and communication	Airtime	@2000	6000
Fare to town	2 trips	@1000	1000
Personnel training and hiring (Meals, refreshments, Lodging+ water	3 data collectors	@5000	15000
Printing and binding	Printing Binding	Printing @5000 Binding @5000	10000

Cost of publication	1	30000	30000
Data management	Writing materials	@3000	5000
and analysis	Buying software	@2000	
Contingence			10000

Appendix 3: Consent Form

Title of the Study:

Problematic Internet use, Depression, Anxiety and Stress among university of Nairobi students

Principal Investigator and institutional affiliation

Sylvia Mita Adoyo

University of Nairobi

College of Health Sciences University of Nairobi

Department of Psychiatry

My name is Sylvia Mita Adoyo, I am a Master of Science in Clinical Psychology student from the University of Nairobi, Department of Psychiatry. I am doing research on Problematic Internet use, Depression, Anxiety and Stress among university of Nairobi students and would like you to be part of this research. The main objective of the study is to determine the association between problematic internet use, depression, anxiety and stress among students of the University of Nairobi.

The benefits accrued are that the information obtained from this research will be valuable to stakeholders and will help in policy making with regards to different sectors such as the education system, technology system, medical system. If you choose to participate in the study, there will be no risks to your health or wellbeing.

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Your participation choice will not affect how the University will continue to treat you in any way. Any information you give as a participant will only be used for this study and confidentiality and anonymity will be upheld at all times during and after the study.

The online data collection instruments that you are required to fill are three. All of them will take approximately 10 minutes to complete. There is no form of reimbursement given for participation.

In case of any queries or enquiries you can call me on my mobile no: 0713705874 Or Contact the KNH/UON/ERC for further details

Statement by the Participant

I have been invited to participate in research and have read the foregoing information, or it has been read to me and I have understood it. I consent voluntarily to be a participant in this study

Name of Participant _____ Signature of Participant _____

Date _____

Witness name (A witness is a fellow participant in the study)

Name of witness _____ Signature of witness _____

Date _____

Statement by the researcher

I have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has willingly and freely given consent

Name of Researcher _____ Signature of Researcher _____

Date _____

Appendix 4: Questionnaire

By

(Waithaka,2013)

Internet use among university students in Kenya:

A case study of the University of Nairobi

PART 1

Bio-data

1. To which college of the University of Nairobi (UON) do you belong?

CHSS

CHS

CAE

CEES

CBPS

CAVS

2. Status:

Undergraduate: 1styr 2ndyr 3rdyr 4thyr 5th yr 6th yr

3. Gender:

Male Female

4. Age: years

PART II

Awareness/knowledge of internet services

5. Are you aware of the internet services offered by the UON Library?

Yes No

Competence in computer and internet use

6. Do you have access to the internet? Yes No

7. Please indicate your competence in handling the tasks listed below on the scale of

1. Very poor 2. Poor 3. Fair 4. Good 5. Very good

	1	2	3	4	5
Basic skills (eg typing and word processing) [][][][][][
Using search engines	[][][[][
Using information gateways	[][][[][
Evaluating Websites for relevance	[][][[][
Web navigation	[][][[][
Browsing	[][][[][
Downloading and saving information	[][][[][
Printing	[][[][][

PART III

Access to and utilisation of internet services

8. How do you access the internet? (Choose all that apply.)

- Desktop computer
- Laptop
- Handheld device (iPhone, Smartphone, iPad, etc)
- Other Please specify:

.....

9. Please estimate the number of hours that you have access to the internet per day

- 1hr
- 2 hrs
- 3 hrs
- 4 hrs
- 5 hrs
- more than 5 hrs

10. For what purpose do you use the internet?

- Teaching
- Learning
- Research
- Communication
- Recreation
- Read news
- Read personal and corporate Web pages
- Other Please specify:

11. Roughly what percentage of your academic information needs is satisfied through the internet?

- Zero %
- Less than 10%
- 11–20%
- 21–30%
- 31–40%
- 41–50%
- More than 50%

12. Has access to the internet improved your academic work? Yes No

13. If “yes”, how? Please explain:

.....
.....

PART IV

Licensed databases and online journals services

14. Do you access electronic resources at the UON Library? Yes No

Use of social networking sites (SNS)

15. With which SNS do you have accounts? (You may select more than one.)

Facebook

Twitter

Instagram

LinkedIn

Youtube

Whatsapp

Telegram

TikTok

Snapchat

Other Please specify:

16. Please rank the following SNS according to your preference: 1 is "Most favourite" and 5 is "Least favorite".

Facebook

Twitter

Instagram

LinkedIn

- Youtube
- Whatsapp
- Telegram
- TikTok
- Snapchat
- Other please specify:

17. How frequently do you use SNS?

..... Times per day

18. Or what purpose do you use SNS? Writing comments on your own profile

Writing comments on your friend's profile

Sharing photos

Sending messages to friends

Searching for new friends

Looking at profiles of other people

Creating events/parties and inviting friends

Creating and joining groups

Please rate how strongly you agree or disagree with the following statements about your use of SNS.

19. Sometimes I visit SNS when I am in class.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

20. My grades are suffering because of my use of SNS.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

21. My use of SNS distracts me from studying.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

22. I think am addicted to SNS.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

23. The time I spend on SNS means I have less study time.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

24. I have missed class because of being on SNS.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

25..I am able to control my use of SNS so that it does not interfere with my studies.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

26. I use SNS to communicate with classmates about course-related issues.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly disagree []

PART V

CIUS

Compulsive Internet Use Scale (CIUS) Instruction: Please answer the following questions about your use of the internet for private purposes. **Never (0) Seldom (1) Sometimes (2) Often (3)**

Very often (4)

1. How often do you find it difficult to stop using the internet when you are online?
2. How often do you continue to use the internet despite your intention to stop?
3. How often do others (e.g. partner, children, parents, friends) say you should use the internet less?
4. How often do you prefer to use the internet instead of spending time with others (e.g. partner, children, parents, friends)?
5. How often are you short of sleep because of the internet? 6. How often do you think about the internet, even when not online?
7. How often do you look forward to your next internet session?
8. How often do you think you should use the internet less often?
9. How often have you unsuccessfully tried to spend less time on the internet?
10. How often do you rush through your (home) work in order to go on the internet?
11. How often do you neglect your daily obligations (work, school or family life) because you prefer to go on the internet?
12. How often do you go on the internet when you are feeling down?
13. How often do you use the internet to escape from your sorrows or get relief from negative feelings?
14. How often do you feel restless, frustrated or irritated when you cannot use the internet?

PART VI

DASS-21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree or a good part of time
- 3 Applied to me very much or most of the time

Items Depression Anxiety and Stress Scale-21 with their respective constructs

- | Item | Question |
|------|---|
| 1 | I found it difficult to calm myself |
| 2 | My mouth felt dry |
| 3 | I didn't experience any positive feelings |
| 4 | I had difficulty breathing at times (such as wheezing and breathlessness without having made any physical effort) |
| 5 | It was hard for me to have the initiatives to do things |
| 6 | I intended to exaggerate when I reacted to situations |
| | Item Question |
| 7 | I felt shaky (for example, in my hands) |

- 8 I felt I was always nervous
- 9 I got worried about situations in which I could have panicked and looked ridiculous
- 10 I felt I had no desire for anything
- 11 I felt restless
- 12 I found it difficult to relax
- 13 I felt depressed and had no motivation
- 14 I was intolerant of the things that kept me from continuing to do what I had been doing
- 15 I felt like I was going to panic
- 16 I didn't feel enthusiastic about anything
- Item Question
- 17 I felt like I was worthless as a person
- 18 I felt like I was being a little too emotional/sensitive
- 19 I knew my heartbeat had changed even though I hadn't done anything physically rigorous (*e.g.* increased heart rate, irregular heartbeat)
- 20 I felt afraid for no reason
- 21 I felt there was no meaning to life

Appendix 5: Dummy Tables

Table 6:*Socio-Demographic Characteristics Dummy table*

	Category	Frequency (N)	Percentage (%)
x	x1	x1.1	x2.1
	x2	x1.2	x2.1
	x3	x1.3	x2.3
	x4	x1.4	x2.4
y	y1	y1.1	y2.1
	y2	y1.2	y2.2
	y3	y1.3	y2.3
	y4	y1.4	y2.4
	y5	y1.5	y2.5
	y6	y1.6	y2.6
	y7	y1.7	y2.7
z	z1	z1.1	z2.1
	z2	z1.2	z2.2
	z3	z1.3	z2.3
r	r1	r1.1	r2.1
	r2	r1.2	r2.2
	r3	r1.3	r2.3
	r4	r1.4	r2.4
	r5	r1.5	r2.5

Table 7: Relationship Between PIU and Depression, Anxiety, Stress Dummy Table

Distress Condition	Level of Distress	PIU		N	p	AOR	95% CI
		Mild to Moderate	Severe				
x	x1	x1.1	x2.1	x3.1	x4.1	x5.1	x6.1
	x2	x1.2	x2.2	x3.2			
y	y1	y1.1	y2.1	y3.1	y4.1	y5.1	x6.1
	y2	y1.1	y2.2	y3.2			
z	z1	z1.1	z2.1	z3.1	z4.1	z5.1	x6.1
	z2	z1.2	z2.2	z3.2			

Table 8: Relationship between PIU and Socio-demographic Factors Dummy Table

Socio-Demographic Characteristic	Pearson Chi- Square P-Value
x	x1
y	x2
z	x3