

KENYATTA UNIVERSITY

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF PSYCHOLOGY

**RELATIONSHIP BETWEEN DEPRESSION AND PATHOLOGICAL INTERNET USE
AMONG UNIVERSITY STUDENTS IN KENYA**

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DECLARATION

This project is my original work and has not been presented for a degree in any other university or for any other award.

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DEDICATION

I dedicate this work to my mother Hellen Kemunto for her love, support and for always believing in me. I also dedicate this to my brother Jesse Maroma and his family for their support.

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I acknowledge the contribution of my supervisors Dr. Muchiri Karega and Dr. Oteyo John Samson whose guidance and insights were invaluable in the completion of this work. I am very grateful for your support and may God bless you. I also thank the management and students of the selected universities who agreed to participate in the study.

ABSTRACT

There has been a rapid growth in internet use in Kenya. University students are the highest users of internet in the country. This puts them at risk of becoming pathological internet users. Pathological internet use has also been found to have negative consequences on the individuals. These include problematic social relationships, poor academic performance and psychological disturbance. Studies in other countries have associated increased levels of pathological internet use among individuals who are depressed. However, in Kenya, pathological internet use and its relationship with depression has not been established among university students. The current study sought to establish the relationship between depression and pathological internet use among university students in Kenya. The study was based on Davis's Cognitive Behavioral Model of Pathological Internet Use. The study used correlational design to establish the relationship between the variables. The target population was all university students in Kenya. Random sampling was used to sample students from one public university and one private university in Kenya. A total of 400 respondents participated in the study. Young's Internet Addiction Test and Beck Depression Inventory were adapted in the questionnaire to measure pathological internet use and depression respectively. Percentages and measures of central tendency were used to describe the data. The findings revealed a prevalence of 16.8% of pathological internet use and a prevalence of 23.6% of depression. Independent samples T-test was used to test for differences in pathological internet use between male and female students. The findings revealed that female students were likely to be pathological internet users compared to male students. Pearson's product moment correlation was used to establish the relationship between depression and pathological internet use and it was found that a weak positive relationship existed between depression and pathological internet use. The study also identified various measures that could be used to mitigate the problem of pathological internet use. Based on the findings, it was concluded that there was need to identify and help the affected students exercise moderation and self control when using the internet in order for them to achieve their lifetime goals. The findings of the study also provide empirical evidence on the gender differences in depression and pathological internet use which may be useful in improving counseling interventions for university students.

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ABBREVIATIONS AND ACRONYMS

ANOVA:	Analysis of Variance
BDI:	Beck Depression Inventory
CCK:	Communication commission of Kenya
PIU:	Pathological Internet Use
IAT:	Internet Addiction Test
SPSS:	Statistical Package for Social Sciences
USA:	United States of America

DEFINITION OF TERMS

- Internet:** A worldwide network connecting millions of computers globally allowing people to access information contact each other and share information resources
- Internet access:** The availability and connection to internet devices like mobile phone, university computer laboratory, laptop, or cyber cafe at any time of the day.
- Internet penetration:** The percentage of a country's total population that has access to the internet
- Internet user:** An individual, who has access to the Internet via a university computer laboratory, a mobile phone, a laptop or a cyber café.
- Pathological Internet Use:** A score of 50 and above in young's internet addiction test
- Student:** An individual who is actively enrolled as a full time student in a university
- Depression:** A score of 14 and above in the Beck Depression Inventory
- Online:** Refers to the state when an individual is using the internet
- Social media:** Refers to interaction forums through which internet users share information, and personal messages. It includes Facebook, Twitter, Whatsapp and Instagram

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The internet has changed the way people communicate and changed the lives of people in the 21st century. It provides many benefits to the user which includes communication, searching for information, downloading content, transacting business and recreation. However, despite the numerous benefits of internet use, there are growing concerns about the risks involved and the negative effects on the users. According to Young (1998) some internet users may develop symptoms that are similar to addictive disorders. This means that some people who use the internet may develop Pathological internet use (PIU).

Pathological Internet Use is the compulsive desire to continually use the internet which leads to negative consequences to the social, academic and family life of individuals. It is characterized spending long amounts of time online, excessive mental involvement in internet, attempts to reduce internet use, anxiety when not using the internet, negative impact on academic and work performance and lying about time spent on the internet (Young,2004). There are different forms of pathological internet use. These include pornography watching, internet gaming and online chatting. Individuals addicted to the internet are affected physically, socially and psychologically. Their academic and career performance is also affected (Akhter, 2013; Young, 2004).

There is a growing concern about the problem of pathological internet use across the globe. Countries such as China and South Korea have recognized this public mental health issue and have invested substantially in education, research and treatment of pathological internet use (Block, 2008; BBC news, 2005). There is still much debate as to whether Pathological internet use should be officially classified as a psychological disorder. However, in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), Internet Gaming Disorder, a form of Pathological Internet Use, is listed as a disorder that requires further research. (American Psychiatric Association, 2013). This underscores the seriousness of the problem of Pathological internet use. In Africa Longe, Balogun, Chiemekwe, Longe, Onifade, Otti (2007) found that 27% of Nigerian teenagers who had access to the internet were addicted to pornography. While in South Africa, Thatcher & Goolam (2005) found prevalence rates of pathological internet use to be 5% of the country's population.

In Kenya, the availability of internet among university students has enabled them to socialize, access academic resources and enhanced communication (Kariuki, 2010). However, the down side of it is the likelihood of some university students developing Pathological internet use. According to Chak and Leung (2004) university students are at a higher risk of getting addicted to the internet because they have free and unlimited access to the internet. Most university students in Kenya have access to the internet either through their mobile phones, laptops or university computer laboratories (Kariuki, 2010; Ndungu (2011). This means that they have access to the internet 24 hours a day. The availability and free access of internet in universities and the high rates of internet subscriptions through mobile phones makes the university students the highest users of internet in the country (CCK, 2014; Kariuki, 2010). Waithaka (2013) also

found that all the university students were internet savvy and used the internet mostly for socialization and entertainment and not for academic work. This indicates that university students in Kenya are increasingly depending on the internet for their daily activities and are at risk of becoming pathological internet users.

Gender differences have also been reported among internet users. Some studies indicate that male youth tend to use the internet more than the females (Thatcher et al., 2005; Jalalijenad et al., 2012) while others indicate that more females use the internet more than the males (iHub Research, 2012). Studies by Kariuki (2010) and Ndungu (2011) indicate that more male university students in Kenya use the internet compared to female students. This could have an impact on the levels of pathological internet use among male and female university students and needed to be established in this study.

Whether Pathological internet use is a primary psychological disorder or a secondary manifestation of another psychological disorder still remains an issue of debate among mental health professionals. However, In the United States of America, Europe and Asia the prevalence of pathological internet use has been found to be high among youth with manifestations of depression. (Akhter, 2013; Jalalinejad et al., 2012; Yen et al., 2007; Young, 2004). According to Yen, Ko, Yen, Wu, and Yang (2007) there is a similar incidence of depression among individuals pathological internet users and of pathological internet use among depressive individuals.

Depression manifests as, insomnia, deep sadness, loss of appetite, hopelessness, irritability, self-dislike, unpleasant mood, and suicidal tendencies (America Psychiatric Association, 2013). The low self-esteem, isolation, fear of rejection and the need for affirmation which are associated with depressed individuals, may result in pathological internet use. According to Yang, Choe, Baity, Lee, & Cho, (2005) the interactive features of the internet may lead to pathological internet use in individuals who are depressed. Other scholars opine that the depression occurs as a result of social isolation associated with internet addiction (Tsai & Lin, 2003). Orsal, Orsal, Unsal & Ozalp (2013) studied university students in Turkey and found a positive correlation between level of internet addiction and level of depression among the students. Şenormanc, Konkan, Güçlü, and Şenormanc (2014) also studied patients admitted to an internet addiction treatment facility and found that they manifested with symptoms of depression, loneliness, anger and interpersonal relationship problems. This shows that there is a likelihood of depressed individuals becoming pathological users of the internet.

Apart from the high use of internet among university students in Kenya, they are also at risk of suffering from depression. According to Othieno, Okoth, Peltze, Pengpid, Malla (2013) 35.7% of University of Nairobi students are moderately depressed while 5.6% were severely depressed. Atwoli, Munjala, Ndung'u, Kinoti, and Ogot (2011) indicated that Kenyan university students have psychosocial symptoms that could be related to depression and other addictive behaviors. Depression has been found to co-exist with other psychological conditions. Khasakhala, Ndeti, Mutiso, Mbwayo, Mathai (2012) opine that individuals with depression are likely to suffer for other co-existing disorders like substance abuse, anxiety disorders and conduct disorders. This implies that depressed university students are likely to have other psychological problems like

pathological internet use. This depression levels among university students need to be established using a wider sample of university students in Kenya. University of Nairobi and Strathmore University were sampled to represent the population of university students in Kenya because they are ranked highest in terms of internet connection among universities in Kenya (CPS, 2012)

Considering that Kenyan university students have higher internet access, there is a likelihood of them becoming addicted to the internet. It is appropriate to understand the existence of this problem amongst the Kenyan university students' population. Also, the fact that university students are susceptible to depression and the co-occurrence of pathological internet use with depression warranted a study to establish the same in the Kenyan context.

1.2 Statement of the Problem

There is an increase in internet access and usage among university students. Whereas the benefits of internet use cannot be underestimated, there is need to understand the risks involved in excessive internet use among university students in Kenya. Easy access to the internet and the uncontrolled nature of internet use through mobile phones and internet hotspots makes the university students vulnerable to pathological internet use. This study sought to establish this phenomenon in the Kenyan context since Pathological internet use affects the individual's academic performance, social relationships and psychological wellbeing. University students in Kenya are also at risk of suffering from depression which also affects them adversely. A number of studies done in western countries associate depression with pathological internet use especially among the youth. However, little has been done to establish this fact in the Kenyan context. The co-occurrence of depression and pathological internet use among the university students may complicate the diagnosis and prognosis of these two psychological problems hence

there is need to establish if it exists among university students in Kenya. This study therefore sought to fill this gap.

1.3 Purpose of the study

The purpose of the study was to establish the relationship between depression and pathological internet use among university students in Kenya

1.4 Objectives of the Study

The following objectives guided the study

1. To establish the prevalence of pathological internet use among university students in Kenya
2. To establish the prevalence of depression among university students in Kenya
3. To establish the relationship between depression and pathological internet use among university students in Kenya
4. To find out the intervention measures that can be used to mitigate pathological internet use among university students in Kenya.

1.5 Research questions

The study was guided by the following research questions

1. What is the prevalence of pathological internet use among university students in Kenya
2. What is the prevalence of depression among university students in Kenya
3. What is the relationship between depression and pathological internet use among university students in Kenya
4. What intervention measures can be used to mitigate pathological internet use?

1.6 Justification and Significance

The importance of studying the relationship between depression and pathological internet use among university students was informed by the need to understand the impact of the increase in accessibility of internet among university students in Kenya. While accessibility to internet among university students is perceived to help them in their educational and social goals, a broader understanding of the psychological impact of the internet use in relation to development of pathological internet use may have practical and theoretical implications on social, educational, university student counseling services and counseling psychology in general.

The findings of the study may benefit university administration and counselors by highlighting the relationship between pathological internet use and depression. As opposed to focusing psychological interventions solely on the known disorders, university counselors may find this study to be useful in designing interventions that are more holistic and inclusive of pathological internet use as a possible co-occurring problem. The intervention strategies may help university counselors detect the presence of pathological internet use among students who need counseling for various emotional problems like depression, poor academic performance and social problems. The university counselors and administrators can use the information from this study to educate the university students and the general public on the dangers of excessive internet use.

The findings of this study may also be of particular interest to the university administrators. This is because presence of pathological internet use may have negative consequences on the healthy functioning of university students. This may undermine the attainment of life goals like completing university and transitioning to their careers and becoming productive members of the society.

The study findings may also contribute in adding new and scholarly literature to the already existing knowledge on pathological internet use and its relationship with depression and may provide a foundation for further research in the area of pathological internet use, co-morbidity and the respective interventions.

1.7 Scope and Limitations

The study was done among university students hence the procedure of collecting the data may not allow for the findings to be generalized to the general non university population. The thematic scope of the study only focused on self reports of pathological internet use and depression symptoms among the study population. The measurement of the two variables of pathological internet use and depression is based on subjective self reports of the university students. The researcher explained to the participants the need to be honest and accurate in their responses to avoid social desirability of the responses. The study was correlational hence may not completely rule out the impact of confounding factors on the relationship between the two variables of study. The researcher sought to reduce the effect of confounding factors by establishing some demographic variables of the study population.

1.8 Assumptions of the study

The study makes the assumption that pathological internet use has negative consequences on university students in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains a review of literature on the relationship between depression and pathological internet use among university students in Kenya. The chapter begins with a theoretical framework that explains pathological internet use as well as depression. It also covers a review of past studies on internet use and addiction and a review of related studies on depression among the youth as well as its relationship to pathological internet use. The chapter ends with a summary of the reviewed literature and a conceptual framework that explains the relationship between depression and pathological internet use among university students.

2.2 Theoretical Framework

In this section the Cognitive Behavioral Model of Pathological Internet Use by Davis (2000) is discussed to provide a theoretical background for establishing the relationship between depression and pathological internet use among university students in Kenya.

2.2.1 Davis' Cognitive Behavioral Model of Pathological Internet Use

This study was based on a theoretical framework of pathological internet use proposed by Davis (2000). The model proposes that development of pathological internet use is as a result of faulty cognitions paired with behaviors that serve to preserve the dysfunctional behavior. According to the Davis, the progression of pathological internet use is a result of distal and proximal causes. Distal causes are near the beginning of the addiction while proximal causes are found toward the end of the chain.

One of the key factors as to whether individuals continue to use the internet is the reinforcement they receive from the internet experience (Davis, 2000). If a Kenyan university student has a positive experience with use of social media, he or she is reinforced to continue its use. The positive experience with use of internet will serve to condition the student to repeat the use of the internet in order to receive the same positive reinforcement he or experienced previously

According to the model, psychopathologies like social anxiety and depression are a distal cause for pathological internet use. This means that Kenyan university students with existing psychological conditions like depression are also likely to develop an addiction to internet. However, according to the model, it does not mean that psychopathology causes symptoms of pathological internet use by itself but that is a basic component in the etiology of the disorder. The model also proposes that exposure to internet technology is a distal cause of the development of the addiction. As such, when Kenyan university students are exposed to pornographic websites, social media sites they are likely to develop an addiction to the internet. The above factors are viewed not as causes of pathological internet use but as possible contributors to pathological internet use.

Another key tenet of the theory is the proximal causes of pathological internet use. These are due to the occurrence of maladaptive cognitions which cause the symptoms of pathological internet use (Davis, 2000). The maladaptive thoughts are thoughts about self and the world. According to the model individuals with a low self efficacy, self doubt and negative assessments are constantly thinking about online activities. These negative cognitions are associated with depression.

Therefore Kenyan university students with negative cognitions associated with depression are likely to develop an addiction to the internet. This is because they have a negative self concept and utilize the internet to receive positive feedback in a non- threatening environment (Davis,2000). Those with maladaptive thoughts about the world generalize specific events on the internet to more trends in the real world. For example they think “nobody loves me offline” , ”the internet is the only place where I am respected” “internet is my only friend” or “people treat me badly offline”. This all or nothing kind of thinking is a maladaptive cognition that may exacerbate pathological internet use among the university students in Kenya. These distorted cognitions are automatically activated when a stimulus associated with being online is encountered (Davis, 2000).

The above model is appropriate for the study as it explains how university students can develop pathological internet use. It means that those university students in Kenya who have access to internet and have depression are likely to develop pathological internet use. Similarly those that have negative thoughts associated with depression are likely to develop pathological internet use. This means that based on the model, university students with symptoms of pathological internet use are also likely to manifest symptoms of depression.

2.3 Review of Related Studies.

In this section a review of studies on internet use, pathological internet use and relationship between depression and pathological internet use is discussed.

2.3.1 Pathological Internet Use (PIU) among University Students

In Kenya, the use of internet has increased rapidly over the last decade. The official statistics from Communication Commission of Kenya (CCK) (2013) indicates that the number of internet users in Kenya has risen from 41 percent in 2012 to 52 percent of the country's total population by December 2013. This means that over half (20 million) of the Kenyan population is connected to the internet. This rapid growth is attributed to increased use of mobile phones and mobile data services mainly by young people on social media sites like Facebook and Twitter (CCK, 2013)

The use of internet can yield many benefits to the user. These include communication, searching for information, downloading content, transacting business and recreation. For university students the use of internet can also help them in their academic goals (Ndungu, 2011). However, despite the numerous benefits of internet, there are growing concerns about the negative consequences of excessive use of the internet. Several researchers have established that some internet users may develop pathological symptoms similar to addictive disorders. Young (1998) pioneered research on internet use in the United States of America and found that a number of people who use the internet become addicted to it.

Young (1998) did an exploratory study to establish the existence of pathological internet use among internet users in the USA. She developed a questionnaire to test for pathological internet use based on the diagnostic criteria for Pathological Gambling Disorder according to the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV) (American Psychiatric Association, 1994). The data was collected using face to face interviews and through email. In the study, Young sampled 596 internet users and found that 396 of them were dependent on internet use while 200 were not. The sample comprised of students and working

adults. Among the students, Young found that those who were addicted to the internet were severely affected in their academics as they spent much time browsing irrelevant non academic websites, in chat rooms and playing online games. Young reported that they had difficulty finishing homework, studying for their exams and getting enough sleep to be alert for their classes the next morning. Kenyan university students who use the internet excessively could also experience difficulty in their studies. There are different forms of pathological internet use. These include pornography watching, internet gaming and online chatting (Young1998). Individuals with pathological internet use are affected physically, socially and psychologically. Physically, individuals with pathological internet use experience dry eyes, sleep disturbance, headache and back strain while socially, family relationships are affected; their academic and career performance is also affected. Psychologically, they suffer from loneliness, low self esteem and depression (Akin, & Iskender, 2011).

Studies indicate that the youth are likely to develop pathological internet use easily compared to the rest of the population. Chou, Condron & Belland, (2005) reviewed over 15 studies conducted on pathological internet use across the globe and found that the youth were more likely to develop addiction to the internet compared to the other populations. Soule,Shell & Kleen (2003) also studied pathological internet use in the United States of America and found that those who were 25 years or less spent more time online compared to those who were older. Similarly study by Jones & Fox (2009) in the United States of America found that the generation of people aged 18-32 years are more dependent on the internet for communication and entertainment than the generation of people above 32 years. According to the study 30% of the youth use the internet daily. The youth have embraced the use of the internet and could be more vulnerable to pathological internet use. Most university students in Kenya are also within the age range of 25

years and less hence there is need to establish if they also have similar internet use characteristics.

According to Montgomery, Gottlieb–Robles & Larson (2004), most internet products are designed to appeal to the emotions, values and habits of the youth culture. This makes the youth heavy users of the internet. Considering the psychological development of youth, the heavy use of internet makes them susceptible to defective behaviours like pathological internet use. According to Strasburger, Jordan & Donnerstein (2010) young people are less self regulative when it comes to use of internet hence likely to develop pathological internet use. Kim, LaRose and Peng (2009) also opine that young people use the internet as a way to cope with the developmental challenges that they face. Considering that university students in Kenya have their developmental and academic pressures, there is need to establish if they are also using the internet as a means of coping with their stressors.

Pathological internet use especially among the youth has become a major public health and social concern. In fact, Asian countries like China and South Korea have recognized this public mental health issue and have invested substantially in education, research and treatment of pathological internet use (Block, 2008). There is still much debate as to whether Pathological internet use should be officially classified as a psychological disorder. However, in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), Internet Gaming Disorder, a form of Pathological internet use, has been listed in the appendix as a disorder that requires further research. (American Psychiatric Association,2013). This underscores the seriousness of the problem of Pathological internet use.

University students are susceptible develop pathological internet use because of their easy access to the internet. According to Young (2004) college students are likely to become pathological internet users because they free unlimited access to the internet and have a lot of unstructured time. The college students' freedom from parental control and lack of censuring of what they say or do online also contributes to their likelihood of them becoming addicted to the internet. (Young, & Rogers, 1998) also opine that the challenges in the lives of university students may leave them vulnerable to Pathological internet use compared to other internet users.

Studies done to establish the existence of pathological internet use among university students show that a significant number of them are addicted to the internet. VidyaMavila, Kodavanji, Kumar, & Pai, (2013) studied internet behavior patterns among undergraduate students in one of the universities in India and found that 18.88% of the students were addicted to the internet while 57.77% were mildly addicted to the internet and 23.35% were not addicted to the internet. The study had randomly sampled 90 students whereby 97.8 % of them indicated that they mostly used the internet for social networking. This suggests that most university students use the internet for social media. Similarly Akhter, (2013) randomly sampled 359 Pakistani university students and found that 13% of them were addicted to the internet and that those who were addicted were negatively affected in their studies. The study also revealed that more male students were addicted to the internet compared to the female students.

In Nigeria, Longe, et al.(2007) investigated internet pornography among teenagers and found that 26.7 % of the teenagers were likely to be addicted to pornography. The study had sampled 270 teenagers in primary and secondary schools aged between 7 and 18 years across four location in southwestern Nigeria. This could also reflect among Kenyan university students as

they have unlimited and uncontrolled access to the internet. In another study Mbatha, (2012) investigated the prevalence of pathological internet use in government departments in South Africa and found a number of government workers could be addicted to the internet. Mbatha sampled 37 employees across various government departments and 41% of them occasionally received complaints about the time they spent on the internet while 24 % always received complaints about the same. The findings also indicated that 28% of the government employees stayed online for longer than intended while 30 % of them admitted to having their job performance or productivity suffer due to their internet usage. Thatcher & Goolam (2005) also investigated the prevalence of pathological internet use among the South African population. They found rates of pathological internet use of between 1.67% and 5.29% among the South Africans most of whom were young males who spent most of the time on social media. This shows that the problem of pathological internet use is also present among the African populations.

In Kenya studies on internet use among university students show that Kenyan university students are increasingly using the internet. Waithaka (2013) studied internet use among university students in Kenya and found that most of them spent most of their time on the internet on social networks like Facebook rather than for academic purposes. She noted that 88% of the students had accounts on Facebook. In the study, 74% of the respondents admitted that pathological internet use could be a problem especially since they spent a lot of time on social networks like Facebook (Waithaka, 2013). This puts a number of university students at risk of developing an addiction to the internet. In a similar study Kariuki, (2010) investigated internet uses and motives among university students. The study sampled 100 Mt. Kenya and Gtretsa University students

and found that they used the internet daily to communicate with friends, to search for information online and for entertainment. The studies on internet use by Kariuki (2010) and Waithaka (2013) reveal that university students are heavy users of the internet than the rest of the Kenyan population. However, the studies do not specifically test the students for pathological internet use but only makes the conclusion based on the general internet use patterns of the students. This study made an attempt to fill this gap by establishing the prevalence of pathological internet use among the students using standardized test.

Njoroge (2013) also studied the impact of social media on behavior change among the youth and found that most of the students, (80.9%) admitted that computers and mobile phones had become very addictive and that it was very hard to live without them. The computers and mobile phones are mostly used to access the internet. This admission shows that university students could be experiencing the negative effects of excessive internet use since the computers and mobile phones are mostly used to access the internet. The study sampled university students across three selected public universities in Kenya. According to the study, 60.3% of the respondents spend 2-5 hours on the internet in a day while 20.5% spent 5-10 hours and 1.4% spent more than 10 hours in a day. Only 17.8% spent 1 hour in a day. The respondents mainly spent time on social networks like Facebook and Twitter. In the study, 80.8% of the respondents indicated that they enjoy surfing the internet. The findings of the study also indicated that 67.1% of the university students end up wasting a lot of time chatting on social networks and online games. The study however did not define what addictive internet use is and did not reveal the pathological patterns of internet use among the students. It also focused on social media use only and did not study the general patterns of internet use which include other forms of internet addiction. This study

sought to fill this gap by categorizing the university students into different levels of pathological internet users using Young's Internet Addiction Test.

From the reviewed literature, it emerges that the profile of an internet addict is a young person who has unrestricted access to the internet and uses it mainly for non-academic or non-work related activities. The internet addict, it seems, spends much time on the internet for entertainment and on social media like Facebook and Twitter. Students who are addicted to the internet are likely to be affected in their academic studies and also psychologically. The literature also reveals that Kenyan university students typically have unrestricted access to the internet through their mobile phones, personal computers or laptops and also university computers. They are also heavy users of the internet compared to the general population. The Kenyan university students also use the internet mostly for non academic purposes like chatting with friends on Facebook and are therefore vulnerable to develop addiction to the internet. This implies that some of the Kenyan university students could be at risk of becoming pathological internet users. This study is therefore timely as it sought to establish this phenomenon among Kenyan university students.

2.3.3 Gender Differences in Pathological Internet Use among University

Various studies show that men and women use the internet differently. These differences on internet use between men and women could also have an implication in how the two genders are affected with pathological internet use. Çam & İşbulan (2012) conducted a study in a Turkish institution and found that more male students were addicted to the internet than their female counterparts while Şahin (2011) also found that males have significantly higher Pathological

internet use tendencies compared to females. Similarly, Hamade (2009) conducted a study among university students and found that more than 50% of male students are addicted compared to less than 25% of females who addicted to the internet. The study also found that 18% of males had severe addiction to the internet compared to only 6% of females. Another study by Frangos, Frangos and Kiohos (2010) found that male students in public universities spend more time on the internet than female students. These differences in pathological internet use among male and female students was attributed to the fact the men were generally allowed to experiment with online activities that women. This freedom therefore gave them more time to explore the internet and consequently becoming more vulnerable to pathological internet use.

On the other hand, some studies reveal that women are more prone to pathological internet use than men while other find no differences in pathological internet use among male and female internet users. According to Young (1996) middle- aged women were more prone to pathological internet use than their male counterparts. Ha and Hwang (2014) also studied gender differences in internet addiction among Korean adolescents and found that girls with psychological difficulties like depression and unhappiness were likely to be addicted to the internet than boys with similar difficulties. The differences in findings on the gender differences in pathological internet use could be dependent on the demographics of the subjects and the methodologies used to conduct the studies.

In Kenya, Gender differences on internet use have also been noted among university students in Kenya. A study by Macharia and Nyakwende (2010) on gender differences in internet usage intentions among university students in Kenya revealed that male students are likely to use the

internet more compared to the female students. This was because, the male students experienced less computer anxiety compared to the female students. The female students also perceived ease of internet use was low compared to the male students (Macharia & Nyakwende, 2010). The study sampled 1092 students across the public and private universities in Kenya. On the other hand, iHub Research (2012) found that more females used the internet compared to the males. According to the study females spend an average of 1.9 hours on the internet compared to males who 1.8 hours in a day. There is need to clarify this contradiction using a more representative sample. Also the Kenyan studies do not reveal how the male and female students are affected in terms of pathological internet use and whether they are affected differently. This study sought to fill this gap.

The literature from other countries provides mixed findings on how men and women are affected with pathological internet use. Some studies indicate that women are prone to pathological internet use while others indicate that men are more prone to pathological internet use. The difference in findings on gender differences could be as a result of the cultural and demographic differences amongst the various populations studied. Men and women are socialized differently in various cultures hence are likely to be affected differently by their internet use.

The Kenyan literature on gender differences in internet use is also limited and may not be conclusive. It also does not reveal how the two genders are affected in terms of pathological internet use. Considering the uniqueness of the Kenyan cultural and demographic characteristics, it is necessary to establish these facts in the Kenyan context. This study is therefore timely as it provides a deeper understanding of how pathological internet use may affect male and female university students in Kenya.

2.3.4. Depression among University Students

Depression is a mental disorder that disrupts an individual's occupational, psychological and social functioning (American Psychiatric Association, 2013). Kessler et al., (2003) estimates the prevalence of depression of the general population in the world to be 16%. University students are a group that is thought to be at risk of developing depression. According to Vazquez & Blanco, (2008) depression is one of the most common mental disorders affecting university students. A study of Canadian university students conducted by Price, McLeod, Gleich, & Hand, (2006) found that 7% of male students and 14% of female students met the criteria for depression. In the United States of America (USA) Vazquez and Blanco (2008) sampled 554 university students and found that 8.7% met criteria for a major depressive disorder. Eisenberg et al (2007) also reported similar findings that 11.3% of graduate students had clinically significant depression.

Holzman, Searight, & Hughes, (1996) also conducted a study on prevalence of depression among university students in United States of America and found that nearly 25% of them were depressed. These studies show that depression is prevalent among university students. Depression can compromise learning and memory processes of the students hence adversely affecting their academic performance (Hysenbegasi, Hass, & Rowland, 2005). It can also lead to development of addictions (Beck et al., 2008) and suicidal ideation (Garlow et al., 2008). This shows that depression is a major problem among university students that needs to be addressed.

In Asia, Al-Busaidi et al (2011) conducted a study among 418 university students attending clinics in Oman and found a prevalence of 27% of depression. Similarly Bostanci et al (2005)

conducted a study among Turkish university students using the BDI and found a prevalence of depression of 26.2%. In Africa, Adewuya, Ola, Aloba, Mapayi, Oginni (2006) conducted a study among 1026 university students in Nigeria and found a prevalence of depression of 8.3% while a similar study by Asante & Andoh-Arthur, (2014) a prevalence of 39.1% of depression among Ghanaian University students.

In Kenya a number of university students have also been found to have symptoms of depression. Othieno et al. (2013) studied the prevalence of depression among university students and found that 35.7% of the students were moderately depressed while 5.6% were severely depressed. The study sampled 923 university of Nairobi students and the Centre for Epidemiological Studies Short Depression Scale (CES – D 10) was used to measure for depression. The study however did not sample students from other universities to establish if the trend applies to students across the country. This study sought to fill this gap by sampling students from other universities and using the Beck Depression Inventory to establish the levels of depression among the students. Similarly, Atwoli et al. (2011) conducted a study in four tertiary institutions in Eldoret town and sampled 500 students across the institutions. They found that Kenyan college students have psychosocial symptoms that could be related to depression and other addictive behaviors. This shows that many university students could be at risk of depression which may adversely affect their academic performance and psychological well being. However, the study does not specifically reveal the levels of depression among the students.

Other studies among youth in Kenya also reveal that a significant number could be depressed. For example, a study by Ndeti, Khasakhala, Nyabola, Ongecha- Owuor, Seedat, Mutiso,

Kokonya and Odhiambo (2008) put the prevalence rate of depression at 43.7% among adolescents in Kenya while Syokwaa, Aloka, Ndunge (2014) also found that 79% of Kenyan adolescents had anxiety levels which affected their academic progress in school. This shows that a significant number of youth in Kenya could be affected by depression. This youthful population includes Kenyan university students. Ndetei, Khasakhalsa, Mutiso, Mwayo (2009) also found that 41.3% of youth attending hospitals were depressed. Ndetei and colleagues sampled youth attending general hospitals for various ailments in Kenya and found that a number of them were depressed. Similarly Khasakhala et al. (2012) found that more than a quarter of adolescents in Kenyan suffer from depression. The study randomly selected youth from 17 Nairobi schools and found that 26.4 % of them manifested depressive symptoms. This manifestation of depression among adolescents is likely to be prevalent among university students. This is because according Khasakhala et al (2012) most of the depression cases in Kenya go undetected and untreated. The studies however, do not reveal much about university students as they have focused mainly on adolescents in high schools. Nevertheless, they reveal that there is an increasing trend of many young people suffering from depression.

The reviewed literature from other countries reveals that a significant number of university students are prone to depression which affects their academic performance, relationships and mental health. However, the Kenyan literature mainly gives findings among the general population of adolescents and does not reveal much on the Kenyan university students using a larger sample across universities in Kenya. This study is therefore timely as it seeks to fill this gap on depression among Kenyan university students and seeks to reveal the trends and levels of depression among the university students

2.3.5 Relationship between Pathological Internet Use and Depression

There is much debate among researchers and mental health professionals as to whether pathological internet use is a primary psychological condition or a secondary manifestation of another psychological disorder. However, many studies indicate that pathological internet use seems to co-occur with other psychological disorders. Jalalinejad et al. (2012) studied the relationship between pathological internet use and anxiety among university students in Iran and found that students who had high anxiety levels were also severely addicted to the internet compared to those who were low on anxiety. According to the findings, the students with anxiety find it easier to communicate through the internet due to the anonymous nature of the internet and also that internet provides an escape to them due to its entertainment and amusements (Jalalinejad et al, 2012). In another study Ayas and Horzum (2010) studied the relationship between, depression, loneliness, self esteem and pathological internet use among university students and found that depression and loneliness were significant predictors of pathological internet use while self esteem was not. The study had sampled 292 students in one of the universities in Turkey. Similarly, Akin and Iskender (2011) found that depression, anxiety and stress were significant predictors of pathological internet use among university students in Turkey. This shows a significant correlation between depression and pathological internet use.

Individuals in treatment for pathological internet use have also been found to manifest symptoms of depression. According to Şenormanc et al. (2014) individuals with depression may use internet excessively for several reasons. Fear of rejection, low self esteem, low, motivation, need for acceptance, and avoidance of problems of 'real' life associated with depressed individuals may trigger them to use the Internet excessively. Şenormanc, et al (2014) conducted a research

on clients who were in treatment for pathological internet use in Turkey to establish if they also manifested with depression, anger and loneliness. They found that individuals who were being treated for pathological internet use also had manifestations of anger, depression and loneliness. Orsal et al. (2013) also studied Turkish university students and found a positive correlation between level of pathological internet use and the level of depression.

Similarly Kim et al (2009) opine that lonely and depressed individual have a preference for online activities since they find it comfortable and easy to use. This in turn increases their social problems and isolation hence leading them to sink deeper into the pathological internet use. Their study comprised of 635 university students from two universities in United States of America who responded using an online questionnaire. A study by Young and Rogers (1998) in the United States also revealed that increased levels of depression were associated with pathological internet use. They did an online survey of 259 internet users and found that depressed internet users used it as a coping mechanism for the depressive symptoms of poor motivation, fear of rejection, low self esteem and the need for approval.

Depression among Kenyan youths has also been found to co-exist with other psychological conditions. Kasakhala et al (2012) found that Kenyan youths with depression are likely to suffer from other co-existing disorders like substance abuse, anxiety disorders and conduct disorders. Kenyan literature is limited in revealing the co-occurrence of depression and other psychological problems especially pathological internet use hence this study sets to fill this gap by studying depression and pathological internet use among university students in Kenya.

From the above studies it is clear that pathological internet use seems to co-occur with depression among most internet users. Though Kasakhala et al (2012) opines that depression could co- occur with other psychological disorders, there is hardly any literature suggesting the presence of pathological internet use and depression in the Kenyan context especially among university students. This study therefore sought to establish the existence of this relationship among university students in Kenya.

2.3.6 Intervention Measures that Mitigate Pathological Internet Use

Various intervention measures have been suggested to mitigate the problem of pathological internet use. Şenormanc et al. (2014) opine that there is need to regulate the hours of internet use for individuals suspected of pathological internet use. Other methods of treatment that are geared towards validation of feelings of individual are also helpful in treatment of individuals with pathological internet use (Şenormanc et al., 2014). There is therefore a need to look at pathological internet use from a multidimensional perspective. According to Orsal et al (2013) individuals who are suspected of having depression and internet addiction should be referred to experts so that accurate diagnosis and treatment interventions are made. There is also need to inform the university students about the need for controlled internet use (Orsal et al, 2013). Creating awareness and doing campaigns in universities would be a way of informing them of the need to control their internet use as it may lead to pathological levels.

Other researchers suggest that if the internet is used in a controlled way and appropriate way, then individuals can avoid becoming addicted to the internet (Selim, 2011). This means that if university students learn how to control their internet use and use it for activities that are non destructive like academic purposes, they may prevent themselves from becoming pathological

users. Young (2004) recommends that campaigns to inform education officials, state officials and parents are also necessary to inform them of the dangers of excessive internet use. In Kenya, Njoroge, (2013) suggests that there is need to be trained on better use of the internet to avoid irrelevant and unproductive engagements on the internet. She also suggests that the communication authorities in the country should intervene to filter information that reaches the youth in social media. All these intervention measures are prescribed by the researchers as to how the problem of pathological internet use should be handled. However, the studied populations have not been involved in finding a solution to their problem. This study therefore sought to fill this gap by gathering information from the university students on the intervention measures that can be used to mitigate the problem of pathological internet use. The study also provides solutions unique to the demographic and cultural orientation of the Kenyan university population.

2.4 Summary of Literature Review & Theoretical framework

The review of the literature shows that there is an increase in internet use in Kenya and especially among the youth (CCK, 2013; Hub research, 2010). The literature also reveals that most university students of Kenya have access to internet and use it mainly for interaction and entertainment (Kariuki, 2010; Waithaka, 2013) However, it does not show the presence of pathological internet use as a psychological phenomenon in Kenya. The Kenyan literature on internet use only shows that most university students use the internet but does not reveal the pathological patterns in internet use and the risks involved. The Kenyan literature on internet use only makes inferences that university students use the internet excessively based on the time spent online but does not use psychological procedures to establish the levels of pathological use of the internet. Most of the reviewed studies on pathological internet use have been done in

countries outside Kenya. This study sought to fill this gap of lack of empirical studies on pathological internet use in Kenya. The study classifies the university students in different categories of pathological internet users based on their psychological and emotional characteristics in relation to internet use. A standardized tool for testing for pathological internet use, Young's Internet Addiction Test (IAT) was used in this study.

The reviewed studies also reveal mixed findings on gender differences on internet use and addiction depending on the different demographics and cultural orientations of the populations studied. However, little is known about gender differences in pathological internet use in the Kenyan context especially among university students. This study shall also seek to establish this. The literature also reveals that there are incidences of depression among the Kenyan youthful population (Khasakhala et al, 2012; Ndeti et al, 2008, 2009, 2012; Othieno et al, 2013). The studies on depression and gender differences in among in Kenya however give data on the general population of adolescents and not much on university students considering their specific demographics. Other than Othieno et al, (2013) who did a study in only one university, hardly any work has been done in understanding depression among university students across Kenya yet as implied in the literature, most youth are at risk of depression. This suggests that there is need to study depression among university students in order to establish baseline data that could be used to design interventions for depression that are scientifically oriented and evidence based.

The association of pathological internet use with depression has been established in America and European countries according to the reviewed studies. However, that relationship has not been established in the Kenyan context especially among university students who have been found to

be at risk of depression and pathological internet use. This study therefore could provide empirical evidence on the association between pathological internet use and depression among university students which may be used to improve diagnosis and treatment for the two psychological problems. This current study is therefore designed to provide data on the relationship between pathological internet use and depression among university students as well as to test whether there are gender differences in pathological internet use among university students in Kenya. The reviewed literature also reveals various intervention measures that are suggested by the various researchers on the ways to mitigate the problem of pathological internet use, however there is need to get solutions from the affected populations. This study therefore also sought to find out from the university students the intervention measures that can be used to mitigate the problem of pathological internet use.

2.5 Conceptual Framework

As indicated in Fig 2.1 the conceptual framework shows depression as an independent variable and predictor of pathological internet use among university students. The gender of the students is also an independent variable and influences how the students develop pathological internet use. Internet use exposes the depressed students to pathological internet use. The behavioral symptoms of pathological internet use which include poor academic performance, daily routine, and relationships lead to depression and hence perpetuate the vicious cycle of depression and pathological internet use.

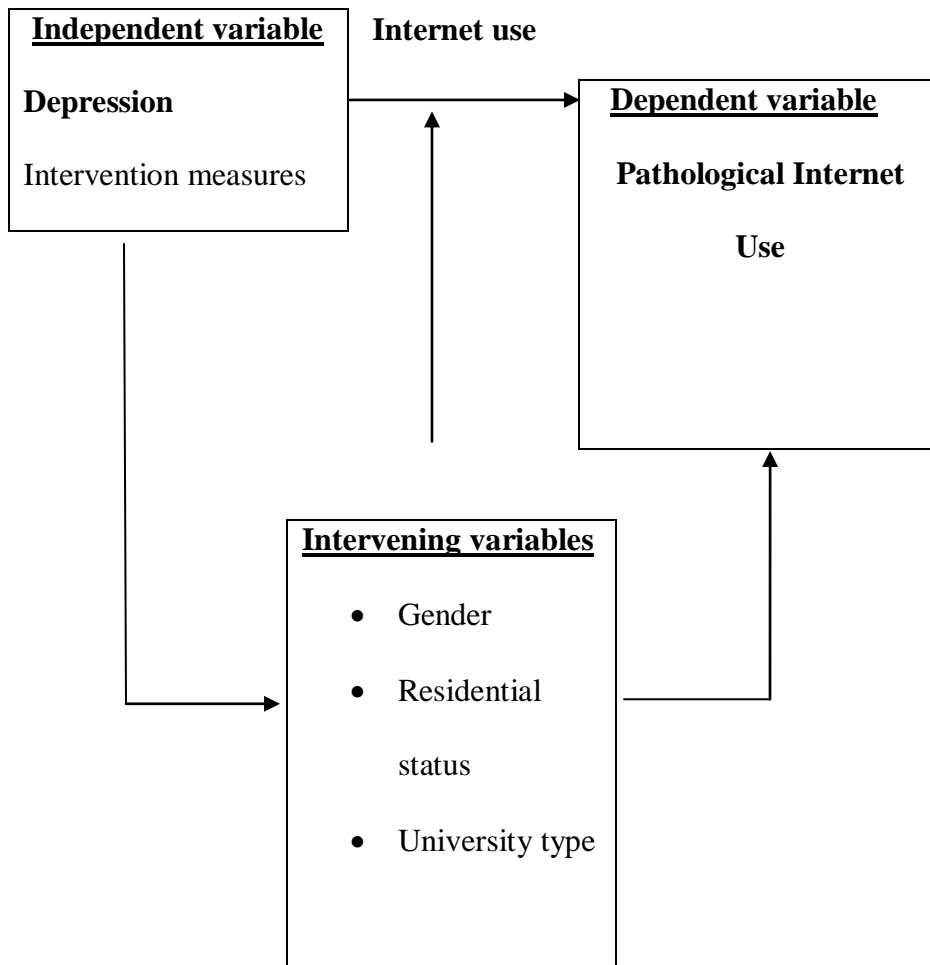


Figure 2.1 Relationship between Depression and Pathological Internet Use among University Students

Source: Author

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter details the methodological steps that shall be undertaken to establish the relationship between pathological internet use and depression among university students. It describes the research design, study variables, site of the study, target population, sampling techniques and sample size, research instruments, validity and reliability, pilot study, data collection procedures, data analysis and presentation and data management and ethical considerations .

3.2 Research Design

This study adopted a correlational design to establish the relationship between the variables. Mugenda & Mugenda (2012) describes correlational research as a study that assesses the relationship between variables whereby the researcher obtains information on one variable to estimate the variation in a related variable. This design is appropriate as the study intended to establish the existence of pathological internet use in the Kenyan population and also its relationship with depression. Data was collected on pathological internet use and depression among university students in Kenya in order to test the nature and extent of the relationship between the two variables.

3.3 Study Variables

The main variables in this study were depression and pathological internet use. Depression was treated as the independent variable while pathological internet use was treated as the dependent variable. Depression was measured in terms of subjective reports of university students with regard to negative thoughts about self, the environment and the future. Pathological internet use was measured in terms of subjective reports of university students with regard to their internet use and how it affects their daily life. The other independent variable in this study is gender. Extraneous variables that could confound the relationship between depression and pathological internet use were university type, residential status and gender. University type was controlled for by blocking the sample into private university and public university. Statistical measures were used to control for gender and residential status. The researcher analyzed the data collected against these demographics to check for their impact on the main variables.

3.4 Site of the study

The study was conducted in Nairobi County. It is the most cosmopolitan city and county in the country as the residents of Nairobi come from different ethnic and racial backgrounds. Nairobi is also the capital city of Kenya and has the highest internet penetration according to CCK (2013). Nairobi and its environs has almost half of the universities in Kenya (KNBS, 2014). It was therefore expected that the university students in Nairobi County vary considerably in terms of economic, social and cultural demographics making the sample more representative of the Kenyan university population.

3.5 Target population

The population that was targeted by this study is all students enrolled in both private and public universities in Kenya. University students have access to the internet and use it more often

compared to the rest of the Kenyan population (Kariuki, 2010). Kenya has 22 public universities and 17 private universities making a total of 39 chartered universities in the country according to KNBS (2014). There were 324, 560 university students in Kenya by 2014 (KNBS, 2014). The accessible population was a total of 67,005 students from one public and one private university.

3.6 Sampling Techniques and Sample size

This study shall use convenience sampling to select the sample for the study. In convenience sampling, the researcher samples a part of the population that is readily accessible (Hulley, 2007). The method is appropriate for the study as it will enable the researcher to sample students who shall be within the university premises at the time of the study and willing to participate in the study. Students from one public university and one private university in Nairobi were sampled to represent university students in Kenya. The university of Nairobi and Strathmore University formed the sample. The public university that was selected in this study is The University of Nairobi. The University of Nairobi was selected because it is ranked as the top public university in Kenya in terms of internet connection (CPS Research, 2012). It has Wi-Fi connection within campus whereby the students are able to access internet through their phones and computers for free at any time of the day. The university is also one of the largest universities in Kenya hence it has a potential for a large sample whose findings may be generalized to university and other educational institutions in Kenya. The university of Nairobi also has students from across the country hence was likely to provide a sample with varied and balanced socio-economic and cultural characteristics that is reflective of the country's population. Strathmore University was also sampled because it is ranked as the top private university in Kenya in terms of internet connection hence its students have access to free internet at any time of the day when they are within the university campus. (CPS Research, 2012). The

University of Nairobi has a student population of 64,069 while Strathmore University has 2,936 students making a total of 67,005 students.

Yamane (1973) formula for determining sample size was used to arrive at the sample as follows;

Yamane (1973) formula is

$$n = \frac{N}{1 + N * (e)^2}$$

N=Total population of students in the sampled universities, 67,005

e= margin of error, 0.05

n =sample size

The calculation of the sample was as follows

$$n = \frac{67,005}{1 + 67005 * (0.05)^2}$$

n= 400 students

From the two universities a proportionate sample of 380 and 20 participants was selected from the public university and the private university respectively.

A proportionate sample (240) male and (160) female students was selected based on KNBS (2014) figures of 60% male and 40% female students in Kenyan universities.

3.7 Research Instruments

This study used one research instruments to obtain data. The instrument had three sections with the Internet Use Questionnaire, Young's Internet Addiction Test (IAT) and Beck's Depression Inventory (BDI).

3.7.1 Internet use questionnaire

The questionnaire gathered demographic information about the participants and also their internet use patterns.

3.7.2 Internet Addiction Test (IAT)

The Internet Addiction Test was developed in 1998 by Kimberly Young. The test has 20 items that shall be adopted to evaluate the level of addiction of the respondents. The instrument requires that the respondent chooses a statement that describes them most. Each item is scored using a five point likert scale which is graded from 1=rare to 5= always. The test evaluates the extent to which internet use affects the daily routine, productivity, social life, sleeping patterns and feelings. The maximum a respondent can score is 100 while the minimum is 20. The higher the respondent scores in the IAT the higher the level of addiction. Scores of between 0-19 indicate below average users, scores of 20 to 49 indicate mild internet users while scores of between 50 to 79 indicate moderate pathological internet use. Scores of 80 to 100 indicate severe pathological internet use. The instrument has shown good psychometric properties when it has been used in previous researches.

3.7.3 Beck Depression Inventory (BDI)

The Beck Depression Inventory shall be used to measure depression among the participants. It was developed by Aaron T. Beck in 1961. The instrument has 21 items which are statements

about the respondent's feelings and perception. Each item has four possible responses. Each item is scored on a range of 0 to 3 indicating the severity of the symptom. The items measure cognitive, emotional, motivational and somatic symptoms of depression. Items 1 to 13 measure psychological symptoms of depression while items 14 to 21 measure physical symptoms. Scores of 0 to 10 indicate minimal depressive symptoms while scores of 11 to 16 indicate mild depression. Scores of 17 to 29 indicate moderate depression while scores of 30 to 40 indicate severe depression among the participants. Scores of 41 to 63 indicate extreme depression

3.8 Validity and Reliability

In adapting the Internet Addiction Test (IAT) and Beck Depression Inventory (BDI), the researcher worked with the supervisors to enhance validity and reliability of the instruments.

Efforts were made to enhance the validity and reliability of the instruments by generating sufficient numbers of items that covered behavior related to internet use. This was done without making the instrument too long to cause respondent fatigue when completing it.

To increase construct validity, some of the items on the IAT were altered to reflect the behavior of university students in Kenya. For example the item that reads "Do you check your email before something else that you need to do?" was altered to read "How often do you check your Social media account (s) before something else that you need to do?" Also the item that reads "Do you neglect household chores to spend more time online?" was altered to read "Do you neglect some of your responsibilities to spend more time online?"

Do you snap, yell, or act annoyed if someone bothers you while you are online? Also read as "Do you get annoyed when someone bothers you while online?"

The internal consistency reliability of Cronbach's alpha of the IAT has been established at 0.89 (Balta & Horzum, 2008). The internal consistency reliability of Chronbach's alpha of the BDI is

0.80 (Hisli 1998). A pilot study was conducted to pretest the reliability and validity of the instruments. Chronbach's alpha was calculated from the pilot study and was found to be 0.84. Chronbach's alpha was also calculated for the BDI and found to have an internal consistency of 0.83.

3.9 Pilot Study

To establish the appropriateness of the instruments, a pilot study was conducted among a sample of 20 university students from two universities in Nairobi. One public university and one private university were randomly chosen for the pilot study. These were Jomo Kenyatta University of Agriculture and Technology (JKUAT) and Mt.Kenya University (MKU) respectively. They were excluded from the final sample. The pilot study sampled 10 students (5 male and 5 female) from each of the universities. The pilot study pre-tested the research instrument to determine its reliability and validity. Chronbach's alpha for the two instruments was 0.84 and 0.83 for the IAT and BDI respectively. Reliability of 0.8 and above indicates good reliability of the instruments. The instruments were therefore reliable for use in the Kenyan population and were adopted for the study.

3.10 Data Collection Procedures

Data was collected in the two universities over a period of two weeks. The questionnaires were administered to the students that were within the university premises at the time of the study. The answering of the questionnaires took 10- 15 minutes to complete.

3.11 Data Analysis and Presentation

Descriptive and inferential statistics were used to analyze the data that was collected. Descriptive statistics such as percentages and measures of central tendency were used to describe the data.

Pearson Product Moment Correlation, r , was used to establish the relationship between depression and pathological internet use. The hypotheses testing was done at $\alpha = .05$. The analysis was aided by the use of Statistical Package for Social Sciences (SPSS) 20.

Independent samples t-test was used to establish the differences in occurrence of pathological internet use between male and female students.

3.12 Data Management and Ethical Considerations

Before conducting the study, permission to conduct the research was sought from Kenyatta University graduate school. Ethical clearance was sought from Kenyatta University Ethics Review Committee. Authority to conduct the research was also obtained from the National Council for Science, Technology and Innovation (NACOSTI) and the Universities involved. Participants were informed of the nature of the research and signed an informed consent before completing the questionnaires. The collected data was treated with confidentiality during and after the study and was only used for the intended purpose of the research.

Community Considerations were taken into account by seeking permission from the university authorities to conduct the study in the universities. During the course of the research, lecturers and university staff were consulted to access and seek consent of the students to participate in the study. The findings and recommendations of the study were availed to the university authorities where the participants were drawn.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

This chapter highlights the findings of the study on relationship between depression and pathological internet use among university students in Kenya. It is divided into six sections. The first section comprises findings on the demographic characteristics of the sample. The second section contains descriptions of the findings on the dependent variable (pathological internet use) while the third section contains descriptions of the findings on the independent variable (depression). The fourth and fifth section contains the findings on the relationship between depression and pathological internet use and the intervention measures to mitigate pathological internet use respectively. A summary of the results is then discussed in the sixth section.

4.2 Demographic Characteristics of the Respondents

The proposed study sample was 400 university students. However, during the actual data collection, the researcher collected a total of 418 questionnaires 18 of which were disqualified from the final data analysis because they were incomplete or filled in wrongly. As such the final data used for analysis was obtained from 400 university students.

The demographic characteristics of the sample were analyzed in terms of: Age, gender, residential status, medium frequently used to access internet, internet activities frequently engaged in, time spent on the internet in a day and social media network frequently used.

4.2.1 Distribution of Responds by Age and Gender

The total sample of the study was four hundred (400) of whom 240 (60%) were male while 160 (40%) were female students. Table 4.1 shows the frequency and percentages of the ages and gender of the sample. The ages of the sample range from 19 to 30 years with a majority (32.5%) of the respondents being the age of 21. The respondents aged 22 years were (27.5%) while (15.5%) were aged 20.

Table 4.1: Distribution of Respondents by Age and Gender

Age	<u>Sample size by Sex</u>		<u>Total sample</u>	<u>Percentage of sample</u>
	Male	Female		
19	0	1	1	0.3
20	30	32	62	15.5
21	70	60	130	32.5
22	70	40	110	27.5
23	34	19	53	13.3
24	16	5	21	5.3
25	5	3	8	2.0
26	7	0	7	1.8
27	1	0	1	0.3
28	2	0	2	0.5
29	2	0	2	0.5
30	3	0	3	0.8
Total	240	160	400	100

The ages of the male and female respondents were also compared and it was found that the mean age of female students was 21.44 years while that of the male students was 22.14 years. The mean age of the respondents was 21.86.

4.2.2 Residential Status of the Respondents

The respondents were asked to indicate whether they live within or outside the university. A majority (66.8%) of the respondents live within the university campus while 33.3% live outside the campus.

4.2.3 Medium frequently used to Access internet

The respondents were also asked to indicate which medium they frequently used to access the internet. A majority (87.0%) of the respondents indicated that they used their mobile phones to access internet, while only 0.5% used cyber cafe. This information is presented in Table 4.2

Table 4.2: Medium frequently used to Access Internet

<u>Medium frequently used to access internet</u>	<u>Number of respondents</u>	<u>Percentage of sample</u>
Phone	348	87.0
Laptop computer	42	10.5
University computer lab	8	2.0
Cyber café	2	0.5
Total	400	100

4.2.4 Internet Activities frequently Engaged in

The respondents were asked to indicate three internet activities that they frequently engaged in. From the findings, the three activities that respondents frequently engaged in were chatting with friends (67.8%), academic work (63.7%) and surfing the web (57.6%). Table 4.3 shows these findings

Table 4.3: Three Internet Activities frequently engaged in

<u>Internet activity</u> <u>frequently engaged in</u>	<u>Number of Responses</u>	<u>Percentage of</u> <u>Responses</u>	<u>Percentage of sample</u>
Chatting with friends	267	29.3	67.8
Academic work	251	27.4	63.7
Surfing the web	227	24.8	57.6
Exchanging pictures	71	7.8	18.0
Playing online games	64	7.0	16.2
Watching pornography	29	3.2	7.4
Downloading	5	0.5	1.2
Total	914	100	231.9

4.2.5 Number of Hours Spent on the Internet per Day

Data on the number of hours spent on the internet was also collected from the respondents. The results reveal that a majority (40.8%) of the respondents spent 1-3 hours on the internet while only 10.8% of the respondents spent less than one hour on the internet. Table 4.4 shows these findings.

Table 4.4: Hours Spent on the Internet per day

<u>Hours spent on the internet</u>	<u>Frequency</u>	<u>Percentage of sample</u>
Less than one hour	43	10.8
1-3 hours	163	40.8
3-5 hours	105	26.3
More than 5 hours	89	22.3
Total	400	100

4.2.6 Social Media Network Frequently Used

The study sought to find out the social media network that was most frequently used by the university students. The findings, which are presented in Table 4.5, indicate that a majority (75.2%) of the students used Whatsapp while only 2.3 % of the students frequently used Twitter.

Table 4.5: Social Media Network Frequently Used

<u>Social media network</u> <u>frequently used</u>	<u>Number of responses</u>	<u>Percentage of sample</u>
Whatsapp	307	76.8
Facebook	64	16.0
Instagram	20	5.0
Twitter	9	2.3
Total	400	100

4.3 Prevalence of Pathological Internet Use among Respondents

In this section findings of the study on pathological internet use are presented first on the general prevalence and then the gender differences.

4.3.1 Prevalence of Pathological Internet Use

The study sought to find out the prevalence of pathological use among students. The respondents were asked to complete the Internet Addiction Test (IAT). The IAT has 20 items that measure the level of pathological internet use using a likert scale that is scored from 0 (Does not apply), to 5 (Always). The findings are shown in Table 4.7. From Table 4.6, the mean pathological internet use was 33.67. The lowest score was 0 while the highest score was 100.

Table 4.6: Descriptive Statistics for Pathological Internet use

Statistics	Values
N	Valid 400
Mean	33.67
Median	33.00
Mode	30
Range	100
Std. Deviation	16.397
Variance	268.874
Skewness	.600
Std. Error of Skewness	.122
Kurtosis	.690
Std. Error of Kurtosis	.243
Minimum	0
Maximum	100

To measure the different levels of pathological internet use, the total scores on the IAT were transformed into four categories and analysed. The categories of pathological internet use were: below average internet users (0-19), mild pathological internet users (20-49), moderate pathological internet users (50-79) and severe pathological users (80-100). The results of the analysis are shown in Table 4.7.

Table 4.7: Prevalence of Pathological Internet use

<u>Pathological Internet Use</u>		
<u>Categories</u>	<u>Frequency</u>	<u>Percentage of sample</u>
Below average internet users	88	22.0
Mild pathological internet users	245	61.3
Moderate pathological internet users	62	15.5
Severe pathological internet users	5	1.3
Total	400	100.0

From Table 4.7, majority (61.3%) of the respondents were mild pathological users while only 1.3% were severe pathological users. The prevalence of pathological internet use among the respondents was 16.8% (Scores ≥ 50).

4.3.2 Gender Differences in Pathological Internet Use among Respondents

The study also sought to find out if there were differences in pathological internet use between male and female students. The findings, as shown in Table 4.8, indicate that female respondents had a higher mean score (36.82) compared to male respondents (31.57).

Table 4.8: Pathological Internet use by Gender

<u>Gender</u>	<u>Statistic</u>	<u>Pathological Internet Use</u>
Male	Frequency	240
	Mean	31.57
	Std. Deviation	14.792
Female	Frequency	160
	Mean	36.82
	Std. Deviation	18.143
Total	Frequency	400
	Mean	33.67
	Std. Deviation	16.397

To establish whether there was any difference in pathological internet use between male and female students, an independent samples t-test was conducted to compare the mean scores of the two groups. The analysis showed that the two means were significantly different. ($t=3.048$, $df=292.891$, $p\text{-value}=0.03$). There was therefore a significant difference between male and female students in terms of pathological internet use.

4.4 Prevalence of Depression among the Respondents.

In this section findings of the study on depression are presented first on the general prevalence and then the gender differences.

4.4.1 Prevalence of Depression

The study sought to find out the prevalence of depression among the students. The respondents were asked to complete the Beck Depression Inventory (BDI). The BDI has 21 items that measure the level of depression using a likert scale that is scored from 0 to 3. The scores on each item were summed up and descriptive statistics were performed. Table 4.9 shows the descriptive statistics for depression among the respondents. From Table 4.9 the mean score for depression was 9.08. The scores were positively skewed (1.426) indicating that a majority of the respondents generally rated themselves low on depression symptoms. The minimum score was 0 while the maximum score was 51.

Table 4.9: Descriptive Statistics for Depression

Statistics	Values
N	Valid 400
Mean	9.08
Median	7.50
Mode	0
Range	51
Std. Deviation	8.065
Variance	65.042
Skewness	1.426
Std. Error of Skewness	.122
Kurtosis	3.245
Std. Error of Kurtosis	.243
Minimum	0
Maximum	51

To measure the different levels of depression the total scores on the BDI were transformed into four categories and analysed as shown in Table 4.10.

Table 4.10: Prevalence of Depression

<u>Categories</u>	<u>Depression</u>	
	<u>Frequency</u>	<u>Percentage of sample</u>
Minimal depressive symptoms	306	76.5
Mild depression	50	12.5
Moderate depression	35	8.8
Severe depression	9	2.3
Total	400	100.0

The categories of depression were minimum depressive symptoms (0-13), mild depression (14-19) moderate depression (20-28) severe depression (29-63). The findings indicate that a majority of the respondents 76.5% had minimal depressive symptoms while 2.3% severe depression respectively. The prevalence of depression among the respondents was 23.6 % (scores ≥ 14).

4.4.2 Gender Differences in Depression among Respondents

The study also sought to find out if there were differences in depression between male and female students. As shown in Table 4.11, the findings revealed that female students had a higher mean score (10.16) compared to male students (8.35).

Table 4.11: Depression by Gender

<u>Gender</u>	<u>Statistic</u>	<u>Pathological Internet Use</u>
Male	Frequency	240
	Mean	8.35
	Std. Deviation	7.836
Female	Frequency	160
	Mean	10.16
	Std. Deviation	8.302
Total	Frequency	400
	Mean	9.08
	Std. Deviation	8.065

To establish whether there was any difference in depression between male and female university students, an independent samples t-test was conducted to compare the mean scores of the two groups. The analysis showed that the two means were significantly different. ($t=2.213$, $df=398$, $p\text{-value}=0.027$). There was therefore a significant difference between male and female students in terms of depression.

4.5 Relationship between Depression and Pathological Internet Use

The study sought to establish if there was a relationship between depression and pathological internet use. Pearson's Product Moment Correlation coefficient was calculated for the relationship between depression and pathological internet use. Table 4.12 shows the findings on the relationship between depression and pathological internet use among the respondents.

Table 4.12: Correlation between Depression and Pathological internet use

<u>Correlations</u>		
<u>Variables</u>	<u>Depression</u>	<u>Pathological Internet Use</u>
Depression	1.000	.218**
Sample size	400	400
Pathological internet use	.218**	1.000
Sample size	400	400

Note: **p<.05, two-tailed.

From Table 4.12, A weak positive correlation was found ($r = 0.218$, $p\text{-value} < 0.01$) indicating a significant relationship between the two variables. The p-value was less than 0.01; hence there was relationship between depression and pathological internet use.

A cross-tabulation was also conducted to establish the co-occurrence of depression and Pathological internet use and it was found that there is a significant relationship although weak. ($\chi^2 = 23.629$, $df = 9$, $\alpha = .005$). The results are shown in Table 4.13.

Table 4.13: Co-occurrence of Depression and Pathological Internet Use

		<u>Depression Scores</u>							
		Minimal		Mild		Moderate		Severe	
Pathological internet use scores	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
Below average	79	89.8	8	9.1	1	1.1	0	0	
Mild	185	75.5	32	13.1	23	9.4	5	2.0	
Moderate	38	61.3	10	16.1	10	16.1	4	6.5	
Severe	4	80	0	0	1	20	0	0	
Total	306	76.5	50	12.5	35	8.8	9	2.2	

Table 4.13 shows that 80% of those who had severe pathological internet usage had low depression scores. This suggests that there is minimal chance that pathological internet use co-occurs with severe depression.

4.5 Measures to Mitigate Pathological Internet Use

The study also sought to find out from the respondents, the measures that can be used to mitigate the problem of pathological internet use. The respondents gave various suggestions which were arranged in themes during analysis. The themes that emerged from analysis were alternative activities, psycho education, regulation, self discipline and counselling as shown in Table 4.13.

Table 4.2: Suggested measures to mitigate Pathological Internet Use

Measure	Frequency	Percentage of sample
Alternative activities	108	27.0
Psycho-education	81	20.2
Regulation	71	17.8
Self discipline	69	17.2
Counselling	41	10.3
No need for intervention	12	3.0
Not sure	18	4.5
Total	400	100

From Table 4.14, 27.0% of the respondents suggested that students should involve themselves in alternative activities like sports, volunteering and reading books, socializing with friends and other outdoor activities. A number of respondents (20.2%) suggested psycho-education on the dangers of excessive internet use while (17.8%) suggested self discipline as a measure to mitigate pathological internet use. Some respondents (17.2%) suggested that internet use should be regulated in terms of limiting access to pornography and social media. Counselling was also suggested as a measure of mitigating pathological internet use by 10.3% of the respondents.

From the findings, 3.0% of respondents felt that nothing could be done to mitigate the problem of internet addiction. Some respondents (4.5%) were not sure what measures could be taken to mitigate pathological internet use.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter contains discussions of the findings, conclusions and recommendations drawn from the study on relationship between depression and pathological internet use among university students in Kenya. The chapter begins with a summary of the findings then a discussion of the findings followed by conclusions drawn from the discussions and finally the recommendations arising from the study.

5.2 Summary of the Findings

The analysis of demographic data which sampled a total of 400 respondents (60% male and 40% female) revealed that most of the respondents were aged between 21 and 22 years. The results also revealed that most of the students (66.8%) live within campus. A majority (87%) of the respondents frequently used their phones to access the internet. The three internet activities that respondents frequently engaged in were chatting with friends (67.8%), academic work (63.7%) and surfing the web (57.6%). A majority of the students (40.8%) spent between 1-3 hours on the internet per day while Whatsapp was the social media network frequently used by the respondents (76.8%).

The findings on pathological internet use revealed that there was a prevalence of 16.8% of pathological internet use among the respondents and significant differences between male and female students in terms of pathological internet use ($t=3.048$, $df=292.891$, $p\text{-value}=0.03$). The prevalence of depression was 23.6% from the findings while a weak positive relationship was

found to exist between depression and pathological internet use ($r = 0.312$, $p\text{-value} < 0.01$). A cross tabulation of depression and pathological internet use scores also established that there was little chance of pathological internet use co-occurring with depression.

The study also asked the respondents to suggest measures that could be put in place to mitigate the problem of pathological internet use. The respondents suggested various measures which include alternative activities (27.0%), psycho-education (20.2%), regulation (17.8%), self discipline (17.2%) and counseling (10.3%). Some respondents (3.0%) felt that there was no need for measures to mitigate pathological internet use while 4.5% were not sure what measures could be taken to mitigate pathological internet use

5.3 Discussion of the Findings

In this section, the researcher discusses the findings of the study together with implications under four subsections. Subsection one, two and three shall discuss findings from analysis of demographic information, pathological internet use, depression and relationship between depression and pathological internet use among university students in the study respectively

5.3.1 Demographic Characteristics of Respondents

The mean age of the students indicates that most students were between the age of 21 and 22 years. Considering that in Kenya students are expected to finish secondary school education at the age of 18 years, these findings indicate that most students joined university immediately after high school at (19 years). This is not surprising since the study selected a block sample of third year students.

With regard to residential status of the students, there were more students who lived in campus than those that live outside campus. This is a reflection of the fact that a large part of the sample was selected from a public university. Public universities provide accommodation for most of their students in the university hostels. However the number of the students living outside campus could mean that the universities had more students than they could accommodate in their hostels.

A majority of the students frequently used phones to access the internet could mean that most of them own smart phones that can be used access internet frequently and easily. Also the availability of affordable internet bundles through mobile phone networks makes it easy for the students to access the internet at any time through their phones. The small number of students who frequently use university computer labs could be as a result of the limited number of computers for use by all the students at one time and the fact that they may not be accessible by the students outside the stipulated working hours. Cyber cafes were least used to access the internet probably due to the financial cost of using them and the limited time of access.

Regarding the internet activity, the findings reveal that chatting with friends, academic work and surfing the web were frequently engaged in by the students. These findings are consistent with Waithaka (2013) who found that university students used the internet for academic work, communication and social interaction. The large number of respondent who engage in chatting with friends could a reflection of the stage of development they are in. According to Erik Eriksons Psychosocial stages of development, individuals aged 18-35 seek to form loving relationships with others. Chatting therefore provides a good forum for university students to interact and form relationships with others.

The many students who use the internet for academic work and surfing the web could be an indicator that the universities are encouraging the use of online information for academic work.

On the number of hours spent on the internet, most of the students spent more than an hour on the internet. This could mean that the internet had become an integral part of the university students' life. Those who spent more than five hours on the internet per day could be at risk users of becoming pathological internet users especially if they spent time on non academic activities. According to Zhang et al (2008) individuals who spend longer hours in the internet per day are more likely to be addicted to the internet.

The findings also reveal that Whatsapp was the most frequently used social media network by the students. Whatsapp is a mobile based social network and most of the students may be able to access it using their phones. The fact that most students used their phones to access internet coupled with the findings that they mostly engaged in chatting with friends could be the reason why Whatsapp is popular among the students.

5.3.2 Prevalence of Pathological Internet Use among University students.

Analysis of data revealed that the prevalence of pathological internet use among the university students was 16.8%. This means that some university students were pathological users of the internet and could be experiencing social and academic problems due to excessive use of the internet. The mean score was 33.67 indicates that most of the students were mild pathological users of the internet. Several studies report different findings of prevalence of pathological internet use among university students depending on assessment tools and methodology used. The findings of this study are however consistent with most studies that use Young's Internet Addiction Test like VidyaMavila et al, (2013) and Akhter (2013) who found a prevalence of

18.88% and 13% among undergraduate India and Pakistani respectively. In Europe the prevalence of pathological internet use among university students was 11.6 % and 3.2% among university students in Greece and United Kingdom respectively (Frangos et al, 2010 and Kuss et al, 2013). The relatively higher prevalence of pathological internet use in this study compared to studies in Europe could be as result of excitement with the internet among university students in Kenya as it is still a relatively new phenomenon. According to Zhang, et al (2008) pathological internet use is determined by the stage of adoption of internet usage in a society. Zhang and colleagues who conducted a comparative study between China and USA concluded that individuals in countries that have been newly exposed to the internet are more likely to be addicted than those that have been exposed for longer. In Africa, a study by Thatcher & Goolam (2005) found prevalence of between 1.67% and 5.29% among South Africans. However, this study was conducted ten years ago and there is a likelihood of increased prevalence over the years due to increased internet access as reflected in the current study.

Gender differences in pathological internet use were noted between male and female students. The findings revealed that female students had a higher mean score compared to male students. This means that female students were more likely to be pathological internet users compared to male students. These findings contradict most findings on pathological internet use among male and female students. According to Akhter (2013), Çam & İşbulan (2012) and Frangos, et al, (2010) male university students were more likely to be addicted to the internet than female students. The results of this study can be explained by the fact the Kenyan culture is more conservative about women interacting and expressing themselves physically. The female students may therefore tend to use the internet more to interact and express themselves through the social media networks which are easily accessible in their phones. This assertion is supported

by the findings of Zeynep (2008) who predicted that women were four to five times likely to use social media networks than men. Though Macharia and Nyakwende (2010) found that male university students in Kenya are likely to use the internet more than female university students, it seems that from the results of this study, female students who use the internet end up becoming pathological users compared to male students. A study by Ha and Hwang (2014) among Korean adolescents found that girls who experienced emotional difficulties are prone to pathological internet use compared to boys. Therefore, the findings of the current study can also be argued to be as a result of more female students who had depressive symptoms hence leading to higher scores in pathological internet use than their male counterparts.

5.3.3 Prevalence of Depression among University students

The findings revealed a prevalence of 23.6% of depression among the respondents. This means that there are some students in the universities who may be depressed. This results support the findings of Othieno et al (2013) who found that 35.7% and 5.6% of university students in Kenya were moderately and severely depressed respectively. They however used a different tool (the Centre for Epidemiological Studies Short Depression Scale (CES - D 10) for their study which could explain the lower prevalence of depression in the current study. Findings in Africa put the prevalence of depression among university students at 8.3% in Nigeria (Adewuya et al, 2006) and 39.1% among Ghanaian University students (Asante & Andoh-Arthur, 2014). In Asia, Al-Busaidi et al (2011) found a prevalence of 27% of depression in Oman while Bostanci et al (2005) found a prevalence of 26.2% among Turkish university students. The differences in prevalence of depression can be attributed to the different assessment tools that were used in the various studies. Nevertheless, the prevalence of depression among the Kenyan university students is an indication that some students could be undergoing psychological difficulties that

require to be addressed. Gender differences in depression were also noted among male and female university students. From the findings female students were likely to be more depressed than male students. These findings contradict the findings of Othieno et al, (2013) who did not find any differences in depression among male and female university students in Kenya. The differences could be as a result of the different tools used to measure depression since Othieno and colleagues had used the (CES - D 10). However, the findings of this study support those of Kasakahla et al. (2012) who found that female adolescents were more likely to be depressed than male adolescents. Kasakhala had used a Child Depression Inventory which was adapted from the Beck Depression Inventory used in this study. Also the global findings generally support the assertion that depression is associated more with females than males.

5.3.4 Relationship between Depression and Pathological Internet Use among University Students.

The findings of the study revealed that there was a weak positive relationship between depression and pathological internet use among the respondents. This implies that as levels of depression increase the levels of pathological internet use also increase. In essence the results indicate that the university students who are depressed use the internet excessively compared to those that are not depressed. These results are consistent with the findings of Orsul et al. (2013), Young & Rogers (1998), Akin & Iskender (2011) who found a positive correlation between depression and pathological internet use. The findings of this study could be explained that depressed students may use the internet as a way of coping with the negative emotions through entertainment and online interaction. These findings therefore give credence to the assertion by Young (1998) that the internet is a safe place for individuals to absorb themselves mentally in

order to reduce the stress, tension and sadness that is associated with depression. The findings of this study reveal that many university students in Kenya use the internet to chat with friends; there is therefore a likelihood that the internet provides a quick fix through online chatting for the depressed students. This however, may not deal with the underlying problem but may lead to another problem of pathological internet use. The findings of the weak relationship between depression and pathological internet use are supported by the other findings that there was little chance of pathological internet usage co-occurring with depression. This indicates that most pathological internet users may not necessarily be depressed. The Pathological internet use may therefore be determined by other factors other than depression. For instance Zhang et al (2008) argues that when individuals are newly exposed to the internet, they are likely to become pathological users because of the excitement with the internet technology. University students in Kenya have access to the internet through the free Wi-fi connection, mobile phones and university computer labs hence are likely to become pathological internet users.

5.3.5 Support for the Theoretical Framework

In this study, pathological internet use was conceptualised by the Cognitive Behavioural model of Pathological Internet Use by Davis (2000). A key tenet of the model is that pathological internet use is as a result of faulty cognitions paired with behaviours that serve to reinforce excessive internet use. The findings of the study showed that depression is positively correlated with pathological internet use. This means that theoretically, the faulty cognitions of negative self perception and outlook towards life that are associated with depression and the reinforcement that comes from using the internet through entertainment and interaction may reinforce pathological internet use among students. The positive reinforcement from internet use by the university students through chatting and surfing the web could be the theoretical link

between the cognitive aspect of Davis model and the actual pathological internet use among university students in Kenya. Davis' model also stipulates that exposure to the internet puts one at risk of becoming addicted to the internet. The findings of this study support the model since most university students in Kenya spent more than one hour on the internet daily. This puts them at risk of becoming pathological internet users according to the theory.

5.3.6 Measures to Mitigate Pathological Internet Use among University Students.

Another objective of the study was to find out from the students what measures could be used to mitigate the problem of pathological internet use. Most of the reviewed literature does not ask the affected populations (university students) to suggest solutions to the problem of pathological internet use. The researchers mostly recommend measures based on their findings. There was therefore need to fill this gap by asking the respondents in this study to suggest measures to mitigate pathological internet use. The findings are discussed below.

A majority of the respondents (27.0%) suggested that the students should engage in alternative activities like sports and outdoor activities. The suggestion by the students that students be involved in alternative activities may not only directly mitigate pathological internet use but also indirectly by helping those students who are depressed to relieve their stress through interactive activities. This could not only help them stay away from the internet for some time but also socialize with others in person. Interacting physically also enhances better social skills compared to interacting online through chatting.

Psycho-education was suggested by the respondents. This could be done through holding seminars and campaigns within universities to highlight the dangers of excessive internet use. By

bringing to the attention of university students and authorities about the dangers of excessive use, the students can be taught skills necessary to moderate and control the use of internet. This supports the suggestions of VidyaMavila et al. (2013) who opine that university students should be made aware of the need for controlled use of the internet. Njoroge (2013) also suggests that university students should be educated trained on better use of the internet to avoid unproductive and irrelevant use of the internet.

Some students also suggested that there should be regulation of internet use. This is to ensure that students have limited access to sites such pornography. Considering that 7.4% respondents indicated that they regularly used the internet to watch pornography, regulation could help in deterring access to such content. Regulation has been used in other countries to mitigate the problem of pathological internet use. The Chinese government for example, has instituted laws that regulate the number of hours adolescents spend playing online games (BBC News, 2005). Şenormanc et al.(2014) also opine that there is need for regulation of number of hours spent on the internet.

Another suggestion was self discipline. Through self discipline, the students can regulate their time and the content they access online. However, not all students are able to discipline and regulate themselves in their internet use. That is why some end up being pathological internet users. Nevertheless, through counselling which was suggested by some of the respondents, the students may be helped to learn the skills and attitudes necessary for self discipline. Counselling may also help in addressing the underlying problem that may be precipitating excessive internet use. Counselling for pathological internet users has been used in other countries to mitigate

pathological internet use. Internet addiction treatment centres and clinics have been started in South Korea, China, Netherlands and USA to specifically offer counselling to pathological internet users (Young, 2007). Studies on the efficacy of counselling to treat pathological internet use have found cognitive behavioural therapy to be effective (Erdena, & Hatunb, 2015; Young, 2007)

Some students felt that there was no need to put in place measures to mitigate pathological use while others were not sure what measures could be put in place to mitigate pathological internet use. This could be an indicator that a number of students are unaware that excessive internet use could have negative consequences in one's life. This is understandable because, pathological internet use is a non chemical addiction whose symptoms and effects may not be apparent in one's life compared to other addictions like substance abuse. In addition to that, the internet is basically a legitimate tool that is beneficial to the students in their academic work and social lives. Unlike chemical addictions like substance abuse which have no direct benefits, the internet has legitimate direct benefits to the students. Some students may therefore be reluctant to suggest measures to mitigate pathological internet use. However, the fact that most of the students (92.5%) suggested specific measures to mitigate pathological internet use could mean that they were aware that the problem of pathological internet use existed amongst them and there was need to find a solution to the problem. This assertion is consistent with the findings of Waithaka (2013) who found that 74% of university students thought that excessive use of the internet could be a problem.

Young (2007) opines that abstinence and banning the internet may not be practical in dealing with pathological internet use but focus should be on moderated internet use. In the same vein therefore, to ensure moderated internet use among university students in Kenya, self discipline among students can be enhanced through alternative activities to internet use, psycho-education on the dangers of excessive internet use, regulation of non beneficial internet content and counselling of students who are pathological internet users.

5.4 Conclusions of the Study

The following conclusions are drawn from this study:

The study found that a majority of the students frequently used phones to access internet perhaps because they are access affordable internet through mobile networks and conveniently so at any time of the day. Chatting with friends and academic work and surfing the web were the three internet activities mostly engaged in by the students most of whom spent more than an hour online per day. This is an indication that internet use is an integral part of a university students' life. University students therefore use the internet everyday for social and academic purposes. The findings of the study also reveal that Whatsapp is the social media frequently used by most of the students probably because it is mobile based and affordable.

On pathological internet use, the findings show a prevalence of 16.8% of pathological internet use which indicates that a number of students were pathological internet users. This means that despite the many benefits that accrue from internet use for university students, some of them may be experiencing negative consequences due to excessive use. Counsellors and other stake holders should therefore be cognisant of the fact that some students may be experiencing difficulties in social relations and academic work due to pathological internet use. Female students were also

found to be more at risk of becoming pathological internet users compared to male students. This means that gender could be a predictor of pathological internet use. However, there is need to identify the reasons for the differences in pathological internet use between male and female students.

The prevalence of depression among university students was found to be 23.6%. This is an indication that some students were depressed and there is need to pay specific attention to this population. Depression is a serious psychological condition that can impair the functioning of the students hence derailing them from achieving their academic goals. Gender differences in depression were also noted with female students more likely to be depressed than male students. The study also found a positive relationship between depression and pathological internet use among university students in Kenya. This indicates that depressed students are likely to be pathological internet users than those who are not depressed. The internet offers interactive feature and content that can be exciting and entertaining. The depressed students could therefore be using the internet to cope with the negative emotions associated with depression.

The study also got suggestions from the students on measures that can be used to mitigate the problem of pathological internet use. The suggestions include; alternative activities, psycho-education, regulation, self discipline and counselling. This implies that the students recognised that promoting healthy psychological well being of the students could be a way of reducing pathological internet use. This can be done by university counselling departments and management working together to devise programs that are geared towards bringing awareness to

the students about the dangers of excessive internet use and offering support to those that are experiencing difficulties through pathological internet use.

5.4 Recommendations

Based on the findings of this study, a number of recommendations are suggested for university administration, counsellors and education policy makers. All these stakeholders are collectively and individually responsible in minimising pathological internet use which may undermine the academic goals of the university students.

5.4.1 Recommendation for University Administrators

- i. There is need to organise seminars and conferences in the universities with students to highlight the possible dangers of pathological internet use and the measures that can be taken to mitigate the problem.
- ii. There is need to regulate the non academic content that can be accessed through university computer labs like pornography and social media.

5.4.2 Recommendations for University Counsellors

- i. University counsellors need to be more cognizant of the new trends in non chemical addictions like pathological internet use among students hence equip themselves with the relevant skills and competencies.
- ii. There is need for university counsellor to incorporate pathological internet use in assessment of students who may manifest with symptoms of depression and vice versa so as to ensure that their interventions are holistic and comprehensive.

- iii. University counsellors need to come up with strategies that will help in preventing pathological internet use and identifying those who may be at risk of becoming pathological internet users.
- iv. University counselors need to factor gender in their assessment for depression and pathological internet use in order to come up with interventions that are sensitive to gender differences.

5.4.3 Recommendations for Education Policymakers

- i. The policy makers in the education sector may need to create awareness among the general population on the dangers of pathological internet use so as to help the public understand those who are at risk and the available remedies to the problem.
- ii. The policy makers may also need to invest in scientific research that addresses emerging non chemical addictions like pathological internet use as opposed to solely focusing on chemical addictions like substance abuse.

5.4.4. Recommendations for Further Research

The current study examined the relationship between depression and pathological internet use among university students in Kenya. The findings are however not exhaustive on the subject of pathological internet use and the following recommendations are made for further research.

- i. There is need for an in-depth study on the nature of pathological internet use among pathological internet users.
- ii. Studies can be conducted to understand the impact of pathological internet use among university students.
- iii. A study can be conducted on pathological internet use across the Kenyan population to understand the demographical differences.

- iv. Studies can also be conducted to investigate other variables that are related to pathological internet use such as personality and relationships and age.

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APPENDICES

APPENDIX I: STUDY QUESTIONNAIRE

SECTION ONE: INTERNET USE QUESTIONNAIRE

Please answer the following questions and tick as appropriate

Age:

Department:

Year of study:

Gender: (Select one) Male Female

1. Where do you live: Within campus Outside campus

2. What do you frequently use to access the internet? (select one)

My Phone

University computer labs

My Laptop

Cyber café

3. Which of the following internet activities do you engage in most frequently? Select three

Playing online games

Watching Pornography

Listening to music

Academic work

Chatting with friends

Exchanging pictures

Surfing the web

Other _____

4. How much time do you spend on the internet in a day?

3 -5 hours 1- 3 hours 30 minutes- 1 hour less than 30 minutes

More than 5 hours

5. Which social media network do you use most frequently? (Select one)

Facebook

Twitter

Instagram

Whatsapp

Other _____

SECTION TWO: INTERNET ADDICTION TEST

The following questions relate to internet use. Please read them carefully and tick the box that best describes your answer. There are no right or wrong answers, so do not spend much of your time on any one item. Be sure not to omit any items.

	Does not apply	Rarely	Occasionally	Frequently	Often	Always
1. Do you find that you stay online longer than you intended?						
2. Do you neglect some of your responsibilities to spend more time online?						
3. Do you prefer the excitement of the internet to intimacy with your partner?						
4. Do you form new relationships with fellow online users?						
5. Do others in your life complain to you about the amount of time you spend online?						
6. Does your school work suffer because of the amount of time you spend online? (E.g., postponing things, not meeting deadlines, etc.)						
7. Do you check your social media accounts before something else you need to do?						

8. Does your academic performance or productivity suffer because of the internet?						
9. Do you become defensive or secretive when anyone asks you what you do online?						
10. Do you block disturbing thoughts about your life with soothing thoughts of the internet?						
11. Do you find yourself anticipating when you will go online again?						
12. Do you fear that life without the internet would be boring, empty or joyless?						
13. Do you become annoyed if someone bothers you while you are online?						
14. Do you lose sleep due to late night internet use?						
15. Do you feel preoccupied with the internet when not online, or fantasize about being online?						
16. Do you find yourself saying "Just a few more minutes" when online?						
17. Do you try to cut down on the amount of time you spend online and fail?						
18. Do you try and hide how long you've been online?						

19. Do you choose to spend more time online over spending time out with others?							
20. Do you feel depressed, moody, or nervous when you are not online and these feelings go away when you go back online?							

21. What intervention measures do you think should be put in place to mitigate the problem of pathological internet use?

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SECTION THREE: BECK DEPRESSION INVENTORY

This section consists of 21 groups of statements that measure depression. Please read each group of questions carefully and then pick the one statement in each group that best describes the way you have been feeling for the past two weeks, including today. Circle the number beside the statement you pick. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not select more than one statement for any group, including 16 (changes in sleeping patterns) or item 18 (changes in appetite)

1. Sadness

- 0. I do not feel sad
- 1. I feel sad much of the time
- 2. I am sad all the time
- 3. I am sad or unhappy that I can't stand it

2. Pessimism

- 0. I am not discouraged about my future
- 1. I feel more discouraged about my future than I used to be
- 2. I do not expect things to work out for me
- 3. I feel my future is hopeless and will only get worse

3. Past failure

- 0. I do not feel like a failure
- 1. I have failed more than I should have
- 2. As I look back, I see a lot of failures
- 3. I feel I am a total failure

4. Loss of pleasure

- 0. I get as much pleasure as I ever did from things I enjoy
- 1. I don't enjoy things as much as I used to
- 2. I get very little pleasure from the things I used to enjoy
- 3. I can't get any pleasure from the things I used to enjoy

5. Guilty feelings

0. I do not feel particularly guilty
1. I feel guilty over many things have done or should have done
2. I feel quite guilty most of the time
3. I feel guilty all of the time

6. Punishment feelings

0. I don't feel I am being punished
1. I feel I may be punished
2. I expect to be punished
3. I feel I am being punished

7. Self dislike

0. I feel the same about myself as ever
1. I have lost confidence in myself
2. I am disappointed in myself
3. I dislike myself

8. Self criticalness

0. I don't criticize or blame myself more than usual
1. I am more critical of myself than used to be
2. 'I criticize myself for all my faults
3. I blame myself for everything bad that happens

9. Suicidal thoughts or wishes

0. I don't have any thoughts of killing myself
1. I have thoughts of killing myself but I would not carry them out
2. I would like to kill myself
3. I would kill myself if I had a chance

10. Crying

0. I don't cry anymore than I use to
1. I cry more than I used to
2. I cry over every little thing
3. I feel like crying , but I cant

11. Restlessness or Agitation

- 0. I am no more restless or agitated than usual
- 1. I feel more restless or agitated than usual
- 2. I am so restless or agitated that its hard to stay still
- 3. I am so restless or agitated that I have to keep doing something or moving

12. Loss of interest

- 0. I have not lost interest in other people or activities
- 1. I am less interested in other people or things than before
- 2. I have lost most of my interest in other people or things
- 3. It's hard to get interested in anything

13. Indecisiveness

- 0. I make decisions about as well as ever
- 1. I find it more difficult to make decisions than usual
- 2. I have much greater difficulty in making decisions than I used to
- 3. I have trouble making decisions

14. Worthlessness

- 0. I do not feel I am worthless
- 1. I don't consider myself as worthwhile and useful as I used to
- 2. I feel more worthless as compared to other people
- 3. I feel utterly worthless

15. Loss of energy

- 0. I have as much energy as ever
- 1. I have less energy than I used to have
- 2. I don't have enough energy to do very much
- 3. I do not have enough energy to do anything

16. Changes in sleeping pattern

- 0. I have not experienced any change in my sleeping patterns
- 1. I sleep somewhat more than usual
- 2. I sleep somewhat less than usual
- 3. I sleep a lot more than usual
- 4. I sleep a lot less than usual
- 5. I sleep most of the day
- 6. I wake up 1-2 hours early and can't go back to sleep

17. Irritability

0. I am no more irritable than usual
1. I am more irritable than usual
2. I am much more irritable than usual
3. I am irritable all the time

18. Changes in appetite

0. I have not experienced any change in my appetite
1. My appetite is somewhat less than usual
2. My appetite is somewhat greater than usual
3. My appetite is much less than before
4. My appetite is much greater than usual
5. I have no appetite at all
6. I crave food all the time.

19. Concentration Difficulty

0. I can concentrate as well as ever
1. I can't concentrate as well as usual
2. It's hard to keep my mind on anything for very long
3. I find I can't concentrate on anything

20. Tiredness or fatigue

0. I am no more tired or fatigued than usual
1. I get more tired or fatigued more easily than usual
2. I am too tired or fatigued to do a lot of the things I used to
3. I am too tired or fatigued to do most of the things I used to do

21. Loss of interest in sex

0. I have not noticed any recent change in my interest in sex
1. I am much less interested in sex than I used to be
2. I am much less interested in sex now
3. I have lost interest in sex completely.

APPENDIX II: INFORMED CONSENT FORM

My name is Maroma Fabio Ogachi. I am a masters student at Kenyatta University. I am conducting a study on “Relationship between Depression and Pathological Internet use among University Students in Kenya.” The information will only be used for the above named study.

Procedures to be followed

Participation in this study will require you to answer a questionnaire that will be provided. The information will only be used for the intended research purposes and will bear no identifying information. You have the right to refuse participation in this study. Please remember the participation in the study is voluntary. You may ask questions related to the study at any time.

You may refuse to respond to any questions and may stop responding at any time. You may also stop being in the study at any time without any consequences.

Discomforts and risks

The study involves no known risk to you and contains no deception. However if any of the questions make you uncomfortable, you may refuse to answer these questions if so you choose.

Benefits

Participation in this study is voluntary and if you choose to participate, you will help us learn the trends in depression and pathological internet use among university students and in the case of any counselling needs, the services will be offered.

Rewards

There will be no rewards for participation in this study.

Confidentiality

Privacy and confidentiality will be ensured. You are not required to write your names on the questionnaire to ensure anonymity. The questionnaires will be kept in a private office in order to ensure privacy.

Contact information

If you have any questions you may contact Dr. Muchiri Karega on 0720008745 or Dr. Oteyo Samson on 0725237845 or the Kenyatta University Review Committee Secretariat on chairman.kuerc@ku.ac.ke, secretary.kuerc@ku.ac.ke or ercku2008@gmail.com.

Participant's statement

The above information regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my records will be kept private and that I can leave the study at any time.

I understand that I will still get the same care and the same services whether I decide to leave the study or not and my decision will not change anything.

.....

Signature

Date

Investigator's statement

I, the undersigned have explained to the volunteer in a language that he/she understands, the procedures to be followed in the study and the risks and benefits involved.

Name of the investigator

.....

Investigator's signature

.....

Date

