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Effect of Social Support and HIV-Related Stigma on Depression in HIV/AIDS Patients

Chinedu Anthony Umeadi
Walden University

Walden University

College of Health Sciences

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Chinedu Umeadi

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Review Committee
Dr. Peter Anderson, Committee Chairperson, Public Health Faculty
Dr. Wen-Hung Kuo, Committee Member, Public Health Faculty
Dr. Amy Thompson, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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MPH, University of Liverpool, 2006

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Dissertation Submitted in Partial Fulfilment
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Doctor of Philosophy
Public Health

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Abstract

HIV has remained a public health problem in Nigeria. The purpose of this cross-sectional study was to examine the effect of social support and HIV-related stigma on depression in people living with HIV/AIDS (PLWHA) and to examine the moderating effect of sociodemographic factors, Quality of Life (QOL), and time since HIV diagnosis on this relationship. This study was based on the social cognitive theory. Data were collected from 98 PLWHA attending the antiretroviral clinic of Federal Medical Center, Umuahia, Nigeria. Regression analyses were used to examine the relationships between the variables. Some 24.5% of the study participants were depressed. Significant relationships identified included negative relationships between depression and social support, positive relationships between depression and negative self-image, and a combination of poor social support and HIV-related stigma having synergic effects in predicting depression. Sociodemographic variables, quality of life, and time since HIV diagnosis did not have a moderating effect on the relationship between social support, HIV-related stigma, and depression in PLWHA. There is a need to improve social support and reduce HIV-related stigma in PLWHA in order to improve their mental health. These findings can help in bringing about positive social change by informing the development of public health initiatives aimed at improving the mental health of PLWHA.

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Dedication

This dissertation is dedicated to all those affected by HIV/AIDS and mental health illnesses across the globe and to those providing care for them in any capacity. I hope that the findings from this dissertation will help bring about some improvement in the biological, psychological, and social wellbeing of this group of people and help healthcare professionals involved in their care develop public health initiatives that are tailored to their exact needs.

Acknowledgments

I will like to thank the chair of my dissertation committee Dr. Peter Anderson for all his support and guidance all through the dissertation process. I will also like to thank other members of my dissertation committee Dr. Wen-Hung Kuo and Dr. Amy Thompson for all their support and guidance.

The story of my Walden journey cannot be complete without mentioning my wife Dr. Christine Umeadi, and daughters Michelle Umeadi, and Olivia Umeadi. You were all sources of inspiration and support all through my Walden journey. You made huge sacrifices to ensure that I completed this program and I hope to make up for the lost times.

Special thanks to all the staff members at the antiretroviral clinic of Federal Medical Center Umuahia for all their support during the data collection period of this study and Dr. Godwin Okafor for the invaluable pieces of advice and support he provided which helped me secure ethical approval for this study.

Finally; I will like to thank the almighty God in heaven for his infinite mercies; especially for good health.

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Chapter 1: Introduction to the Study

HIV/AIDS and depression are two illnesses of public health importance; both causing significant public health burden across the globe (World Health Organization [WHO], 2012a, 2012b). People of all age groups, genders, and socioeconomic and cultural backgrounds may experience depression, and about 350 million people are affected by depression worldwide (WHO, 2012a). HIV continues to spread despite global concerted public health efforts to prevent the disease with about 34 million people reported to be affected by HIV by 2011; 2.5 million of them were newly affected (WHO, 2012b). People living with HIV/AIDS (PLWHA) also experience mental health illness, including depression, more than the general population (Elbirt et al., 2012; Selvaraj, Ross, Unnikrishnan, & Hegde, 2013).

PLWHA are known to be socially isolated and also face discrimination as a result of their illness (Charles et al., 2012; Kinyanda et al., 2011). Poor social support can lead to depression (Grav, Hellzèn, Romild, & Stordal, 2011) and is known to worsen depression and other physical illnesses in PLWHA (Vyavaharkar et al., 2010). Poor social support and HIV-related stigma cause and worsen depression in PLWHA (Akena, Musisi, Joska, & Stein, 2012; Vyavaharkar et al., 2010) and also mediate the effect of sources of available support on depression (Kinyanda et al., 2011; Vyavaharkar et al., 2010). PLWHA are a vulnerable group of people who are at risk of developing health problems such as opportunistic infections; tuberculosis; cancers; hepatic, cardiovascular, renal, cognitive and endocrine problems; and are also known to have social and psychological problems (AIDS.gov, 2013).

Depressed patients are also a vulnerable group. Some symptoms of depression such as low energy levels, poor motivation, poor appetite, low self-esteem, and poor concentration put depressed people at risk of neglect and exploitation (WHO, 2012a). People in this vulnerable group are often subjected to discrimination and stigma, which restricts their access to health and social care services, resulting in worse health outcome (WHO, 2012a). They often live in poverty, poor physical health, and are subject to human rights violations (WHO, 2014). PLWHA who suffer with depression are a more vulnerable group with increased risk of developing more disability and dying prematurely (WHO, 2014).

In this study, I investigated the effect of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria. It was important to carry out this study because the findings could inform evidence-based public health interventions. It could be of benefit to public health professionals involved in service planning and development. It may also be of benefit to PLWHA, their relatives, and their health care professionals. Multiple social, psychological, and biological factors determine the mental health of people at any point in time (WHO, 2010). Social support, HIV-related stigma, and HIV/AIDS itself are all factors that can affect the mental health of PLWHA (Elbirt et al., 2012; Selvaraj et al., 2013). This study has the potential of increasing the knowledge base on the interplay between these factors and can ultimately bring about positive social change by informing development of public health initiatives aimed at improving the mental health of PLWHA, which will bring about improvement in the quality of life (QOL) and mental health of PLWHA.

In the first part of this chapter, I discussed the background to the study, the problem statement, and the purpose of the study. In the next part, I discussed the research questions and hypotheses, the theoretical framework, and nature of the study. In the last part, I defined variables and terms used in the study and discussed the assumptions, scope, and limitations of the study.

Background

HIV has remained a public health problem (AIDS.gov, 2013; WHO, 2012b). It is important to continue studying the health of PLWHA. Depression continues to be more common in PLWHA than in the general population (Elbirt et al., 2012; Selvaraj et al., 2013). Sub-Saharan Africa has the highest HIV burden globally, and HIV has remained a public health problem in Nigeria despite concerted prevention efforts by different public health organizations and the Nigerian government over the last 2 decades (National Agency for the Control of AIDS [NACA], 2012; WHO, 2013a). There were about 3.4 million people living with HIV/AIDS in Nigeria by the end of 2012, with prevalence rate of 3.1 in adults (UNAIDS, 2012; WHO, 2013a).

Social support has been shown to affect depression in general (Goodwin et al., 2012; Müller, Peter, Cieza, & Geyh, 2012; Teo, Choi, & Valenstein, 2013; Theeke, Goins, Moore, & Campbell, 2012) and also in PLWHA as shown by Bekele et al. (2013), Eller et al. (2010), Oppong (2012), and Rotheram-Borus et al. (2010). High levels of stigma have also been shown to be associated with HIV/AIDS (Liu, Canada, Shi, & Corrigan, 2012; Nattabi, Li, Thompson, Orach, & Earnest, 2011; Palmer et al., 2011; Vlassoff, & Ali, 2011), and HIV-related stigma has been shown to affect depression in

PLWHA (Akena et al., 2012; Hatzenbuehler, O'Cleirigh, Mayer, Mimiaga, & Safren, 2011; Vyavaharkar et al., 2010).

I could not identify any studies in which the authors examined the effect of both social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria. There is a literature gap in the area of mental health of PLWHA in Eastern Nigeria, and I am hoping that the findings from my research will help fill this literature gap.

Sociodemographic factors, QOL, and time since HIV diagnosis have been shown to be associated with depression in PLWHA (Shacham, Nurutdinova, Onen, Stamm, & Overton, 2010; Vyavaharkar, Moneyham, Murdaugh, & Tavakoli, 2012). Researchers have, however, given different views on the effect of sociodemographic factors and QOL on depression in PLWHA with some reporting positive association and others reporting no association (Akena et al., 2012; Clarke, Gibson, Barrow, Abel, & Barton, 2010; Moosa, & Jeenah, 2012; Peltzer, 2012). There is inconclusive evidence as to whether sociodemographic factors and QOL have any significant effect on depression in PLWHA or not. I also could not identify any Eastern Nigeria-based studies on the effects of sociodemographic factors and QOL on depression in PLWHA. I hope to fill these literature gaps with the findings of this research.

There were two studies in which the authors investigated the effect of time since HIV diagnosis on depression in PLWHA (Mello et al., 2010; Ramirez-Avila et al., 2012); but, neither of these studies were Eastern Nigeria-based. The paucity of research on the effect of time since HIV diagnosis on depression in PLWHA demonstrates a literature gap which I am hoping to fill with the findings of this research. Even though the individual effects of social support and HIV-related stigma on depression in PLWHA have been studied, I did not identify any studies in which the authors examined the combined effect of the two variables on depression in PLWHA. I hope to fill this literature gap with findings of my research.

This study is needed because depression remains a public health problem in PLWHA and there is paucity of research in Eastern Nigeria in this area. I hope to contribute to the body of evidence in the area of mental health of PLWHA in Eastern Nigeria and also fill some of the literature gaps identified above with the findings from this research.

Problem Statement

HIV/AIDS and depression are two illnesses of public health importance, both causing significant public health burden across the globe (WHO, 2012a, 2012b). The area of HIV/AIDS and depression has been well researched in recent decades. Most researchers in this area have studied the relationship between depression, social support, and HIV-related stigma in PLWHA (Akena et al., 2012; Kinyanda et al., 2011; Su et al., 2013) and not the combined effect of social support and HIV-related stigma on depression in PLWHA. No researchers have examined the combined effect of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria. Identifying the full impact of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria will add to the body of literature in the field of HIV/AIDS and depression. I also aimed to identify whether the variables of age, gender, sexual orientation, religion, occupation, annual income, educational status, marital status, QOL, and year since diagnosis of HIV may be moderating the relationship between social support, HIV-related stigma, and depression.

This study is unique in that I addressed an area of HIV/AIDS and depression that had not been previously researched in PLWHA in Eastern Nigeria (United Nations Population Fund [UNFPA], 2013). The study has the potential of identifying factors that adversely affect the mental health of PLWHA. It is important to ensure that PLWHA have good mental health. The WHO (2010) identified mental health as an integral part of health and stated that “there is no health without mental health” (p. 1).

Purpose of the Study

In this quantitative study, I used a cross-sectional study design for this study. I gathered information from a group of people in Eastern Nigeria on just one occasion. Cross-sectional design is a commonly employed research design in the field of social sciences used to gather information on populations at a given point in time (Aschengrau & Seage III, 2008). Because I neither intended to carry out any experiments nor establish causality in this study, I decided to use a cross-sectional study design.

In this study, the independent variables were social support and HIV-related stigma. The dependent variable was depression. The moderating variables were sociodemographic factors of age, gender, sexual orientation, religion, occupation, annual income, educational status, marital status, QOL, and time since HIV diagnosis.

Research Questions and Hypotheses

The research questions for this study were as follows:

1. What is the individual and combined effect of social support (as measured by score on Duke-UNC functional social support questionnaire) and HIV-related stigma (as measured by score on Berger HIV stigma scale) on depression (as measured by score on Beck depression inventory-II) in PLWHA in Eastern Nigeria?

$H1_0$: There is no relationship between the individual and combined effect of social support and HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

$H1_a$: There is a relationship between the individual and combined effect of social support and HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

2. Do sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL (as measured by score on WHO QOL-BREF scale), and time since diagnosis of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria?

$H2_0$: Sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL, and time since diagnosis of HIV does not moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria?

$H2_a$: Sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL, and time since diagnosis of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

Measurement of Study Variables

Social support was measured by score on the Duke-UNC functional social support questionnaire; HIV-related stigma was measured by the score on Berger HIV stigma scale, depression was measured by the score on the Beck depression inventory, and QOL was measured by the score on the WHO QOL-BREF scale. Information on sociodemographic factors and time since HIV diagnosis was gathered through a questionnaire.

Theoretical Perspective

This study was based on the social cognitive theory (SCT). According to SCT, “behavior as the result of three reciprocal factors: behavior, personal factors, and outside events” (Schiavo, 2007, p. 39). SCT helps in understanding and predicting individual and group behavior and in identifying methods through which behavior can be changed or modified (Schiavo, 2007). SCT was started by Bandura as a learning theory before evolving into SCT; according to SCT, learning occurs in social contexts with dynamic and reciprocal interaction of persons, their environment, and behaviour (Boston University, 2013).

SCT theorists emphasize social influence and external and internal social reinforcement taking into account peoples’ past experiences, which helps in predicting whether behavioral actions will occur or not (Boston University, 2013; York University, 2013). The goal of SCT is to explain how people, through control and reinforcement, regulate their behavior to achieve behaviors which are goal-directed and maintainable over time (York University, 2013). SCT has six constructs: reciprocal determinism (the central concept of the theory), behavioral capability, observational learning, reinforcements, expectations, and self-efficacy (Boston University, 2013).

Personal factors include cognitive, affective, and biological events (University of Twente, 2013). Social support and HIV-related stigma are external events/environmental factors which are out of the control of PLWHA and have been shown to have a direct impact on depression in PLWHA (Charles et al., 2012; Kinyanda et al., 2011; Vyavaharkar et al., 2012). Low mood and HIV/AIDS are affective and biological components of individual personal factors respectively. Behavioral, personal, and environmental factors influence each other, and this is why I choose to base this research on the SCT. The interaction between behavior, personal, and environmental factors plays a role in the development and maintenance of depression, especially in PLWHA, which can be explained by reciprocal determinism (one of the constructs of SCT; Boston University, 2013; Sherr, Clucas, Harding, Sibley, & Catalan, 2011). According to reciprocal determinism, peoples' behavior influences and can also be influenced by personal factors and their social environment (Boston University, 2013; York University, 2013). SCT was used to understand and explain the effect of social support and HIV-related stigma on depression in PLWHA, as well as the role sociodemographic factors, QOL, and year of diagnosis of HIV may play in the relationship between social support, HIV-related stigma, and depression.

Nature of the Study

In this quantitative cross-sectional study, I gathered information from a group of people in Eastern Nigeria to identify any individual or combined effects of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria; I also examined the relationships between sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL, and time since HIV diagnosis to identify whether they moderated the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria or not.

The independent variables were social support and HIV-related stigma. The dependent variable was depression. The moderating variables were sociodemographic factors of age, gender, sexual orientation, religion, occupation, educational status, marital status, QOL, and time since HIV diagnosis.

My target population was PLWHA attending the antiretroviral clinic at Federal Medical Centre Umuahia (FMCU), Nigeria which has about 1,287 HIV patients actively attending their clinic (FMCU, 2014). I used a purposive sampling method for this research. My sampling frame for this study was PLWHA from the age of 18 years and above who were actively attending the FMCU antiretroviral clinic and who were physically well enough to participate in a study and able to complete questionnaires in English language. I administered the Beck Depression Inventory (BDI-II), Duke-UNC functional social support questionnaire, Berger HIV stigma scale, WHO QOL-BREF scale for measuring quality of life, and a short questionnaire for collecting demographic information to the people within my sample frame who met the inclusion criteria.

Data collected with the questionnaires were transferred to SPSS which was also used to carry out data analysis. Descriptive statistics were generated for the collected data using SPSS. Graphs were also produced with SPSS. Multiple regression analysis was used to examine the individual and combined effects of social support and HIV-related stigma on depression in my study participants and also to examine the moderating effects of the sociodemographic factors, QOL, and year since diagnosis of HIV on depression in the study participants.

Definitions

Depression: A severe mental health disorder which is characterized by low mood, loss of pleasure or interest, feelings of guilt, hopelessness, and worthlessness, low self-esteem, disturbed sleeping pattern, poor appetite, low energy levels, and poor concentration (WHO, 2012a; Wright, Stern, & Phelan, 2012). The dependent variable, depression, was measured by the score on the Beck Depression Inventory (Wang & Gorenstein, 2013).

HIV-related stigma: As negative views the general public hold against PLWHA (Rao et al., 2012). This was measured by the score on the Berger HIV Stigma Scale (Berger, Ferrans, & Lashley, 2001).

Quality of life (QOL): The way individuals perceive their positions in life in relation to their standards, expectations, goals, and concerns taking into consideration their cultural background and the values of the systems they live in. This was measured by the score on the WHO QOL-BREF scale (WHO, 2013b).

Social support: Resources that are provided by other people which can affect the perception that an individual belongs to network where care, affection, obligation, and aid can be given and received (Lin et al., 2013; Teo et al., 2013). This was measured by the score on Duke-UNC Functional Social Support Questionnaire (Broadhead, Gehlbach, De Gruy, & Kaplan, 1988).

Assumptions

In this study, I assume that the study participants were representative of adults who are 18 years and above living with HIV/AIDS in Eastern Nigeria. It is hoped that not including people below the age of 18 years living with HIV/AIDS, excluding people who are not physically well enough to participate in the study, and including only people who can complete questionnaires in English language have not affected the representativeness of the study adversely or brought about bias. It was assumed that recruiting from an HIV clinic with staff members at the clinic informing potential study participants of the study will not lead to bias. It was finally assumed that study participants will complete the questionnaires honestly and to the best of their knowledge and ability, and that the questionnaires used in collecting data were appropriate for collecting such data and for measuring the variables in question.

Scope and Delimitations

I looked at the effect social support and HIV-related stigma had on depression in PLWHA. I chose to focus on depression because the rate of depression was rising and is currently the leading cause of disability globally in terms of total years lost due to disability (World Federation for Mental Health [WFMH], 2012; WHO, 2012a).

Depression is common in people with chronic health problems such as stroke, cardiovascular diseases, and HIV/AIDS (National Institute for Health and Care Excellence [NICE], 2009). I also chose to look at the effect social support and HIV-related stigma had on depression because they were known to affect depression in PLWHA (Akena et al., 2012; Charles et al., 2012; Rao et al., 2012; Sherr et al., 2011; Sumari-de Boer, Sprangers, Prins, & Nieuwkerk, 2012) and I hoped to identify their effect on depression in PLWHA in Easter Nigeria.

The study subjects I included in this study were PLWHA from the age of 18 years and above who were actively attending the FMCU antiretroviral clinic, who were physically well enough to participate in the study, and who also able to complete questionnaires in English language. First, I chose PLWHA above the age of 18 years to ensure that they were old enough to provide a valid informed consent. Second, I chose people who were physically well enough to participate for ethical reasons. Finally, I chose people who could complete the questionnaires in English language because all of the questionnaires used were in the English language and that English language was the official language of Nigeria, including Eastern Nigeria.

Limitations

I chose a cross-sectional study design for this study. A cross-sectional study design offers a chance to carry out research in real-life settings with probability samples, thereby increasing external validity. It has some limitations which include (a) lack of control over other factors that may explain the findings of studies, (b) direction of causation having to be logically or theoretically inferred because researchers cannot manipulate the independent variables, (c) inability to establish causality, and (d) the possibility of prevalence-incidence bias (also called Neyman bias) occurring as a result of questionnaires used in gathering data (Aschengrau & Seage III, 2008; Frankfort-Nachmias & Nachmias, 2008). I used purposive sampling for this study and this may have hindered external validity (Aschengrau & Seage III, 2008). Instrumentation could be a threat to internal validity in this study as there may be inconsistencies in the way study participants completed their questionnaires and there may also be some problems with the way the information was gathered and in the way the questionnaires were graded (Aschengrau & Seage III, 2008; Frankfort-Nachmias & Nachmias, 2008). I endeavored to be consistent in the messages I gave to the study participants about how to complete the questionnaires in order to minimize this threat.

Significance of the Study

The findings of this study will contribute to the literature in the field of mental health of PLWHA, especially in relation to the effect social support and HIV-related stigma had on depression in PLWHA. The findings will also provide information to public health policy makers in Eastern Nigerian to improve the health care given to PLWHA in Eastern Nigeria. This study has the potential of bringing about positive social change by informing the development of public health initiatives aimed at improving the mental health of PLWHA, which will lead to improvement in their QOL and mental health and give them a better sense of belongingness and wellbeing.

Summary

In this chapter, I discussed the public health importance of depression and HIV/AIDS and their relationship and introduced the problem statement and how this study leads to positive social change. I stated my research questions and hypotheses; discussed the theoretical perspective of this study, which is the social cognitive theory; discussed the study methodology, which is a quantitative cross-sectional study design; and discussed my sampling, data collection, and data analysis plans. In the latter parts of this chapter, I discussed the scope and delimitations of the study, the limitations, and the significance of the study.

In Chapter 2, I will discuss the available literature in the field of mental health and social care of PLWHA and the epidemiology of depression and HIV/AIDS across the globe. I will highlight the public health aspects of HIV/AIDS and depression; the effect of social support and HIV-related stigma on depression; and the moderating effect of sociodemographic factors, QOL, and time since diagnosis of HIV on the relationship between social support, HIV-related stigma, and depression in PLWHA across the globe.

Chapter 2: Literature Review

Introduction

HIV/AIDS and depression are two diseases of public importance. HIV/AIDS and depression cause significant health burdens globally and occur across all age groups, genders, socioeconomic, and cultural backgrounds (WHO, 2012a). There have been concerted efforts over the past 3 decades to curb the spread of HIV/AIDS (WHO, 2012a, 2013a). Some progress has been made; but, the public health burden created by these two diseases still remains (WHO, 2012a, 2013a).

Depression is more common in PLWHA than in the general population (Elbirt et al., 2012; Selvaraj et al., 2013). Socioeconomic factors such as poverty, social isolation, poor living environment, and discrimination and physical illnesses such as HIV/AIDS and its complications are known to cause depression and are also known to worsen depression in people already suffering with depression (Grav et al., 2011; Vyavaharkar et al., 2010). PLWHA who suffer from depression more than the general population are known to have fewer social contacts than the general population and are also discriminated against because of their disease status (Charles et al., 2012; Kinyanda et al., 2011). These factors are likely to further increase their rates of depression as poor social support and HIV-related stigma have been shown to cause and worsen depression in PLWHA (Akena et al., 2012; Vyavaharkar et al., 2010).

PLWHA are a vulnerable group of people who suffer from a superimposed depressive illness, which further increases their vulnerability, worsens the prognosis of their illness (AIDS.gov, 2013; WHO, 2013a). HIV/AIDS and depression have been well researched over the last few decades; but, the combined effect of social support and HIV-related stigma on depression in PLWHA has not been well studied (Sherr et al., 2011). Even though some Nigerian researchers have examined the relationship between HIV-related stigma, social support, and depression in PLWHA (Onyebuchi-Iwudibia & Brown 2013; Shittu et al., 2013 & 2014), no one has looked at the combined effect of HIV-related stigma and social support on depression in PLWHA.

Most research in this field has been carried out in Asia, Central Africa, South America, the Indian subcontinent, and the United States (Akena et al., 2012; Charles et al., 2012; Rao et al., 2012; Sumari-de Boer et al., 2012; Teo et al., 2013;.Vyavaharkar et al., 2010; Zimpel, & Fleck, 2013). There is a need to research how HIV-related stigma and social support affect depression in PLWHA in Nigeria because some 3.4 million people were living with HIV/AIDS in Nigeria as at 2012 (WHO, 2013c). The purpose of this study was to address the literature gap in the area of HIV/AIDS and depression in Eastern Nigeria, thereby informing evidence-based public health interventions. This chapter is a review of the literature related to HIV/AIDS and depression and how social support and HIV-related stigma affects depression in PLWHA, literature relating to the moderating effect of sociodemographic factors, QOL, and year of diagnosis of HIV infection on the relationship between social support, HIV-related stigma, and depression in PLWHA.

Literature Search Strategy

The literature search for this study was carried out mainly through the Walden University library. I accessed journal articles from available health-related databases. The databases included EMBASE, CINAHL Plus, Science direct, Health and Medical Complete, MEDLINE, PsychInfo, PubMed, Sociological Abstracts, Google Scholar, Cochrane Database of Systematic Reviews, and Thoreau: Multiple Database Search. The search criteria for selected articles were based on key words and combinations of words that included *HIV*, *AIDS*, *HIV/AIDS*, *depression*, *depression in Nigeria*, *HIV/AIDS in Nigeria*, *social support*, *HIV-related stigma*, *sociodemographic factors*, *quality of life*, *time since diagnosis of HIV*, *people living with HIV/AIDS*, and *Eastern Nigeria*. Hundreds of results were obtained from these search criteria. The articles that were deemed relevant to this dissertation were used in the literature review. Information from recognized health organizations and academic institutions were also used as deemed appropriate in different sections of the chapter. The literature search was limited to 2010 to 2014, but when relevant, earlier years were included in the literature search.

Theoretical Perspective

This study was based on the SCT. Bandura used SCT as a learning theory before evolving into SCT. According to SCT, learning occurs in social contexts with dynamic and reciprocal interaction of persons, their environment, and behaviour (Boston University, 2013). SCT can be used to understand and predict individual and group behavior and in identifying methods through which behavior can be changed or modified (Schiavo, 2007).

HIV/AIDS

HIV belongs to a group of retroviruses known as lentiviruses. It can infect multiple organs in the body including the brain (AIDS.gov, 2009). It infects mainly the

CD4 lymphocytes (T cells), but to a lesser extent monocytes, macrophages, and dendritic cells which are also CD4 cells. HIV directly and indirectly destroys CD4 cells. HIV-infected CD4 cells lose their function in the human immune system and turn into HIV replicating cells after undergoing six steps.

1. Binding and fusion involves HIV binding to specific types of CD4 receptors on the surface of the CD4 cells releasing its genetic materials into the host cells.
2. Reverse transcription involves a special enzyme called reverse transcriptase changing the genetic material of the virus to enable integration into the deoxyribonucleic acid (DNA) of the host.
3. Integration during which the virus's new genetic material enters the nucleus of the cell and uses an enzyme called integrase to integrate itself into the host's genetic material where it could stay inactive for several years.
4. Transcription occurs when the virus uses the host's enzymes to create more of its genetic material when the host's cells become activated.
5. Assembly, which occurs when an enzyme called protease cuts longer HIV proteins into individual proteins, forming a new virus when they come in contact with the virus.
6. Budding involves the virus pushing itself out of the host cell taking with it part of the cell's membrane which it uses to bind to a new CD4 cell and

receptor thus beginning the process again (AIDS.gov, 2009; AIDSinfo, 2005).

HIV infection has three stages: acute infection, clinical latency, and AIDS (AIDS.gov, 2009). The acute infection occurs within 2 to 4 weeks of infection during which large amounts of virus are being produced in the body immune system to bring the viral level back to a stable level called viral set point resulting in increase in CD4 count. During acute retroviral syndrome, infected individuals can experience an acute flu-like illness. They can present with fever, enlarged lymph nodes, sore throat, and rash. It does not appear in everyone and can take up to 3 months to appear in some people (Centers for Disease Control and Prevention [CDC], 2013).

The clinical latency stage is a stage during which HIV produces at a low level but is still active (CDC, 2013). People at this stage may maintain an undetectable and healthy CD4 count without using medications during the initial years of the infection, and this period may last up to 8 years but can be shorter in some people. Viral load usually rises and the CD4 cell count drops towards the middle and end of the latency period (AIDS.gov, 2009). The last stage is the development of full blown AIDS, and this occurs when peoples' CD4 count drops below 200 cells per cubic millimeter (200 cells/mm^3) of blood. At this stage, people are exposed to opportunistic infections, and without treatment, people diagnosed with AIDS will survive for about 3 years (AIDS.gov, 2009).

AIDS was first clinically observed in the United States in 1981 among a cluster of injection drug users and men who have sex with men (MSM; CDC, 2013). A lot of research has been conducted in the field of HIV over the past 3 decades, and the disease is now well understood (United Nations [UN], 2011). There is no cure for HIV/AIDS, but research is on-going in this area (NIAID, 2013). Antiretroviral drugs which can prolong the lives of PLWHA and lower their chance of infecting others are available. These antiretroviral drugs are becoming increasingly available to PLWHA in developing countries (CDC, 2013).

HIV is transmitted through blood, semen, preseminal fluid, rectal fluids, vaginal fluids, and breast milk of infected people (Berges, Akkina, Folkvord, Connick, & Akkina, 2008; CDC, 2013). This occurs when these fluids make contact with the mucous membrane or damaged tissue of uninfected people or when they are injected into the bloodstream of uninfected people. HIV is mainly spread through sexual intercourse (anal and vaginal), sharing injection needles with an HIV-infected person, blood transfusion, from an HIV-infected mother to an unborn child, and through any other means that exposes individuals to the blood and intimate fluids of infected individuals (CDC, 2013).

People Living With HIV/AIDS

HIV remains a global public health problem causing more than 25 million deaths over the past 3 decades (WHO, 2013a). There were approximately 34 million people living with HIV in 2011 (WHO, 2013a). Sub-Saharan Africa has the highest HIV burden with 69% of all people living with HIV being from the region (WHO, 2013a). Living with HIV can be difficult as there is as yet no cure for it (NIAID, 2013). Even though there is no cure for HIV, treatment with antiretroviral drugs are now more successful and more readily available than they used to be and enable PLWHA to lead as normal a live as possible. PLWHA are advised to lead a healthy lifestyle to aid their failing immune system (National Health Service [NHS], 2012).

PLWHA are prone to developing opportunistic infections including bacterial infections such as pneumonia and tuberculosis; fungal infections, such as vaginal thrush and pneumocystis pneumonia; parasitic infections, such as toxoplasmosis; viral infections, such as hepatitis; and cancers, such as Kaposi sarcoma in advanced stages (Chu & Selwyn, 2011; WHO, 2013a). This is more commonly seen in areas were antiretroviral drugs are not readily available and in those people who are not adherent to their antiretroviral medications for various reasons including having a chaotic lifestyle, continued intravenous (IV) drug use, or not taking medications because of underlying mental health problems such as depression and anxiety which can result in poor motivation and suicidal ideas and intent (NHS, 2012; WHO, 2013a). Even with all the improvement in the care of PLWHA, they still face discrimination and social isolation (Charles et al., 2012; Sumari-de Boer et al., 2012; Vyavaharkar et al., 2010, 2011; WHO, 2013a). This is coupled with the opportunistic infections and mental health problems they are prone to (Chu & Selwyn, 2011; WHO, 2013a).

HIV/AIDS and PLWHA in Nigeria

HIV has remained a public health problem in Nigeria despite concerted effort by different public health organizations and the Nigerian government over the last 2 decades. There were about 3.4 million people living with HIV/AIDS in Nigeria by the end of 2012; with prevalence rate of 3.1 in adults (UNAIDS, 2012; WHO, 2013a). Of the adults living with HIV in Nigeria as of 2012, about 1.7 million of them were women.

There were also about 430,000 children aged 0 to 14 years living with HIV, 240,000 deaths due to HIV, and about 2.2 million orphans due to HIV in Nigeria as at 2012 (UNAIDS, 2012, 2014). Nigeria has the second highest annual reports of new HIV infection globally (AVERT.org, 2014) and the third highest global HIV infections burden after India and South Africa (USAID, 2014). HIV prevalence in Nigeria is highest amongst women, youths, people with low level of formal education, and amongst inhabitants of urban areas (NACA, 2012).

Of the six Nigerian geopolitical zones of the North East, North West, North Central, South West, South East, and South South, the North central geopolitical zone, which includes Abuja the Nigerian capital, has the highest prevalence rate at 7.5%, followed by South South and South East geopolitical zones with prevalence rates of 6.5% and 5.1% respectively (NACA, 2012). Of the 36 states in Nigeria and the federal capital territory, Abuja, Benue, and Akwa Ibom states had the highest prevalence rates at 12.7% and 10.9%, while Kebbi and Ekiti sates had the lowest prevalence rates at 1% and 1.4% respectively. Abia state, where this study was conducted, has the eight highest prevalence rate at 7.3% (The federal capital territory); Abuja had the fifth highest prevalence rate at 8.6% and Lagos states (the most populous city in Nigeria and the former capital of Nigeria) had the 15th highest prevalence rate at 5.1% (NACA, 2012).

The three main routes of HIV transmission in Nigeria are heterosexual sex (which accounts for about 80% of HIV infections) blood transfusions (which is the second most common source of HIV infection) and mother-to-child transmission (which is the third most common route of HIV transmission; NACA, 2012). Other routes of transmission include anal sex by MSM, and IV drug use (AVERT.org, 2014; NACA, 2012). The main at risk groups in Nigeria are sex workers, brothel and nonbrothel-based with HIV prevalence rates of 27.4% and 21.7%, MSM with HIV prevalence rates of 17.2%, and IV drug users with HIV prevalence rates of 4.2% (NACA, 2012). Other groups at higher risk of HIV infection in Nigeria include transport workers and members of the armed forces and police (AVERT.org, 2014).

Some factors that have contributed to continued transmission of HIV in Nigeria include poor sexual health and HIV education, low condom use levels, high sexually transmitted diseases levels, and gender inequality among women. People indulging in low risk/unsafe sexual practices have been shown to account for about 42% of new HIV infections in Nigeria (AVERT.org, 2014). The annual number of new infections in the Nigeria has, however, been declining steadily with a 6.1% decrease from 340,015 in 2008 to 319,322 in 2010 and a further 2.7% decrease to 310,620 in 2011 (NACA, 2012). This decrease has been mainly due to on-going public health education in the area of HIV/AIDS by health organizations and the Nigerian government and an increase of antiretroviral therapy to infected individuals (NACA, 2012). The Health Protection Agency (2012) reported that PLWHA in the United Kingdom had the higher rates of difficulties at work, financial difficulties, and social challenges and recommended that the wider social determinants of health such as housing, access to good health care, social support, financial support, community support, and improvement in psychological wellbeing of PLWHA be addressed in order to address the health inequalities that exist amongst this group of people. This has been shown to be the same for Nigeria as reported by NACA (2012).

Depression

Depression is a common mental health disorder that is characterized by low mood, loss of pleasure or interest (anhedonia), feelings of guilt, hopelessness and worthlessness, low self-esteem, disturbed sleeping patterns, poor appetite, low energy levels, and poor concentration (WHO, 2012; Wright, Stern, & Phelan, 2012). Depression can become severe, chronic, or recurrent bringing about impairment in peoples' ability to cope with daily life and work obligations, which can lead to suicide, resulting in the loss of almost 1 million lives every year in more severe cases (WHO, 2012). Depression is the leading cause of disability globally in terms of total years lost due to disability and is a contributor to the global burden of disease (World Federation for Mental Health [WFMH], 2012; WHO, 2012). It is estimated to affect 350 million across the globe, affecting women more than men (WHO, 2012; Wright et al., 2012). According to the CDC (2010), between 2006 and 2008, depression was more common in people with physical illnesses in the United States. The CDC also reported that depression could affect the course of common chronic conditions adversely.

The etiology of depression is multifactorial in nature. Biological, psychological, and social factors play different roles in causing depression (Fu et al., 2001; Wright et al., 2012). The biological causative factors include genetics (runs in families), neurochemistry (imbalance in neurotransmitters such as serotonin, noradrenaline, and dopamine), neuroendocrinology, cerebral pathophysiology, cellular factors, and immunology components (Fu et al., 2001; Wright et al., 2012). Psychological components include psychodynamic, cognitive, and behavioral components (Wright et al., 2012). Social components include predisposing/vulnerability factors such as a lack of a confiding relationship, unemployment, and social isolation and precipitating factors/life events such as bereavement, separation, redundancy, marital discord, physical illnesses, acute stressors, and poor social networks (WHO, 2012; Wright et al., 2012).

Depression leads to poorer outcomes for chronic diseases. Martens, Hoen, Mittelhaeuser, de Jong, and Denollet (2010), following an assessment of 473 patients on demographic and clinical variables within the first week of hospital admission for acute myocardial infection (MI) found out that somatic/affective symptoms of depression (low mood, low energy levels, altered sleeping pattern, poor appetite, poor motivation, and la ack of enjoyment or interest) were associated with MI severity and cardiovascular prognosis. Depression has also been found to be higher in patients with other physical health problems, such as diabetes mellitus and obesity, and can also worsen their prognosis (Needham, Epel, Alder, & Kiefe, 2010; Waitzfelder et al., 2010).

Chronic physical health problems such as stroke, cardiovascular diseases, and HIV/AIDS can cause and exacerbate depression. The pain, functional impairment, and disability associated with these chronic physical health problems play a role in an individual developing depression (NICE, 2009). Depression is about two to three times more common in people with chronic physical health problems, and functional impairment is likely greater when people suffer from both depression and chronic illness than if they had depression or chronic illness alone (Gunn et al., 2012; NICE, 2009).

Having more than one physical health problem also further increases peoples' chances of developing depression and also perpetuates depression in people already suffering with depression leading to poorer outcome for both physical illnesses and the depression (Gunn et al., 2012).

Depression in Nigeria

Depression, just like in other parts of the world, is a serious public health problem in Nigeria with lifetime prevalence of 3.1% in the adult population (Gureje, Uwakwe, Oladeji, Makanjuola, & Esan, 2010). Depression in Nigeria has high comorbidity rate with anxiety disorders, musculoskeletal conditions, chronic pain and ulcer; and brings about increase lifetime odds ratio of suicide attempt (Gureje et al, 2011). Depression is also about five times more common in PLWHA in Nigeria than in the general population (Chikezie, Otakpor, Kuteyi, & James, 2013). Among the Nigerian population; depression was more common in females, unemployed people, and in people who have had HIV for more than 3 years. Having a child and living with others reduced depression rate amongst Nigerians (Chikezie et al, 2013).

According to NICE (2010), people who were depressed were more likely to be separated or divorced, living alone, and socially isolated. The point by NICE (2010) on the social isolation being common in depressed individuals is relevant to this study as one of the aims of the study is to find out the effect of social support on depression in PLWHA. Some socioeconomic factors reported by NICE to be associated with depression include unemployment, low social class, lower predicted intellectual function, lack of formal educational qualifications, living in poor neighborhood, and living in urban environment. This general overview of depression in the Nigeria population is important because I looked at the effect of social support and HIV-related stigma on depression in PLWHA in Easter Nigeria in this study.

Relationship Between HIV/AIDS and Depression

Researchers have associated depression with HIV/AIDS. Different rates of depression among PLWHA have been reported across the globe, ranging from approximately 72% in China (Su et al., 2012) to 22% to 71% in the US (Bhatia, Hartman, Kallen, Graham, & Giordano, 2011; Wagner et al., 2011), 24% to 38% in Botswana (Lawler et al., 2011) to 27% in Cameroon (Gaynes et al., 2012), approximately 15% in Western Europe (Elbirt et al., 2012), and 56.7% in Nigeria (Shittu et al., 2013). Depression has also been reported to be the most common mental health disorder in PLWHA (Kaestner et al., 2012; WHO, 2008). People newly diagnosed with HIV are even at higher risk of developing mental health illnesses including depression and are also more likely not to link in with care. This was reported by Bhatia et al. (2011) following a prospective cohort study of people newly diagnosed with HIV infection in Houston, Texas, USA. Some 67% of their 180 study participants screened positive for depression and results from a multivariate analysis showed depression to be associated with female sex, annual income of less than 25,000 dollars, poor access to medical care at baseline, recent substance misuse, and low self-efficacy. Fifty-six percent of depressed study participants as against 68% of non-depressed study participants linked in to care after diagnosis with HIV infection (Bhatia et al., 2011). The etiology of depression in general is multifactorial in nature (Wright et al., 2012) and is even more multifactorial and complicated in PLWHA considering the fact that they face peculiar difficulties in life which range from difficulties relating directly to their physical health, to psychosocial difficulties including stigma due to their illness often resulting in social isolation, and poor quality of life (Selvaraj et al., 2013).

Some of the problems faced by PLWHA which are thought to contribute to depression include problems associated with disclosure, problems relating to the physical health complications of HIV/AIDS, relationship problems including problems with intimacy, and the problem of taking antiretroviral drugs treatment and their side effects (Sherr, Clucas, Harding, Sibley, & Catalan, 2011). Vyavaharkar et al. (2011) in a South-Eastern US cross-sectional study examined the relationship between social support, HIV disclosure, and depression in 340 rural African American women living with HIV. They found out that availability of social support and HIV disclosure were inversely correlated with depression. This highlights the emotional and psychological stress that people newly diagnosed with HIV go through as disclosing their status as demonstrated by Vyavaharkar et al. (2011) can bring about reduction in depressive symptoms.

Joge, Deo, Choudhari, Malkar, and Ughade (2011) pointed out that social responses of fear, denial, and discrimination were often the initial reactions of people newly diagnosed with HIV infection and their relatives and friends. They carried out a cross-sectional study in which they assessed the rate of disclosure of HIV serostatus, reactions by the patients and their spouses, and discrimination they faced. They found out that the first reaction following diagnosis was fear (74%) followed by depression (48%), and then suicidal thoughts (12%). They also found out that 85% of the 801 people they included in their study disclosed to their spouses and that the spouses' reactions were crime (i.e. that the newly diagnosed relative had committed a crime by contracting HIV), followed by horror, and then anger; and also that friends, work colleagues, neighbors, and relatives discriminated against newly diagnosed people (Joge et al., 2011). Other factors that can trigger mental health problems including depression in people newly diagnosed with HIV infection include worry about how to cope with the infection, peoples' usual coping styles, perceived lack of social support, and worry about how to live a life of on-going antiretroviral treatment with its side effects (Bhatia et al., 2011; Sherr et al., 2011; Vyavaharkar et al., 2011).

Depression has been shown to have a negative effect on physical illnesses in general including HIV/AIDS which on its own can lead to several other physical illnesses especially at the later stages of the illness (Martens et al., 2010; Needham et al., 2010; Sherr et al., 2011; Waitzfelder et al., 2010). People with mental health problems including depression and substance misuse have been shown to have higher rates of HIV infection and people with HIV infection have also been shown to have higher rates of mental health problems including depression (Sherr et al., 2011; WHO, 2008). Several reasons have been suggested for this by different researchers. Nonadherence to treatment including medications has been consistently reported as a major contributory factor to poor health outcomes in PLWHA suffering with depression (Lawler et al., 2011; Sumari-de Boer et al., 2012; Wagner et al., 2011).

Sumari-de Boer et al. (2012) in a Dutch study compared adherence to combined antiretroviral therapy and virology response between immigrant and indigenous HIV-infected patients in the Netherlands; and also checked if any difference was related to difference in psychosocial variables such as HIV-related stigma, quality of life, depression, and personal belief about medications. They detected higher viral loads amongst immigrants and following multivariate analysis found out that higher HIV-related stigma and prior virology failure were associated with non-adherence to combined antiretroviral therapy and depressive symptoms; and that depressive symptoms were also associated with nonadherence to treatment in general (Sumari-de Boer et al., 2012).

Similar findings were reported by Wagner et al. (2011) in which they detected that severe depression was associated with poor adherence to antiretroviral therapy. Even though most researchers have reported positive correlation between depressive symptoms and nonadherence to antiretroviral treatment, some have suggested that antiretroviral medications can cause depression in PLWHA (Bongongo, Tumbo, & Govender, 2013; Kaestenr et al., 2012). Kaestenr et al. suggested the possibility of a combined antiretroviral therapy-induced depression in their case report while Bongongo et al. reported higher rates of depression in HIV patients on combined antiretroviral therapy, 77% in men and 70% in women.

There have also been reports of gender difference in the way PLWHA adhere to treatment with antiretroviral therapy especially in intravenous drug users, with women suffering with depression being less likely to adherer to treatment (Kang, Deren, & Colón, 2011). The researchers discussed in this paragraph highlight the need for emphasis to be laid on making an effort to find out the reasons for deterioration in the health of PLWHA and also to pay close attention to depressive symptoms and its possible effects on adherence to antiretroviral medications. It is equally important to watch out for a possible depressant effect of antiretroviral medications and the effect psychosocial factors such as HIV-related stigma and gender may be having on nonadherence.

There are several other features of depression which can result in poorer health outcome for PLWHA who suffer with depression. Some of these features include poor motivation, poor concentration, cognitive impairment including memory impairment and loss of ability in activities of daily living, death wish which can result in nonadherence to treatment in the hope that their health will deteriorate and subsequently result in their death, and immunosuppression which has been associated with depression (Braganca & Palha, 2011; Elbirt et al., 2012; Gaynes et al., 2012; Sherr et al., 2011; Wright et al., 2012). There is also strong research evidence that depression is associated with poor quality of life in PLWHA (Charles et al., 2012; Olisah et al., 2011; Rao et al., 2012; Selvaraj et al., 2013). Selvaraj et al. examined the association of depression with health-related quality of life among PLWHA in South India. They found out that PLWHA who suffered with depression had poorer health-related quality of life (Selvaraj et al., 2013).

The literature reviewed so far demonstrated the case for healthcare professionals including clinicians to be more vigilant for depression in PLWHA as earlier detection and treatment can improve the general health and QOL of the individuals. Diagnosing depression in PLWHA does not go without its own challenges. There is an overlap between some symptoms of depression and that of HIV/AIDS. Some of the overlapping symptoms include low energy levels, poor motivation, poor concentration, feelings of hopelessness and worthlessness, poor appetite, disturbed sleep/altered sleeping pattern, lack of enjoyment in things, guilty feelings, death wish, and suicidal ideas and intent (Sherr et al., 2011, Wright et al., 2012). It needs thorough assessment and taking into account peoples' presentation over a period of time with the aid of clinical assessment tools by trained personnel to make a correct diagnosis (Jonsson, 2012; Schumacher et al., 2012).

Despite the adverse health implications of depression on PLWHA, depression is still not adequately recognised and treated in general and in PLWHA (Olisah et al., 2011; Vyavaharkar et al., 2011). The WHO (2012) reported that despite the adverse health implications of depressant in general that less than half of people suffering with depression receive treatment. This has been attributed to lack of resources, lack of trained health care providers, social stigma associated with mental disorders, and inaccurate assessment (WHO, 2012). It is clear from literature review so far that depression is strongly associated with HIV/AIDS and that there are many factors that contribute to this association. Some of these factors have been mentioned in this section of the literature review but they will be explored and discussed more robustly in subsequent sections.

Social support and HIV-related stigma have been identified as significant contributory factors in the development and perpetuation of depression in PLWHA (Charles et al., 2012; Rao et al., 2012; Selvaraj et al., 2013; Su et al., 2013). Part of the aim of this study was to identify the effect of social support and HIV-related stigma on depression in PLWHA; I explored these factors more extensively in subsequent sections.

Effect of Social Support on Depression

Social factors have long been known to contribute to depression with social factors being an important component of the biopsychosocial etiological model of depression (Wright et al., 2012). Social support is one of the social factors known to affect depression in a wide variety of people and also predicts negative outcomes for depression (Goodwin et al., 2012; Müller, Peter, Cieza, & Geyh, 2012; Teo, Choi, & Valenstein, 2013; Theeke, Goins, Moore, & Campbell, 2012). Goodwin et al. explored prospective predictors of depression in palliative care and found out that low social support from friends and family was the most significant risk factor for non-remission of depressive illness in palliative care. The findings of Goodwin et al. can inform development of evidence based interventions in PLWHA as they become palliative care patients at the later stages of their illness.

Social support has also been shown to play an important role in the mental health of people with severe physical illnesses as demonstrated by Müller et al. (2012) in a systematic review in which they demonstrated that social support was positively related to physical and mental health; pain, coping, and adjustment; and life satisfaction in people with spinal cord injuries. Müller et al. also found that assertiveness was related to higher rates of depression in rehabilitation settings. This is of relevance to this study because PLWHA at the later stages of their illness could develop any kind of physical illness including cancers and neurological complications which can present with similar symptoms as people with spinal cord injuries, depending on the area of their body/brain affected, and can go into rehabilitation centers as a result (National Institute of

Neurological Disorders and Stroke [NINDS], 2013). Theeke et al. (2012) also demonstrated in an Appalachian US study in which they examined the relationship between loneliness, depression, and social support, and QOL in chronically ill older people that loneliness correlates with depression, lower quality of life, and lower social support.

Relationships between the quality of social support people receive and depression were also examined in some studies. Chao (2011) examined the relationship between social support and depression and identified that greater network size, broader networks, frequent contacts, living with family, receiving emotional, instrumental, and financial support, and satisfaction with support being given were negatively correlated with depressive symptoms. In this study, not just social support mattered, but the quality of the social support and peoples' perception of the social support they were receiving also had effect on depressive symptoms. This is consistent with the findings by Teo et al. (2013) in a cohort study in which they found out that risk of depression was significantly higher in people with baseline social strain, who lacked social support, and with poor overall relationship quality. Some researchers have also tried to find out the types of social support that may affect depression. Rasic et al. (2013) through a longitudinal study demonstrated that religious attendance independently predicted lower depressive symptoms. This finding can inform the type of social support that can be given to PLWHA when developing healthcare interventions.

Social support, QOL, and depression have also been shown to be interrelated and the need for them to be considered together when dealing with people with severe physical illness such as HIV/AIDS have been highlighted in some studies (Rao et al., 2012; Sheer, 2011). Imhonde, Ndom, and Ehon (2013) showed that depression, social support, and self-esteem had significant joint influence on QOL among people with sickle cell disease which is a chronic illness with similar complications as HIV/AIDS (Imhonde et al., 2013).

The studies discussed in this section consistently associated social support with depression (Goodwin et al., 2012; Müller et al., 2012; Teo et al., 2013; Theeke et al., 2012). This is important because I looked at the effect of social support on depression in PLWHA in Eastern Nigeria in this study. It is important to specifically examine the effect of social support on depression in PLWHA in order to link the literature review so far to this study.

Effect of Social Support on Depression in PLWHA

Social support has been shown to have significant impact on depression in PLWHA (Bekele et al., 2013; Eller et al., 2010; Oppong, 2012; Rotheram-Borus et al., 2010) and some researchers have further described some specific clinical features of depression that are affected by social support in PLWHA (Atkins et al., 2010; Wright et al., 2012). Bekele et al. examined the direct and indirect effects of perceived social support on physical and mental Health Related Quality of Life (HRQOL) in a sample of 602 Ontario residents living with HIV/AIDS and found that perceived social support had significant direct and indirect effects on physical and mental health, including depression and concluded that social support had the potential of contributing to better HRQOL by decreasing detrimental effects of depression on HRQOL. PLWHA who suffer with depression have been reported to have self-care behaviors for dealing with depressive symptoms which fall into the following six categories: complementary therapies, talking to others which is a form of social support, distraction techniques, physical activity, medications, and denial/avoidant coping (Eller et al., 2010).

Psychological and social support in the US population were found to be negatively associated with depressive symptoms (-0.42, $p < 0.000$ and -0.29, $p < 0.000$ respectively; Eller et al., 2010). Family and social relationships have also been shown to be associated with alleviation of depressive symptoms in PLWHA in Thailand, with better family functioning specifically having a positive effect on quality of life, medication adherence, and decrease in depressive symptoms; and better social support being specifically associated with better quality of life and decreased depressive symptoms (Rotheram-Borus et al., 2010). Oppong (2012) investigated the association between age, gender, social support, and psychological wellbeing of PLWHA and found out that social support was negatively associated with depression, stress, and anxiety which can be a component of a depressive illness or an illness of its own (Wright et al., 2012).

The effect of social support on depression in PLWHA is not only restricted to adults but also seen in children living with HIV/AIDS (Wang et al., 2012). In a Chinese cross-sectional study, Wang et al. examined the relationships among several risk and protective factors for depressive symptoms in children living with HIV/AIDS and found out that experience of traumatic events and HIV-related stigma directly contributed to depression in their study participants and that trusting relationships along with future orientation and perceived social support mediated the effects of traumatic events and HIV-related stigma on depression. There is a dynamic interplay between social support, depressive symptoms, and HIV-related stigma not only in adults but also in children (Rao et al., 2012; Wang et al., 2012). PLWHA can experience cognitive impairment as part of an HIV/AIDS symptom complex and can also experience this as a result of depression as cognitive impairment in the form of poor concentration or memory difficulties as a feature of depression (Elbirt et al., 2012; Wright et al., 2012).

Difficulties have been encountered in the primary causative factor for cognitive impairment in PLWHA who suffer with depression (Jonsson, 2012; Schumacher et al., 2012). Atkins et al. (2012) used a cross-sectional design to examine the role social support may play in attenuating the effects of neuropsychological status and depression on cognitive impairment in PLWHA in Toronto. They found out that depression was significantly associated with higher levels of cognitive symptoms and that greater social support was significantly associated with lower levels of cognitive symptom burden (Atkins et al., 2012). They also found out that there was significant interaction between social support and depression in their study population and concluded that it was important to screen for and identify PLWHA who may suffer with depression and to intervene accordingly as treating them could improve their neuropsychological wellbeing, including cognitive status (Atkins et al., 2012).

Depression in PLWHA has been shown to affect different aspects of their lives including their sexual life (De Ryck, Van Laeken, Nöstlinger, Platteau, & Colebunders, 2012). De Ryck et al. carried out a retrospective cross-sectional study amongst men living with HIV/AIDS across Europe with the aim of determining risk factors for decreased sexual satisfaction and found out that decrease sexual satisfaction was associated with depression, anxiety, stress, low partner support, and HIV-related stigma. De Ryck et al. highlighted the need for the sexual relationship of PLWHA to be integrated into regular HIV care as addressing some of the risk factors for decreased sexual satisfaction can improve the quality of life of PLWHA (Atkins et al., 2012).

Poor social support has also been shown to be a barrier to access to treatment for HIV/AIDS in PLWHA who suffer with depression (Reif et al., 2013). Nonadherence to treatment as already discussed in previous sections is a known problem in PLWHA who suffer with depression (Kang et al., 2011; Kaestner et al, 2012). Thames et al. (2012) examined the influence of baseline drug use, literacy, neurocognition, depression, treatment-specific social support, and patient satisfaction with health care providers on medication adherence over a period of 6 months. They found out that depressive symptoms and treatment-specific social support predicted adherence to medications for Caucasian whereas patient satisfaction with health care provider was the strongest predictor for medication adherence for African Americans (Thames et al., 2012). They highlighted the need to consider the fact that people of different races could respond differently to care and have reasons for this; and further highlighted the need to tailor healthcare interventions including interventions for depression in PLWHA to the exact needs of the individuals.

It is equally important to consider peoples’ attachment styles when developing interventions for managing depression in PLWHA (Hinnen et al., 2012). Hinnen et al.

investigated the relationship between adult attachment style and depressive symptomatology in PLWHA that attended Slotervaart hospital Netherlands and found out that insecure attachment style was strongly associated with depressive symptoms and that this association was partly mediated by perceived social support. They concluded that insecure attachment style was a vulnerability factor for developing depressive symptoms which would need medical attention when dealing with chronic illnesses such as HIV/AIDS (Hinnen et al., 2012). They further highlighted the interplay between social support, depression, and HIV/AIDS but added that peoples' attachment style could play some role in the interplay.

Authors in this section consistently showed that good social support was inversely associated with depressive symptoms including cognitive function (Atkins et al., 2010; Bekele, 2013; Eller, 2010; Oppong, 2012; Rotheram-Borus et al., 2010). This is important because one of the tests in this research is the relationship between social support and depression in PLWHA in Eastern Nigeria. In the next section, I will review another important relationship: role of HIV-related stigma on PLWHA.

Effect of HIV-Related Stigma on PLWHA

High levels of stigma have been shown to be associated with HIV/AIDS (Liu, Canada, Shi, & Corrigan, 2012; Nattabi, Li, Thompson, Orach, & Earnest, 2011; Palmer et al., 2011; Vlassoff, & Ali, 2011). HIV-related stigma has negative effects on PLWHA including disclosure of HIV status to partners and relatives, delaying access to healthcare, interfering with adherence to antiretroviral therapy, and use of HIV preventive services (Kose, Mandiracioglu, Mermut, Kaptan, & Ozbel, 2012; Nattabi et al., 2011). Nattabi et al. quantified the burden of HIV-related stigma and examined factors associated with HIV-related stigma in a Ugandan study. Nattabi et al. identified that women, people above 30 years of age, and people who had been on antiretroviral therapy for longer periods had higher levels of stigma.

Nattabi et al. also found that verbal abuse and negative self-perception were the more common forms of abuse. Vlassoff and Ali explored the nature of HIV-related stigma among South Asians in Toronto, its consequences for PLWHA, and the role it played in predicting access to HIV services with a qualitative research. They found that HIV-related stigma was higher in their study population than in other Canadian communities and that Asian families often rejected HIV-positive family members. Vlassoff and Ali also found that women living with HIV/AIDS were more disadvantaged and stigmatized because of their HIV status, and that many PLWHA concealed their illnesses and avoided HIV-related services because of HIV-related stigma. Nattabi et al. and Vlassoff and Ali highlighted some of the difficulties faced by PLWHA because of their HIV status and both identified that women were affected more by HIV-related stigma and that there were some cultural differences in the way PLWHA are stigmatized as a result of their illness.

Phillips et al. (2011) reported following their South US qualitative study that African American women who had the highest level of newly diagnosed HIV cases in the US lived in extremely difficult life circumstances which did not only reflect their chronic illness but also life of abuse and poverty. Philip et al. reported that HIV-related stigma along with depression were of major concerns to the African American women they interviewed.

Kose et al. (2012) identified society and work-related social problems and access to health services as the most important problems identified in PLWHA in Izmir Turkey. Their study participants were concerned about HIV-related stigma and were sensitive about disclosure because of this. HIV-related stigma has been shown to affect different aspects of the lives of PLWHA including employment (Liu et al., 2012).

PLWHA can face some barriers when trying to return to work and this has become more noticeable in recent years with increase access to HIV/AIDS treatment including antiretroviral therapy which has made HIV/AIDS more of a chronic and manageable illness (Liu et al., 2012). Liu et al. investigated the factors that influenced employers’ decision to employ PLWHA through a quantitative research in which they interview 156 employers across Chicago, US; and Beijing, and Hong Kong, China. They found that fear of contagion and perceived incompetence were important factors in shortlisting PLWHA (Liu et al., 2012). Their findings highlight how HIV-related employment stigma can hinder the chances of PLWHA securing employment.

HIV-related stigma has also been reported to mediate the relationship between self-efficacy, medication adherence, and quality of life (Li et al., 2011). Li et al. tested the relationship between these variables and found that there was a moderate association between self-efficacy and HIV-related stigma and that high self-efficacy predicted medication adherence and better QOL. They also found that HIV-related stigma mediated the relationship between self-efficacy and quality of life. Li et al. highlighted the important role HIV-related stigma played in the relationship between self-efficacy, medication adherence, and QOL and need for this to be borne in mind when developing healthcare interventions aimed at improving self-efficacy. Li et al. discussed so far have shown the different ways in which HIV-related stigma can affect PLWHA. Understanding the effect of HIV-related stigma on PLWHA is an important part of my research and the findings from this research will hopefully provide some insight into how HIV-related stigma affects PLWHA in Eastern Nigeria.

Effect of HIV-Related Stigma on Depression in PLWHA

HIV-related stigma does not only affect the social life aspects of PLWHA (Liu et al., 2012) but also affects their mental health including depression (Akena et al., 2012; Hatzenbuehler, O'Cleirigh, Mayer, Mimiaga, & Safren, 2011; Vyavaharkar et al., 2010). Hatzenbuehler et al. examined the prospective relationships between experiencing HIV-related stigma and symptoms of anxiety and depression, and risk behavior for sexual transmission of HIV. They found that experiencing HIV-related stigma was prospectively associated with symptoms of depression and generalized anxiety. They also found that perceived HIV-related stigma was prospectively associated with transmission risk behaviors including unprotected sexual intercourse with HIV-negative persons or persons with unknown HIV status. Hatzenbuehler et al. concluded that HIV-related stigma may increase the risk of mental health problems and risk for sexual transmission in PLWHA.

The effect of HIV-related stigma on depression has been demonstrated in different parts of the world including African countries such as Uganda where Akena et al. (2012) showed that major depressive disorder was associated with AIDS-related stigma; Indian Sub-Continent where Charles et al. (2012) reported that PLWHA who had experienced personalized stigma and negative self-image had 3.4 and 2.1 times higher risk of severe depression respectively than PLWHA who did not have the same experience; and in Asia where Rao et al. (2012) found out that HIV-related stigma was positively associated with depressive symptoms and that social support mediated this relationship. Presence of HIV-related stigma and depression can result in a negative body image (Palmer et al., 2011) and can also result in none adherence with medications (Sumari-de Boer et al., 2012).

James, Tharao, and Loutfy (2013) examined the relationship between HIV-related stigma, racial discrimination, and depression. James et al. found that HIV-related stigma was associated with increase depression and that this association was partially mediated through resilient coping. James et al. also found out that HIV-related stigma, gender discrimination, and racial discrimination were significantly correlated with each other and with depression. James et al. highlighted the importance of considering the multiple intersecting forms of stigma when developing healthcare interventions.

In a global cross-sectional survey, Nachega et al. (2012) examined the perspectives of PLWHA on perceived HIV-related stigma and its consequences. They found that 27% of the 2,035 people that participated in their study reported having depressive symptoms and that HIV-related stigma was associated with depression (Nachega et al., 2012).

The authors discussed in this section showed that HIV-related stigma was positively associated with depression (Hatzenbuehler et al., 2011; James et al., 2013;

Nachega et al., 2012). This is of significance because the effect of HIV-related stigma on depression in PLWHA in Eastern Nigeria is another of the tests in my research. In the next section, I will review the effect of sociodemographic factors, Quality of Life (QOL), and year of diagnosis of HIV on depression in PLWHA.

Effect of Sociodemographic Factors, Quality of Life, and Time Since HIV Diagnosis on Depression in PLWHA

Sociodemographic factors, QOL, time since HIV diagnosis, and depression have been shown to be inter-related in PLWHA (Shacham, Nurutdinova, Onen, Stamm, & Overton, 2010; Vyavaharkar, Moneyham, Murdaugh, & Tavakoli, 2012). Shacham et al. looked at the interplay of sociodemographic factors on virology suppression among PLWHA attending an outpatient clinic in the US. and identified that African Americans, people with less than high school degree, and people with depressive symptoms had increased odds of having unsuppressed viremia (i.e. unsuppressed human immunodeficiency virus in blood) as compared to Caucasians, people who attained higher educational levels, and people with mild depressive symptoms respectively. Vyavaharkar et al. (2011) examined physical, psychological, and social factors associated with QOL among a sample of rural Southern US women living with HIV/AIDS and found that age, race, and time of diagnosis of HIV were all significantly associated with QOL. Depression was significantly and negatively associated with QOL (Vyavaharkar et al., 2011).

Researchers have given different views on the effect of sociodemographic factors and QOL on depression in PLWHA with some reporting positive association and others reporting no association (Akena et al., 2012; Clarke, Gibson, Barrow, Abel, & Barton, 2010; Moosa, & Jeenah, 2012; Peltzer, 2012). Akena et al. reported that lack of employment and having low level of education was significantly associated with depression in PLWHA. Peltzer aimed at assessing QOL in PLWHA in three South African hospitals over a 20 month period found that low internalized stigma, being employed, less severe HIV infection, and low depressive symptoms were independent predictors of good QOL. Peltzer advised that interventions that addressed stigmatization and improved economic and employment opportunities were needed in order to maximize QOL for patients on antiretroviral therapy.

Some researchers have reported negative or no association between socioeconomic factors, QOL, and depression in PLWHA (Clarke et al., 2010; Moosa, & Jeenah, 2012). Moosa and Jeenah aimed to determine change in adherence to antiretroviral therapy in PLWHA after receiving treatment with an antidepressant or psychotherapy with a randomized prospective study. They did not identify any significant differences in the sociodemographic characteristics between the control group (PLWHA on antiretroviral therapy that were not depressed) and the patient group (PLWHA on antiretroviral therapy that were depressed). They also did not find any significant association between the increased adherence they identified in the patient group and baseline demographic and clinical characteristics. They concluded that successful treatment of depression in PLWHA on antiretroviral therapy with antidepressant or psychotherapy was associated with improvement in antiretroviral adherence; independent of sociodemographic factors and type of treatment (Moosa, & Jeenah, 2012).

Clarke et al. (2010) aimed to determine the prevalence of depression among PLWHA attending HIV/AIDS clinic in Kingston, Jamaica and explored the role of any patient-specific clinical and social issues as intermediary factors in the relationship between HIV/AIDS and depression with a cross-sectional study. They found that 43% of their study participants were depressed and that there were no significant differences in depression rates across the different sociodemographic or clinical factors they explored (Clarke et al., 2010).

Some researchers have also shown that QOL has significant effect on depression in PLWHA; Briongos Figuero, Bachiller Luque, Palacios Martín, González Sagrado, and Eiros Bouza. (2011) in a Spanish cross-section study, Reis et al. (2011) in Brazilian cross-sectional study, and Charles et al. (2012) in an Indian community based cross-sectional study. The authors in these studies consistently identified that presence of depressive symptoms was negatively associated with QOL. The authors also pointed out in their conclusions that more effort should be made by healthcare professionals to identify and treat depression in PLWHA as this could have important positive effect on the QOL of PLWHA (Briongos Figuero et al., 2011; Charles et al., 2012; Reis et al., 2011).

The authors discussed so far suggested that there is inconclusive evidence as to whether sociodemographic factors and QOL have any significant effect on depression in PLWHA or not. I did not identify any studies carried out in Eastern Nigeria that examined the effects of sociodemographic factors and QOL on depression in PLWHA. These findings are important in relation to this study as one of the tests in this research is to determine whether sociodemographic factors and QOL moderated the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria. The authors discussed in this section and the unavailability of Eastern Nigerian studies looking at the effects of sociodemographic factors and QOL on depression in PLWHA suggest that there is a literature gap which I am hoping to fill with the findings of this research.

I did not find many studies in which the researchers specifically investigated the effect of time since HIV diagnosis on depression in PLWHA. Several authors looked at the effect of time since HIV diagnosis on several other variables such as change of antiretroviral therapy, HIV-related fatigue, and QOL (Barroso et al., 2010; Vyavaharkar et al., 2012; Zúñiga, Muñoz, Kozo, Blanco, & Scolari, 2012). Zúñiga et al. reported that less or equal to 6 years of HIV diagnosis was among the factors that were associated with patient-initiated change of antiretroviral drugs which they reported could result in sub-optimal adherence among US Latino population. Barroso et al. identified having fewer years since HIV diagnosis along with psychological distress such as Post Traumatic Stress Disorder (PTSD), depression, and anxiety as a factor that put PLWHA at risk for greater fatigue intensity and fatigue-related impairment of functioning. Vyavaharkar et al. identified time of diagnosis of HIV as one of factors that were significantly associated with QOL.

I identified two studies in which the researchers looked at the effect of time since HIV diagnosis on depression in PLWHA (Mello, Segurado, Malbergier, 2010; Ramirez-Avila et al., 2012). Mello et al. measured the prevalence of major depression in a sample of 120 PLWHA on treatment in a treatment center and investigated factors that were potentially associated with depression. They found that longer time of diagnosis was positively associated with depressive symptoms and concluded that depression was highly prevalent in PLWHA but that it was still being underdiagnosed (Mello et al., 2010).

Ramirez-Avila et al. (2012) evaluated the prevalence and correlates of depressive symptoms before diagnosis of HIV and determined the effect these symptoms had on seeking care for HIV in a clinic in South Africa through a cross-sectional study. They identified that depressive symptoms were common among newly diagnosed HIV study participants and that this had a significant effect on CD4 uptake. They advised that screening for depression at the time of HIV diagnosis was important for improving linkage to mental health and HIV services in South Africa.

During my literature search, I noted that there was a paucity of research on the effect of time since HIV diagnosis on depression in PLWHA. This is another focus of my research and I am hoping that the findings of this research will add to body of evidence on factors affecting depression in PLWHA; in particular, the role time since HIV diagnosis.

Combined Effect of Social Support and HIV-Related Stigma on Depression in PLWHA

Social support and HIV-related stigma have been shown to affect depression in PLWHA as already discussed in the sections on the effect of social support on depression in PLWHA (Bekele, 2013; Eller, 2010; Oppong, 2012; Rotheram-Borus et al., 2010) and effect of HIV-related stigma on depression in PLWHA (Akena et al., 2012; Hatzenbuehler et al., 2011; Vyavaharkar et al., 2010). The authors discussed in the individual sections have examined the individual effects of social support and HIV-related stigma on depression in PLWHA. I did not identify any researchers that examined the combined effect of social support and HIV-related stigma on depression in PLWHA. This demonstrates a literature gap which I am hoping to fill with the findings from this study as I have studied the combined effect of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria.

Summary

After a detailed literature review, there is evidence that HIV remains a serious public health problem (WHO, 2012 & 2013a). It is important to continue studying the health of PLWHA. Depression has also been shown through the literature review carried out to be more common in PLWHA than in the general population (Elbirt et al., 2012; Selvaraj, Ross, Unnikrishnan, & Hegde, 2013). HIV remains a major public health problem in Nigeria with 3.4 million people living with HIV/AIDS in Nigeria by the end of 2012 (UNAIDS, 2012; WHO, 2013a).

Social support has been shown to affect depression in general (Goodwin et al., 2012; Müller et al., 2012; Teo et al., 2013; Theeke et al., 2012) and also PLWHA as shown in the studies by Bekele et al. (2013), Eller et al. (2010), Oppong (2012), and Rotheram-Borus et al. (2010). High level of stigma has also been shown to be associated with HIV/AIDS (Liu et al., 2012; Nattabi et al., 2011; Palmer et al., 2011; Vlassoff, &

Ali, 2011) and HIV-related stigma has been shown to affect depression in PLWHA (Akena et al., 2012; Hatzenbuehler et al., 2011; Vyavaharkar et al., 2010).

In my literature review, I could not identify any studies in which the authors examined the effect of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria. This finding demonstrates that there is a literature gap in the area of mental health of PLWHA in Eastern Nigeria and I hope that the findings from my research will help in filling this literature gap.

Sociodemographic factors, QOL, time since HIV diagnosis, and depression have been shown to be inter-related in PLWHA (Shacham et al., 2010; Vyavaharkar et al., 2012); but, researchers have given different views on the effect of sociodemographic factors and QOL on depression in PLWHA; with some reporting positive association and others reporting no association (Akena et al., 2012; Clarke, Gibson, Barrow, Abel, & Barton, 2010; Moosa, & Jeenah, 2012; Peltzer, 2012). This suggests that there is inconclusive evidence as to whether sociodemographic factors and QOL have any significant effect on depression in PLWHA or not. I also could not identify any studies carried out in Eastern Nigeria in which the effects of sociodemographic factors and QOL on depression in PLWHA were examined. I hope to fill these literature gaps with the findings of this research.

I also found only two studies in which the authors specifically investigated the effect of time since HIV diagnosis on depression in PLWHA (Mello et al., 2010; Ramirez-Avila et al., 2012) and none of these studies were Eastern Nigerian studies. The paucity of research on the effect of time since HIV diagnosis on depression in PLWHA demonstrates a literature gap which I am hoping to fill with the findings of this research. Even though the individual effects of social support and HIV-related stigma on depression in PLWHA have been extensively studied, I did not identify any studies in which the authors examined the combined effect of the two variables on depression in PLWHA. I also hope to fill this literature gap with findings of my research. The findings from this literature review have demonstrated that depression remains a serious public health problem in PLWHA and that there is paucity of research in Eastern Nigeria in this area. I hope to contribute to the body of evidence in the area of mental health of PLWHA in Eastern Nigeria and also fill some of the literature gaps identified as already outlined above with the findings of this research.

Chapter 3: Research Method

Introduction

The purpose of this study was to identify the effect of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria. This chapter is a description of the methodology of my study. The first section is a description of the research design and rationale. In the second section, I detail the methodology of the study which includes a description of the study population, sampling, recruitment procedure, instrumentation, and data analysis. The last section is a detail of ethical consideration and considerations to threats to validity.

Research Design and Rationale

A nonexperimental quantitative design was used for this study; the nonexperimental design I chose was the cross-sectional study design. Cross-sectional designs are used to gather information on populations at a given point in time. It is classed as a survey design (Aschengrau & Seage III, 2008). It is a commonly employed research design in the field of social sciences (Frankfort-Nachmias & Nachmias, 2008). Most of the researchers I reviewed in my literature review in Chapter 2 used cross-sectional study designs (Akena et al., 2012; Atkins et al., 2010; Charles et al., 2012; Nachega et al., 2012; Oppong, 2012; Shacham et al., 2010; Vyavaharkar et al., 2011; Zimpel & Fleck, 2013). In cross-sectional studies, individuals are asked questions on different issues and the aim is usually to describe the pattern of relationships that exist between variables (Frankfort-Nachmias & Nachmias, 2008). Cross-sectional studies can be used to identify health problems and highlight an existing association but cannot identify cause and effect relationships. They can also generate data from which inferences on health issues can be made and hypotheses generated (Aschengrau & Seage III, 2008).

Some of the strengths of cross-sectional design include (a) giving researchers the chance to carry out research in real-life settings with probability samples and thereby increasing external validity, (b) individual cases are not required to be assigned randomly to groups, (c) useful when assigning individuals to control and experimental groups may be unethical or impractical, (d) easy and quick to conduct, and (e) being relatively cheap to conduct (Aschengrau & Seage III, 2008; Frankfort-Nachmias & Nachmias, 2008). Some of the limitations of cross-sectional studies are (a) a lack of control over other factors that may explain the findings of studies, (b) direction of causation having to be logically or theoretically inferred because researchers cannot manipulate the independent variables, (c) inability to establish causality, and (d) possibility of prevalence incidence bias also called Neyman bias occurring as a result of questionnaires used in gathering data (Aschengrau & Seage III, 2008; Frankfort-Nachmias & Nachmias, 2008).

I chose a cross-sectional study design for my study because I gathered information from a group of people in Eastern Nigeria on just one occasion and because I only intended to identify any individual or combined effects of social support and HIV-related stigma on depression in PLWHA in Eastern Nigeria. I also examined the relationships between sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, annual income, educational status, and marital status), QOL, and time since HIV diagnosis to identify whether they moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria. Because I neither intended to carry out any experiments nor establish causality in this study, I chose to use a cross-sectional study design. Other reasons for my choosing a cross-sectional design included time constraints and financial constraints.

Study Variables

Variables are measurable or observable characteristics/attributes of individuals or organizations that vary among the people/organization in question (Creswell, 2009). Variables can be independent, dependent, intervening/mediating, or moderating (Creswell, 2009). Independent variables cause, influence, or affect outcomes and can also be referred to as treatment, manipulative, antecedent, or predictor variables. Dependent variables depend on the independent variables and are also referred to as criterion, outcome, and effect variables (Creswell, 2009). Intervening/mediating variables mediate the effects of independent variables on dependent variables, and moderating variables are variables produced by researchers through the multiplication of two existing variables (Creswell, 2009). It is important to have clearly defined variables in quantitative research methods.

In this study, the independent variables were social support, which was measured by the score on the Duke-UNC functional social support questionnaire and HIV-related stigma, which was measured by the score on Berger HIV stigma scale. The dependent variable was depression, which was measured by the score on Beck depression inventory. The moderating variables were sociodemographic factors of age, gender, sexual orientation, religion, occupation, educational status, and marital status; QOL was measured by the score on the WHO QOL-BREF scale and time since HIV diagnosis.

Methodology

Population

My study population was PLWHA attending the antiretroviral clinic at FMCU. Umuahia is the capital city of Abia state, which is a state in the Eastern part of Nigeria in West Africa. The clinic had about 1,287 HIV patients actively attending their clinic (FMCU, 2014). I had preliminary discussions about my study with one of the public health consultants based at Umuahia, Nigeria who advised me that I could recruit my study participants from the unit and gave advice on the processes involved in obtaining ethical approval for the study.

Sampling and Sampling Procedure

I used purposive sampling method for my research. In purposive sampling, researchers use their subjective judgement to select sampling units that appear to be representative of the population (Frankfort-Nachmias & Nachmias, 2008). I used purposive sampling method because my study population was not large and identifying cases can be difficult. I also only sampled people living with HIV/AIDS; the availability of the sample pool can be limited by location in such study populations as was the case in my study. The advantage of this sampling method is that it is convenient and can be used when people with the characteristics researchers are interested in are relatively small like in the case of PLWHA. The disadvantage is that it can reduce the reliability of the study, and the study can be difficult to repeat by other researchers (Frankfort-Nachmias & Nachmias, 2008).

My sampling frame for this study was PLWHA from the age of 18 years and above who were actively attending the antiretroviral clinic at FMCU, Nigeria and who were physically well enough to participate in a study and who were also able to complete questionnaires in English language. I administered the BDI-II, Duke-UNC functional social support questionnaire, Berger HIV stigma scale, WHO QOL-BREF scale for measuring QOL, and a short questionnaire for collecting demographic information to the people within my sample frame who met the inclusion criteria.

I carried out sample size calculation using G*Power 3, which is a free online flexible statistical power analysis program (Faul, Erdfelder, Lang, & Buchner, 2007). My sample size calculation gave a sample size of 89. In carrying out the sample size calculation, I used the A priori power analyses, used *t* test, and used the linear multiple regression, random model, single regression coefficient. I also put in the following parameters before calculating the sample size: two tail *t* test, effect size of 0.15, alpha level of 0.05, and power level of 0.95. The G*Power package I used suggested an effect size of 0.15 as the most appropriate effect size when using multiple regression with two predictor variables, hence my using 0.15 as my effect size. I used 0.95 as my power level in order to have more chances of rejecting the null hypothesis when the alternate hypothesis is true and to avoid a Type II error (Aschengrau & Seage III, 2008; Frankfort-Nachmias & Nachmias, 2008). I also chose an alpha level of 0.05 in order to increase the chances of not falsely rejecting the null hypothesis, thereby avoiding a Type I error

(Aschengrau & Seage III, 2008; Frankfort-Nachmias & Nachmias, 2008). I had a target of recruiting about 100 participants for this study.

Procedure for Recruitment, Participation, and Data Collection

I attended the antiretroviral clinic at FMCU, Nigeria during their HIV clinics to hand the five questionnaires, that is, Beck Depression Inventory (BDI-II), Duke-UNC functional social support questionnaire, Berger HIV stigma scale, WHO QOL-BREF scale for measuring QOL, and questionnaire for collecting demographic data to people who are well enough to participate in the study as they attend their clinic appointments. Demographic information about my study participants was collected through the questionnaire on demographic information. The demographic information I intended to collect was age, gender, sexual orientation, religion, occupation, annual income, educational status, and marital status. I could not collect information about annual income as study participants struggled with giving this information as most were self-employed traders or farmers and had no idea of their annual income.

The civil servants amongst them also could not clearly state their annual income. I was however able to collect the other demographic information. A staff member at the clinic introduced me to the clinic attenders every morning after which I shared study flyers to them before giving them a general overview about the study. I then asked people interested in participating in the study to come up to the space provided for me at the center for more information about the study and administration of the questionnaires if still willing to participate. I explained the study further to those who called in to see me and gave them a more detailed study information sheet. I administered the questionnaires to 98 patients over a period of 2 weeks, between 1st December 2014 and 12th December 2014. I supported the study participants with completing the questionnaires in line with their preference. Staff members did not participate in recruiting study participants or administering the questionnaires.

I collected data for this study through questionnaires contained in the study pack; Beck Depression Inventory, Duke-UNC functional social support questionnaire for measuring social support, Berger HIV stigma scale for measuring HIV-related stigma, WHO QOL-BREF scale for measuring QOL, and questionnaire for collecting demographic data and information on time since HIV diagnosis. I advised study participants that copies of the findings of the study will be available at the clinic for collection if they wished to have copies of the findings. I did not collect any patient identifiable information.

Ethics

I paid special attention to maintaining ethical standards as stipulated by Walden University and FMCU. I obtained ethical approval from the Research Ethical Committee of FMCU (Approval No: FMC/QEH/G.596/Vol.10/116) and also obtained Institutional Review Board (IRB) approval from Walden University (Approval No: 10-03-14-0275698) before proceeding to data collection. Researchers are thought to be ethically grounded when (a) research is valid, (b) researcher is competent, (c) research will be of benefit to the study population, (d) study participants have a choice to participate or not participate in the study, and (e) informed consent is obtained (Rudestam & Newton, 2007). I worked towards meeting these standards by demonstrating that this research was valid, that I was a competent researcher, and by demonstrating that this study will be of benefit to my study population. I obtained informed consent from my study participants. The importance of obtaining informed consent from study participants cannot be overemphasized. Rudestam and Newton outlined 11 points to be borne in mind when obtaining informed consent: (a) telling the participant who the researcher is, (b) why they are being asked to participate in the study, (c) their time commitment to the study, (d) benefits of the study to them, (e) any risks associated with participating in the study and how the risks will be managed if any, (f) explaining the study in lay terms, (g) emphasizing the point that participation is voluntary and that they could withdraw their consent at any time during the study, (h) providing study participants with copy of their informed consent, (i) advising on any payments/compensations, (j) explaining limits of confidentiality, and (k) informing the participants about debriefing (Rudestam & Newton, 2007).

I provided potential study participants with study information sheet. I obtained informed consent, ensuring that I covered all the 11 points outlined above. In the study information sheet to study participants inviting them to participate in the study, I explained the study in lay terms to ensure that they understood the study well. I advised them that if they did not wish to participate in the study; that they should simply precede to seeing the clinician they came to see as usual.

Instruments and Operationalization of Construct

The five instruments I used to collect data for this study as already outlined above were Beck Depression Inventory (BDI-II), Duke-UNC functional social support questionnaire, Berger HIV stigma scale, WHO QOL-BREF scale for measuring QOL, and questionnaire for collecting demographic data and information on time since HIV diagnosis.

Beck Depression Inventory

The BDI was created by Beck and first published in 1961 (Wang & Gorenstein, 2013). It was revised in 1978 as the BDI-1A, and later in 1996 as BDI-II (Wang & Gorenstein, 2013). The BDI-II was used for this study. Health care professionals and researchers widely use the BDI as an assessment tool for measuring characteristic attitudes and symptoms of depression (Wright, Stern, & Phelan, 2012). BDI-II has been used in research in the area of HIV (Lipps et al., 2010).

Lipps et al. (2010) carried out a research in which they explored the internal validity consistency, reliability, and the concurrent and discriminatory validity of the BDI-II using HIV-positive patients in Jamaica. They administered BDI-II along with the Center for Epidemiology Studies Depression Scale (CES-D) and the Social Provisions Scale to 191 HIV patients attending three different clinics in Jamaica. Lipps et al. found that BDI-II had high level of reliability at 0.089, good concurrent validity as shown by correlation of 0.74 with score on the CES-D, and an acceptable discriminatory validity as shown by a moderate correlation with the Social Provisions Scale of -0.42 (Lipps et al., 2010). They concluded that the BDI-II was a sufficiently reliable and valid measure for assessing depression in HIV-positive patients.

Wang and Gorenstein (2013) also carried out a systematic review of the utility of the BDI-II for detecting depression in medical settings. Some of the medical settings included primary care (four studies), cardiology clinics (12 studies), neurology clinics (14 studies), obstetrics units (eight studies), brain injury clinics (six studies), nephrology (five studies), chronic pain clinics (four studies), chronic fatigue clinics (four studies), oncology clinics (three studies), and infectious diseases clinics (three studies). Wang and Gorenstein found that the BDI-II showed high reliability and good correlation with measures of depression and anxiety. Wang and Gorenstein concluded that the cut-off points for depression should be adjusted because they found that the threshold for detecting depression varied across different patients. They concluded that the BDI-II could easily be adapted in most clinical conditions for the detection of major depression and recommendation of appropriate intervention (Wang & Gorenstein, 2013). Lipps et al (2010) and Wang and Gorenstein showed that the BDI-II has high reliability and validity and can be used as an assessment tool for this study. Pearson Education Limited has the copyright for the BDI-II. I registered with and purchased 150 copies of the BDI-II and a BDI-II manual from Pearson Education Limited.

The Duke-UNC Functional Social Support Questionnaire

The Duke-UNC Functional Social Support Questionnaire was developed by Broadhead, Gehlbach, De Gruy, and Kaplan (1988) with the aim of measuring perceived quality of social support in family medicine settings. Broadhead et al. started with a 14-item questionnaire and narrowed down to an eight-item questionnaire. The DUKE-UNC Functional Social Support Questionnaire has been used widely in social science research to measure levels of social support in general medical settings including research involving PLWHA since its development in 1988 (Liu et al., 2013; Mas-Expósito, Amador-Campos, Gómez-Benito, & Lalucat-Jo, 2013).

Mas-Expósito et al. (2013) carried out research with the aim of validating the modified DUKE-UNC Functional Social Support Questionnaire in patients with schizophrenia. They administered the questionnaire to 241 patients with schizophrenia at the beginning of their study and after 12 months. Using factor analysis, they found two factors that explained 54.15% of the variance and that internal consistency was good for the total DUKE-UNC Functional Social Support Questionnaire (0.87 at baseline and 0.88 at 1 year follow-up). Mas-Expósito et al. also found that correlations between DUKE-UNC Functional Social Support Questionnaire scores and those of global functioning, psychiatric symptoms, disability, and QOL ranged between small and large. They concluded that the DUKE-UNC Functional Social Support Questionnaire was reliable and valid and suggested that the instrument was appropriate for the assessment of perceived social support in patients with mental health problems including patients with schizophrenia (Mas-Expósito et al., 2013).

Liu et al. (2013) used the DUKE-UNC Functional Social Support Questionnaire when they explored the associations of functional social support and psychological capital with depressive and anxiety symptoms among PLWHA employed full-time. With the data they gathered using the DUKE-UNC Functional Social Support Questionnaire, they were able to conclude that functional social support and psychological capital could help reduce depressive and anxiety symptoms among PLWHA employed full-time (Liu et al., 2013).

The DUKE-UNC Functional Social Support Questionnaire is appropriate for this study as it has been used in researches involving mental health patients and PLWHA. The American Society on Aging and American Society of Consultant Pharmacists Foundation has the copyright for the DUKE-UNC Functional Social Support Questionnaire. I obtained written permission from the American Society on Aging to use the DUKE-UNC Functional Social Support Questionnaire.

The Berger HIV-Stigma Scale

The Berger HIV-stigma scale was developed by Berger, Ferrans, and Lashley in 2001 (Emlet, 2007). It is a questionnaire that consists of 40 questions that use a 4-point Likert-type scale; ranging from *strongly agree* to *strongly disagree* (Berger et al., 2001). It captures four stigma domains; personalized stigma, disclosure concerns, negative self-image, and public attitudes (Berger et al., 2001; Emlet, 2007). Each item on the questionnaire can be scored from one to four with total scores ranging from a minimum of 40 to a maximum of 160 (Berger et al., 2001; Emlet, 2007). The Berger HIV-stigma scale has been used in HIV research in the past (Charles et al., 2012; Onyebuchi-Iwudibia & Brown, 2013). Charles et al. used the Berger HIV-stigma scale to assess degree of HIV-related stigma felt by their study participants. Onyebuchi-Iwudibia and Brown also used the Berger HIV scale to assess the degree of HIV-related stigma felt by their study participant in an Eastern Nigerian study in which they examined the prevalence of depression among HIV-positive patients in Eastern Nigeria and its relationship with HIV-related stigma.

The Berger HIV-stigma scale is appropriate for this study as it has been used in similar studies in the past. In the paper by Berger et al. (2001), the Berger HIV-stigma scale was distributed to 318 HIV affected adults aged 19-82 years involved with 60 organizations across eight states in the US. The questionnaire, apart from containing items for HIV-stigma scale; contained measures of other constructs related to stigma. This, according to Berger et al., made it possible to evaluate construct validity for the Berger HIV-stigma scale. They measured self-esteem with the Rosenberg Self-Esteem Scale, depression with the Center for Epidemiology Studies-Depression (CES-D) scale, and social support and social conflict with the Multicenter AIDS Cohort Coping and Change Study social conflict measures. Berger et al. found that the Berger HIV-stigma scale was reliable and valid when used in large, diverse samples.

Emlet (2007) carried out a study in which he administered the 40-item Berger HIV-stigma scale to 25 older adults aged 50 to 72 years with the aim of assessing how they felt the questionnaire captured their experiences of stigma. He found that the Berger HIV-stigma scale showed excellent internal consistency ranging from 0.92 to 0.96 (Emlet, 2007). He also found that the Berger HIV-stigma scale had good convergence validity with the CES-D depression scale; and concluded that the scale was reliable and valid for measuring HIV-stigma (Emlet, 2007). Charles et al. (2012) pilot tested The Berger HIV-stigma scale for reliability in the Indian cultural setting and showed the scale to have internal reliability of 0.79. Barbara Berger has the copyright for the Berger HIV-stigma scale and I obtained written permission from her to use the Berger HIV-stigma scale.

The WHO Quality of Life-BREF (WHOQOL-BREF)

The WHO Quality of Life-BREF (WHOQOL-BREF) is a shorter version of the WHOQOL-HIV Full Instrument (WHO, 2013b). It was developed by the WHO in 1991 and contains 26 items which measure physical health, psychological health, social relationships, and environment domains. WHOQOL-BREF is deemed by the WHO to be more convenient for use in large research studies or clinical trials than the WHOQOL-HIV Full Instrument (WHO, 2013b). The WHOQOL-BREF will be appropriate for my study as it measures QOL which is one of the mediating variables in my study. Permission is required to use the WHOQOL-BREF and I have obtained permission from the WHO to us the US version of the WHOQOL-BREF.

Some researchers in different parts of the world have examined the validity and reliability of the WHOQOL-BREF (Skevington & McCrate, 2011; Trompenaars, Masthoff, Van Heck, Hodiamont, & De Vries, 2005). Skevington and McCrate examined the WHOQOL-BREF. They administered the WHOQOL-BREF to 4628 well and sick people recruited from 38 sites across the UK simultaneously with the Short Form-36 (SF-36) health status scales with a view to testing how reliable the instrument was. They found that WHOQOL-BREF had an internal consistency of 0.92 and had good test-retest reliability (Skevington & McCrate, 2011). They also reported that the discriminant validity of the WHOQOL-BREF was good and also showed good concurrent validity. Skevington and McCrate concluded that the WHOQOL-BREF was a high quality patient-centered generic tool that was suitable for individuals in clinics, research, and audits.

Trompenaars et al. (2005) examined the psychometric properties of the WHOQOL-BREF among 533 Dutch adult psychiatric outpatients. Their study participants also completed questionnaires measuring psychopathological symptoms and perceived social support. They reported that the WHOQOL-BREF had good construct validity and had internal consistency ranging from 0.66 to 0.80. Trompenaars et al. concluded that the WHOQOL-BREF had good content validity, construct validity, and reliability among adult Dutch psychiatric outpatients; and that it was an adequate measure for assessing QOL at the domain level in the same population.

Charles et al. (2012) used the WHOQOL-BREF in their cross-sectional study in India to measure the QOL of their study participants. The internal consistency of the WHOQOL-BREF in their study was 0.81 (Charles et al., 2012). The WHO has copyright for the WHOQOL-BREF and I obtained permission from the WHO to the use the WHOQOL-BREF.

Sociodemographic Questionnaire

I developed a questionnaire for collecting demographic data and time since HIV diagnosis. The demographic information I collected were age, gender, sexual orientation, religion, occupation, educational status, and marital status. This was a simple questionnaire. The questionnaire had no scales and the questionnaire did not require testing against any standard questionnaires. The questionnaire was used for the sole purpose of collecting factual information.

Operationalization of Variables

The BDI-II is a 21-item questionnaire. Each item is rated on a 4-point scale from zero to three and the total scores can range from 0 to 63. The scores are interpreted as follows: 0-13 = minimal depression, 14-19 = mild depression, 20-28 = moderate depression, and 29-63: severe depression (Wang & Gorenstein, 2013). For this study, depression was classed as any score on the BDI-II from 14 and above and this will be graded as mild, moderate, and severe as outlined above.

The Duke-UNC Functional Social Support Questionnaire (FSSQ) is an eight-item instrument used in measuring the strength of a person's social support network. Responses to each of the questions are scored on a scale of one to five; with as much as I would like receiving a score of five and much less than I would like receiving a score of one. The scores from the eight questions are summed, giving a maximum score of 40, and an average score is arrived at by dividing the sum by eight, with higher average scores indicating greater social support and vice versa (Broadhead et al., 1988).

The Berger HIV-stigma scale consists of 40 questions that utilize a four-point Likert-type scale; ranging from *strongly agree* to *strongly disagree*, and capturing four stigma domains: personalized stigma, disclosure concerns, negative self-image, and public attitudes, with each item on the questionnaire having the scope of being scored between 40 and 160 (Berger et al., 2001; Emlet, 2007).

The WHOQOL-BREF is a 26 items questionnaire covering four domains: physical health (seven items), psychological health (six items), social relationships (three items), and environment domains (eight domains), and also contains QOL and general health items, with each item on the WHOQOL-BREF being scored from 1 to 5 on an ordinal scale (WHO, 2013b). The raw scores which can ranges for each domain are as follows: physical health 0-28, psychological health 0-24, social relationships 0-12, and environment 0-32 are finally transformed linearly to a 0-100 scale (Skevington & McCrate, 2011; WHO, 2013b). A total score for each domain and an overall QOL score will be calculated. Higher score will indicate higher quality of life.

Data Analysis Plan

Collected data were transferred to SPSS with which data analysis was carried out. Descriptive statistics was generated for the collected data using SPSS. Tables were produced with SPSS. Multiple linear regression analysis was used to examine the relationship between social support, HIV-related stigma, and depression in the study participants and multiple logistic regression analysis was used to examine the moderating effect of sociodemographic factors, QOL, and year since diagnosis of HIV on this relationship.

Data Management

I paid close attention to making sure that the collected data were accurate. I did not use secondary data; the issue of ensuring that any databases used were accurate did not arise. I collected primary data. I ensured that I gave clear and simple instructions to the study participants on how to complete the questionnaires and made it clear to them that they could ask for clarification on how to accurately complete the questionnaires if they were not clear about any aspects of the questionnaires. I transferred the data gathered through the questionnaires to SPSS personally.

I cross checked the information transferred from the questionnaires to SPSS several times and also asked two other people (one of the secretaries at the antiretroviral clinic at FMCU, and my secretary at my clinic) to cross check the data I transferred unto SPSS against information on the questionnaires. My concentrating while transferring the data from the questionnaires to SPSS and cross checking that I transferred accurate information several times, and asking two other people to cross check that the data transferred from the questionnaires to SPSS were correct were the data cleansing and screening procedures I applied in this study.

Research Questions

1. What is the individual and combined effect of social support (as measured by score on Duke-UNC functional social support questionnaire) and HIV-related stigma (as measured by score on Berger HIV stigma scale) on depression (as measured by score on Beck depression inventory-II) in PLWHA in Eastern Nigeria?

$H1_0$: There is no relationship between the individual and combined effect of social support and HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

$H1_a$: There is a relationship between the individual and combined effect of social support and HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

2. Do sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL (as measured by score on WHO QOL-BREF scale), and time since diagnosis

of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria?

H2_0: Sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL, and time since diagnosis of HIV does not moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria?

H2_a: Sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL, and time since diagnosis of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

I used regression analyses to test my research questions. I ran four regression models altogether. The first two were multiple regression analyses which were used to test research question one. The third and fourth were multiple logistic regression analyses which were used to answer Research Question 2.

Threat to Validity

The main threat to external validity of this study was my sampling frame and method. I used a purposive sampling method which may have hindered the generalizability of this study. I followed similar steps taken by other researchers who have conducted similar studies (Charles et al., 2012) to improve the external validity of this study. The main threat to the internal validity of this study was instrumentation. There may have been inconsistencies in the way study participants completed their questionnaires. I was consistent in the messages I gave study participants about how to complete the questionnaires. I also used exactly the same questionnaires for all study participants.

I used the grading/scoring methods outlined by the developers of the questionnaires and was consistent in my grading/scoring. The other threat to internal validity that may affect this study is my analysis plan. There may be problems with running multiple statistical tests but the analysis models I used which were multiple regression and logistic regression analyses have helped keep any problems associated with multiple statistical testing to a minimum. I did not identify any threats to construct validity.

Summary

A cross sectional study method was used for this study. My target population was PLWHA attending the antiretroviral clinic at FMCU, Nigeria. I used purposive sampling method for this study. The estimate sample size is 89 but data were collected from 98 participants. I paid special attention to ethical matters during this study and ethical approval was obtained from the Research ethics committee of FMCU and Walden University. Five standard questionnaires were used to collect primary data from study participants and data collected were transferred to SPSS. Data analysis was conducted with multiple regression and logistic regression analyses.

Chapter 4: Results

Introduction

The purpose of this study was to examine the effect of social support and HIV-related stigma (independent variables) on depression (dependent variable) in PLWHA in Eastern Nigeria. The focus was to test whether social support and HIV-related stigma predicted depression in PLWHA or not and also to examine whether demographic variables, QOL and time since diagnosis of HIV (moderating variables), moderated the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

This chapter is an overview of the findings of the study. The first section is a summary of the initial procedure for data collection and information on the operationalization of the variables. The second part of the chapter (i.e., the results) includes details of baseline descriptive statistics and a detailed analysis of the research questions and hypotheses. IBM SPSS Version 21 was used for the data analysis. The third and last section of this chapter is the summary.

Data Collection

Data were collected with five different questionnaires (BDI-II, Duke-UNC functional social support questionnaire, Berger HIV stigma scale, WHO QOL-BREF scale for measuring QOL, and a questionnaire for collecting demographic information) from 98 study participants over a 2-week period (1st December 2014 to 12th December 2014) at the antiretroviral clinic at FMCU Nigeria during their HIV clinics. The demographic information collected was age, gender, sexual orientation, religion, occupation, educational status, and marital status. This was a slight deviation from the original plan as I did not collect information on annual income as originally planned. This was because study participants did not know their annual incomes, and staff members at the antiretroviral clinic confirmed that people in Nigeria in general (including government employees), were unlikely to know their annual incomes. The sociodemographic questionnaire was also used to collect information on time since diagnosis of HIV. Data collected were transferred onto SPPSS version 21 for easy accessibility and in readiness for data analysis.

Data on social support, as gathered with the Duke-UNC functional social support questionnaire, were reported as a continuous variable, and no specific cut offs for judging degree of social support were set. Data on HIV-related stigma, as gathered with the Berger HIV stigma scale, were reported as continuous variables. Berger total HIV-stigma scores (alongside Berger personalized, disclosure, negative self-image, and public attitude HIV-stigma subscale scores) were reported as continuous variables, and no specific cut offs for judging degree of HIV-related stigma were set. Data on depression, as gathered by the BDI-II, were reported as continuous variables. This was used to determine whether the individuals were depressed or not with scores of 0-13 representing not being depressed and scores from 14 and above representing being depressed.

Age, gender, sexual orientation, religion, occupation, educational background, and marital status, as gathered with the social demographic questionnaire, were reported as nominal variables. Data on time since HIV diagnosis were reported as continuous variable. Data on QOL, as gathered with the WHO QOL-BREF scale, were in four domains; physical health, psychological, social relationships, and environment were reported as continuous variables, and no specific cut offs for judging degree of QOL were set.

The antiretroviral clinic at FMCU had about 1,287 HIV patients actively attending their clinic (FMCU, 2014). My sample, 98, made up 7.6% of my sample frame. Because I collected data from patients routinely attending clinic over a 2-week period, my sample is likely to be representative of my study population. The rate of depression in my sample population was 24.5%, and this was similar to the rates reported in HIV populations in neighbouring African countries and other parts of Nigeria: 24% to 38% in Botswana (Lawler et al., 2011), 27% in Cameroon (Gaynes et al., 2012), and 29.3% in Benin, Nigeria (Chikezie et al., 2013).

Results

Descriptive Statistics

Table 1 below includes information about study participants' characteristics relating to age, gender, sexual orientation, religion, occupation, educational background, and marital status. Table 2 below shows descriptive statistics for time since HIV diagnosis and BDI-II score. Table 3 below shows descriptive statistics for diagnosis of depression using BDI-II scores. About a quarter (24.5% of the study participants) were depressed, and the remaining 74.5% were not depressed.

Table 1

Sociodemoraphics of Study Participants

Total Population (*n*=98)	Frequency (*n*)	Percentage (%)
Age		
18-30	18	18.4
31-40	36	36.7
41-50	29	29.6
51 and above	15	15.3
Gender		
Male	28	28.6
Female	70	71.4
Sexual Orientation		
Heterosexual	98	100.0
Homosexual	0	0.0
Bisexual	0	0.0
Religion		
Christianity	98	100.0
Islam	0	0.0
Nonreligious	0	0.0
Other	0	0.0
Occupation		
Unemployed	17	17.3
Self or Public Sector	57	58.2
Employed	24	24.5
Government Employed		
Educational Background		
Primary school completed	40	40.8
Secondary school completed	35	35.7
College completed and above	23	23.5
Marital Status		
Not Married	42	42.9
Married	56	57.1

Table 2

Descriptive Statistics for Time Since HIV Diagnosis and BDI-II Score

Total Population (*n*=98)	Time since HIV Diagnosis	BDI-II Score
Mean	4.34	7.46
Standard deviation	3.802	7.860

Table 3

Descriptive Statistics for Diagnosis of Depression Using BDI-II Scores

Total Population (*n*=98)	Frequency (*n*)	Percentage (%)
Not Depressed (BDI-II Score 0-13)	74	75.5
Depressed (BDDI-II Score 14 and above)	24	24.5

Research Questions and Hypotheses

Multiple linear regression and multiple logistic regression analyses were used to test the research questions. The first multiple linear regression analysis was used to test the individual effect of social support and HIV-related stigma on depression in the study participants; the second multiple linear regression analysis was used to test the combined effect of social support and HIV-related stigma on depression in the study participants where an interaction term for social support and HIV-related stigma was created and included in the regression model. The first multiple logistic regression analysis was used to test the individual effect of sociodemographic variables, QOL, time since HIV diagnosis, HIV-related stigma, and social support on being depressed or not in the study participants. The second multiple logistic regression model was used to test the moderating effect of sociodemographic variables, QOL, and time since HIV diagnosis on the relationship between social support and HIV-related stigma on depression in the study participants. Interaction terms OCED (occupation and educational background), GEMS (gender and marital status), AGET (age and time since HIV diagnosis), and QOL1234 (physical health, psychological, social relationships, and environmental domains of QOL) were created and included in the second multiple logistic regression model. Religion and sexual orientation were not included in the multiple logistic regression model because all the study participants belonged to the same religious group and had same sexual orientation.

Research Question 1. The first multiple regression analysis was carried out with BDI-II score as the dependent variable; and DUKE-UNC FSS Score, Berger Total Stigma Score, Berger Personalized Stigma Subscale, Berger Disclosure Stigma Subscale, Berger Negative Self-image Subscale, and Berger Public Attitudes Subscale as independent variables. Multiple regression analysis was used after the assumptions for its use were met. The sample size (98) was large enough to fulfil the assumption. It is recommended that about 15 participants are required per predictor variable for the regression equation to be reliable (Pallant, 2013).

There were six independent variables in this study which meant that at least a sample size of 90 was required. Multicollinearity was assessed by examining tolerance and Variance Inflation Factor (VIF). Only the tolerance value for Berger Total Stigma Score was less than 0.1 (0.072) and was also the only variable with VIF value of greater than 10 (13.89). This can be explained by the fact that Berger Total Stigma Score is the total score for the other subscales of the Berger stigma scale; indicating singularity. Even though Berger Total Stigma score should ideally be removed from the regression model, I decided to retain it as the tolerance and VIF values only marginally exceeded the recommended cut-off points. The other variables had tolerance values higher than 0.1 and VIF values less than 10. There were no outliers in the data set.

There were no major deviations from normality as indicated by a normal P-P Plot and scatterplot. The R Square for the regression model was .282 indicating that the model explained 28% of the variance depression inputted as BDI-II score in the regression model. The ANOVA table also showed that the model was statistically significant with a p-value of 0.000 i.e. p<.0005 indicating that multiple R in the population equals 0.

Table 4

Relationships Between Social Support and Depression by Score on BDI-II

Variable	**Pearson correlation**	***P* value**
Social support	-0.378	*P* = 0.00

Table 5

Relationships Between HIV-Relates Stigma and Depression by Score on BDI-II

Variables	**Pearson correlation**	***P* value**
Berger Total Stigma Score	0.180	*P* = 0.076
Berger Personalized Stigma Subscale Score	0.121	*P* = 0.234
Berger Disclosure Stigma Subscale Score	0.031	*P* = 0.760
Berger Negative Self-image Stigma Subscale Score	0.305	*P* = 0.002
Berger Public Attitude Stigma Subscale Score	0.103	*P* = 0.311

Table 4 above shows that score on Duke-UNC functional social support questionnaire was moderately negatively correlated to score on BDI-II, that is, good social support is negatively correlated to depression. This finding which was statistically significant with *p* value of <0.01 supports alternative hypothesis one. With this finding in mind; it can be said that people with good social support are less likely to develop depression than those without good social support. Table 5 above shows that negative self-image subscale of the Berger HIV scale was weakly positively correlated to depression. This finding was also statistically significant with *p* value of 0.002. Berger total stigma scale and other subscales of the Berger HIV stigma scale were not significantly correlated to depression. With this finding in mind, people who have negative feelings about themselves as a result of their HIV status are more likely to develop depression than people who do not have negative feelings about themselves due to their HIV status. These findings are in partial agreement with Alternative Hypothesis.

Table 6

Summary of Multiple Linear Regression Model Output for the Relationship Between SSHIVS and Depression

	Beta	**Significance**	**95% Confidence Interval**	
			Lower Bound	Upper Bound
SSHIVS	-.632	.039	.000	.000
DUKE-UNC FSS Score	-.098	.501	-.459	.226
Berger Total Stigma Score	.825	.017	.091	.886
Berger Personalized Stigma Subscale	-.280	.260	-.796	.218
Berger Disclosure Stigma Subscale	-.236	.107	-1.071	.106
Berger Negative Self-image Subscale	.458	.006	.191	1.097
Berger Public Attitudes Subscale	-.069	.649	-.311	.195

The second multiple regression analysis was carried out with BDI-II score as the dependent variable; and SSHIVS (interaction term for DUKE-UNC FSS Score, Berger Total Stigma Score, Berger Personalized Stigma Subscale, Berger Disclosure Stigma Subscale, Berger Negative Self-image Subscale, and Berger Public Attitudes Subscale), DUKE-UNC FSS Score, Berger Total Stigma Score, Berger Personalized Stigma Subscale, Berger Disclosure Stigma Subscale, Berger Negative Self-image Subscale, and Berger Public Attitudes Subscale as independent variables. Multiple regression analysis was used after the assumptions for its use were met. There were no major deviations from normality as indicated by a normal P-P Plot and scatterplot. The *R* Square for the regression model was .316 indicating that the model explained 31% of the variance depression inputted as BDI-II score in the regression model. The ANOVA table also showed that the model was statistically significant with a p-value of 0.000, that is, p<.0005 indicating that multiple R in the population equals 0.

Table 6 above shows that Berger total stigma score appeared to have made the strongest unique significant contribution to explaining the dependent variable, when the variance explained by all other variables in the model is controlled for by having the highest Beta value .825 (*p* value 0.017). Combination of social support and HIV-related stigma SSHIVS and negative self-image as a result of HIV also made strong unique significant contributions to explaining the dependent variable with Beta values of .632 (*p* value 0.039) and .458 (*p* value 0.006) respectively. This finding shows that total HIV-related stigma, negative self-image as a result of HIV, and the combined effect of social support and HIV-related stigma SSHIVS were independent predictors of depression.

Table 7

Relationship Between Combination of Social Support and HIV-Related Stigma, and Depression by Score on BDI-II

Variable	**Pearson correlation**	***P* value**
SSHIVS	-0.037	$P = 0.359$

Table 7 above shows that the combined effect of social support and HIV- related stigma had minimal nonsignificant effect on depression with a Pearson correlation of -.037 and *p* value of 0.4. Tables 4 and 5 above however showed that social support was negatively correlated to depression whilst HIV-related stigma was positively correlated to depression, that is, the more social support people had, the less likely they were to suffer with depression and the more stigma people felt as a result of HIV, the more likely they were to suffer with depression. It can be said from the finding recorded in Table 7 above that good social support and HIV-related stigma had opposing effect on each other in the regression model.

Combining a negative predictor of depression i.e. social support and a positive predictor of depression, that is, HIV-related stigma brought about the two variables cancelling each other out in the correlation analysis shown in Table 7. It can be extrapolated from this finding that if good social support was combined with low or no HIV-relate stigma; that this combination will predict depression negatively and that if poor social support was combined with high HIV-related stigma; that the combination will predict depression positively. It can thus be inferred from these extrapolations that combination of social support and HIV-related stigma has a synergistic effect in predicting depression. From this finding and extrapolations that followed; it can be said that people with good social support and low or no HIV-related stigma are less likely to suffer with depression than the general population of PLWHA and people with poor social support and high HIV-related stigma are more likely to suffer with depression than the general population of PLWHA. These findings and conclusions are in agreement with Alternative Hypothesis 1.

Research Question 2. The first multiple logistic regression analysis was carried out with depression diagnosis (being depressed coded as 1 and not being depressed coded as 0) as the dependent variable and age (coded as follows: 18-30 as 1, 31-40 as 2, 41-50 as 3, and 51 and above as 4), occupation (coded as follows: unemployed as 1, self or public sector employed as 2, and government employed as 3), educational background (coded as follows: primary school completed as 1, secondary school completed as 2, and college completed and above as 3), gender (male coded as 1 and female as 2), marital status (not married coded as 0 and married as 1), time since HIV diagnosis, social support, Berger Total Stigma Score, Berger Personalized Stigma Subscale, Berger Disclosure Stigma Subscale, Berger Negative Self-image Subscale, Berger Public Attitudes Subscale, and QOL as independent variables.

The overall percentage of correctly classified cases according to the first classification table was 75.5% which means that IBM SPSS classified that all cases would not be depressed because there were higher percentage of people classified as not being depressed. The Omnibus Test of Model Coefficients which is a ‘goodness of fit’ test was <0.0005. The Chi-square value was 48.63 with 20 degrees of freedom. In the Hosmer-Lemeshow Goodness of Fit Test for the logistic regression model carried out; the

Chi-square value was 2.065 with a significance level of .583 which further supports the model used as being worthwhile as poor fit is indicated by a significance value less than 0.05 (Pallant, 2013). The Cox and Snell *R* square and Nagelkerke *R* square for the model were .391 and .583 respectively, suggesting that between 39.1% and 58.3% of the variability in the dependent variable is explained by the set of variables included in the model (Pallant, 2013). The percentage by which the model predicted the correct category for each case was 85.7%, that is, the model correctly classified 85.7% of cases overall.

The sensitivity of the logistic model which is the percentage of the group that were depressed that the model accurately identified, that is, true positives (Aschengrau & Seage, 2008) was 58.3% and the specificity of the model which is the percentage of the group that were not depressed i.e. true negatives (Aschengrau & Seage, 2008) that the model accurately identified was 94.%. The positive predictive value of the model which is the percentage of cases that the logistic model classified as being depressed that were depressed (Pallant, 2013) was 77.8% and the negative predictive value which is the percentage of cases predicted by the logistic model not to be depressed that were not depressed (Pallant, 2013) was 87.5%.

Table 8

Significant Variables From the First Multiple Logistic Regression Model

	B value	Wald	Sig	Exp (B) Odds Ratio	95% C.I for Exp (B)	
					Lower	Upper
Personalized Stigma	-.374	5.208	0.022	.688	.499	.949
QOL (Social Relationships domain)	-0.52	4.993	0.025	.949	.907	.994

According to this first logistic regression model; the major factors included in the model that influenced whether a person was depressed or not as shown in Table 8 above were personalized stigma and the social relationships domain of QOL with Wald values of 5.208 and 4.993 respectively and significance values less than .05. Both also had negative B values. The odds ratios for personalized stigma and social relationships domain of QOL were .688 (95% C.I .499-.949) and .949 (95% C.I .907-.994) respectively meaning that people who report personalized stigma were .312 times less likely to be depressed than people who do not report personalized stigma and people who report having good social support on the social relationship domain of QOL were .051 times less likely to be depressed than people who do not report having good social support. There were six cases listed in the casewise list table which is a table in the logistic regression output that gives information about cases in the sample that the model did not fit well (Pallant, 2013). I reviewed the six cases and did feel they were different from the other cases that the model fitted well with and as such did not remove them from the model. The other variables included in the logistic regression model did not contribute significantly to the model. Table 9 below show full SPSS output for all the variables included in the multiple logistic regression model.

Table 9

Full SPSS Output for Variables Included in the First Multiple Logistic Regression Equation

		B	S.E.	Wald	*df*	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Age			4.645	3	.200			
	Age(1)	-1.981	1.106	3.212	1	.073	.138	.016	1.204
	Age(2)	-1.082	1.135	.908	1	.341	.339	.037	3.137
	Age(3)	-3.463	1.881	3.390	1	.066	.031	.001	1.251
	Gender(1)	.916	1.217	.567	1	.452	2.500	.230	27.170
	Occu			.682	2	.711			
	Occu(1)	-.364	1.026	.126	1	.723	.695	.093	5.195
	Occu(2)	.511	1.321	.150	1	.699	1.666	.125	22.178
	Educ			2.075	2	.354			
	Educ(1)	1.368	1.077	1.613	1	.204	3.926	.476	32.403
	Educ(2)	.076	1.451	.003	1	.958	1.079	.063	18.526
	Marital(1)	-.317	.817	.150	1	.698	.729	.147	3.614
	Time	-.184	.129	2.023	1	.155	.832	.646	1.072
	Social	-.110	.058	3.642	1	.056	.895	.799	1.003
	StigmaT	.174	.139	1.578	1	.209	1.191	.907	1.563
	StigmaPE*	-.374	.164	5.208	1	.022*	.688	.499	.949
	StigmaD	-.097	.191	.261	1	.610	.907	.624	1.318
	StigmaN	.126	.164	.596	1	.440	1.135	.823	1.564
	StigmaPA	.023	.092	.060	1	.807	1.023	.853	1.226
	QOLD1	.045	.043	1.110	1	.292	1.046	.962	1.137
	QOLD2	-.043	.040	1.145	1	.285	.958	.886	1.036
	QOLD3*	-.052	.023	4.993	1	.025*	.949	.907	.994
	QOLD4	-.044	.037	1.413	1	.235	.957	.890	1.029
	Constant	6.397	6.244	1.049	1	.306	599.766		

* Asterisk notifying significant variables at $p \leq .05$

People who report personalized stigma were less likely to be depressed than people who do not report personalized stigma and people who report having good social support were less likely to be depressed than people who do not report having good social support. Personalized stigma did not show a significant correlation with depression in the multiple linear regression analysis carried out as outlined in Table 5 above but has shown a significant negative relationship with depression in the multiple logistic regression analysis shown above in Table 9. This could be as a result of inclusion of other variables, that is, sociodemographic factors, QOL, and time since HIV diagnosis in the multiple logistic regression model.

The finding that the social relationship domain of QOL had a negative relationship with depression is consistent with the finding outlined in Table 4 that social support was negatively correlated with depression. Social support on its own in the logistic regression analysis showed a negative relationship with depression but this relationship was not statistically significant. It is likely that the inclusion of sociodemographic factors, QOL, and time since HIV diagnosis brought about these differences in findings.

The second multiple logistic regression analysis was carried out with depression diagnosis (being depressed coded as 1 and not being depressed coded as 0) as the dependent variable; interaction terms OCED (occupation and educational background), GEMS (gender and marital status), AGET (age and time since HIV diagnosis), and QOL1234 (physical health, psychological, social relationships, and environmental domains of QOL); social support, Berger Total Stigma Score, Berger Personalized Stigma Subscale, Berger Disclosure Stigma Subscale, Berger Negative Self-image Subscale, and Berger Public Attitudes Subscale as independent variables. The socio-demographic variables before being combined in the interaction terms were coded as follows: age (18-30 as 1, 31-40 as 2, 41-50 as 3, and 51 and above as 4), occupation (unemployed as 1, self or public sector employed as 2, and government employed as 3), educational background (primary school completed as 1, secondary school completed as 2, and college completed and above as 3), gender (male as 1 and female as 2), marital status (not married as 0 and married as 1).

The overall percentage of correctly classified cases according to the first classification table was 75.5% which means that IBM SPSS classified that all cases would not be depressed because there were higher percentage of people classified as not being depressed. The Omnibus Test of Model Coefficients which is a ‘goodness of fit’ test was <0.005. The Chi-square value was 31.155 with 10 degrees of freedom. In the Hosmer-Lemeshow Goodness of Fit Test for the logistic regression model carried out; the Chi-square value was 8.212 with a significance level of .413 which further supports the model used as being worthwhile as poor fit is indicated by a significance value less than 0.05 (Pallant, 2013). The Cox and Snell R square; and Nagelkerke R square for the model were .272 and .406 respectively, suggesting that between 27.2% and 40.6% of the variability in the dependent variable is explained by the set of variables included in the model (Pallant, 2013). The percentage by which the model predicted the correct category for each case was 83.7% i.e. the model correctly classified 83.7% of cases overall.

The sensitivity of the multiple logistic regression model which is the percentage of the group that were depressed that the model accurately identified i.e. true positives (Aschengrau & Seage, 2008) was 45.8% and the specificity of the model which is the percentage of the group that were not depressed i.e. true negatives (Aschengrau & Seage, 2008) that the model accurately identified was 95.9%. The positive predictive value of the model which is the percentage of cases that the logistic model classified as being depressed that were depressed (Pallant, 2013) was 78.6% and the negative predictive value which is the percentage of cases predicted by the logistic model not to be depressed that were not depressed (Pallant, 2013) was 84.5%.

Table 10

Significant Variables From the Second Multiple Logistic Regression Model

	***B* value**	**Wald**	**Sig**	**Exp (B) Odds Ratio**	**95% C.I for Exp (B)**	
					Lower	Upper
QOL 1234	.000	6.874	.014	1.000	1.000	1.000
Personalized Stigma	-.214	4.129	.042	.808	.657	.992

According to this second multiple logistic regression model; the major factors included in the model that influenced whether a person was depressed or not as shown in Table 10 above were QOL and personalized stigma with Wald values of 6.874 and 4.129 respectively and significance values less than .05. Personalized stigma had a negative B value. The odds ratio was .808 (95% C.I .657-.992) meaning that people who report personalized stigma were .19 times less likely to be depressed than those who do not report personalized stigma. Even though QOL had a significant result with value of 6.874; it had a *B* value of .000 and odds ratio of 1.000 (95% C.I 1.000-1.000) meaning that it had no effect in the prediction of depression.

There were four cases listed in the casewise list table which is a table in the logistic regression output that gives information about cases in the sample that the model did not fit well (Pallant, 2013). I reviewed the four cases and did not feel they were different from the other cases that the model fitted well with and as such did not remove them from the model. People who report personalized stigma were less likely to be depressed than those who do not report personalized stigma. This finding is similar to the finding in the first multiple logistic regression model shown in Table 8 above and the slight differences is likely due to the inclusion of some interaction variables in the regression model.

Table 11

Full SPSS Output for Variables Included in the Second Multiple Logistic Regression Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	OCED	.088	.124	.499	1	.480	1.092	.856	1.392
	GEMS	.250	.326	.586	1	.444	1.284	.677	2.433
	AGET	-.033	.034	.904	1	.342	.968	.905	1.035
	QOL1234	.000	.000	6.874	1	.009	1.000	1.000	1.000
	Social	-.066	.044	2.221	1	.136	.937	.859	1.021
	StigmaT	.078	.097	.654	1	.419	1.081	.894	1.307
	StigmaPE	-.214	.105	4.129	1	.042	.808	.657	.992
	StigmaD	-.194	.135	2.057	1	.151	.824	.632	1.074
	StigmaN	.163	.119	1.860	1	.173	1.177	.931	1.486
	StigmaPA	.040	.066	.359	1	.549	1.041	.914	1.185
	Constant	2.613	3.751	.485	1	.486	13.643		

a. Variable(s) entered on step 1: OCED, GEMS, AGET, QOL1234, Social, StigmaT, StigmaPE, StigmaD, StigmaN, StigmaPA.

The other variables included in the second multiple logistic regression model did not contribute significantly to the model. Table 11 above shows full SPSS output for all the variables included in the second multiple logistic regression model with OCED being interaction term for occupation and educational background, GEMS being interaction term for gender and marital status, AGET being interaction term for age and time since HIV diagnosis, QOL1234 being interaction term for physical health, psychological, social relationships, and environmental domains of quality of life; Social being social support; StigmaT being total stigma score; StigmaPE being personalized stigma score; StigmaD being disclosure stigma score; StigmaN being negative self-image score; and StigmaPA being public attitude stigma score. The interaction terms OCED, GEMS, and

AGET with Wald values of .499 *p* value 0.48, .586 *p* value 0.44, .904 *p* value 0.34 respectively. QOL1234 had a significant relationship but the odds ratio was 1 indicating no association between the dependent variable and the independent variables.

There are no moderating effects among the variables on one another's association with being depressed or not. Based on this finding; it can be concluded that socio-demographic variables, QOL, and time since diagnosis of HIV do not moderate the effect of social support, and HIV-related stigma on depression in PLWHA. With this finding, H_0 2 which reads that sociodemographic factors, QOL, and time since diagnosis of HIV do not moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria cannot be rejected. H_1 2 which reads that socio-demographic factors, QOL, and time since diagnosis of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria can be rejected.

Summary

I have provided a summary of the data collection procedure, information on the operationalization of the variables, details of baseline descriptive statistics, detailed analysis of the research questions and hypotheses using IBM SPSS Version 21, and an overview of the findings from the results of the data analysis. Descriptive statistics showed that the majority of the people included in the study were in the 31 to 40 years age group (36.7%); most were females (71.4%), all were heterosexuals and Christians, more than half were self or public sector employed (58.2%), only about a quarter completed college education or attained higher educational levels, and over half (56%)

were married. The mean length of time the study participants had been diagnosed with HIV was 4.34 years and about one quarter (25.5%) of the study participants were depressed.

Multiple regression analyses (both linear and logistic) were used to test the relationship between depression, social support, and HIV-related stigma. The first multiple linear regression analysis showed that social support was moderately negatively correlated to depression with a Pearson correlation score of -.378 and p value <0.05; meaning that the more social support people had, the less likely they were to suffer with depression. The first multiple regression model also showed that negative self-image was weakly positively correlated to depression with a Pearson correlation score of .305 and p value <0.05; meaning that people who had negative self-image as a result of their HIV status were more likely to be depressed than people who did not have negative self-image as a result of their HIV status. Findings from the second multiple linear regression model and extrapolations that ensued showed that people with good social support and low or no HIV-related stigma were less likely to suffer with depression than the general population of PLWHA and that people with poor social support and high HIV-related stigma were more likely to suffer with depression than the general population of PLWHA; thus supporting alternative hypothesis one $H1$a.

The first multiple logistic regression analysis was used to test the individual effect of sociodemographic variables, QOL, time since HIV diagnosis, HIV-related stigma, and social support on depression in the study participants. This multiple regression model showed that people who report personalized stigma were less likely to be depressed than people who do not report personalized stigma and people who report having good social support were less likely to be depressed than people who do not report having good social support. The second multiple logistic regression model was used to test the moderating effect of sociodemographic variables, QOL, and time since HIV diagnosis on the relationship between social support and HIV-related stigma on depression in the study participants.

Interaction terms OCED, GEMS, AGET, and QOL1234 were created and included in the second multiple logistic regression model. Findings from this multiple logistic regression analysis showed that people who report personalized stigma were .19 times less likely to be depressed than those who do not report personalized stigma. The second multiple logistic regression model also showed that socio-demographic variables, QOL, and time since diagnosis of HIV did not moderate the effect of social support, and HIV-related stigma on depression in PLWHA. I will provide a detailed interpretation of the findings of this study, limitations of the study, recommendations for further studies, implications for positive social change, and conclusions in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This cross-sectional study was carried out to examine the effect of social support and HIV-related stigma (independent variables) on depression (dependent variable) in PLWHA in Eastern Nigeria to test whether social support and HIV-related stigma predicted depression in PLWHA or not and also to examine whether demographic variables, QOL, and time since diagnosis of HIV (moderating variables) moderated the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria. The study was conducted with the aim of gaining a better understanding of the mental health of PLWHA and also to gain a better understanding of the interplay between biological, social, and psychological factors in determining the health outcome of PLWHA.

This study was based on the SCT which explains behavior as the result of three reciprocal factors: behavior, personal factors (depression), and outside events (social support and HIV-related stigma). From the multiple linear regression analyses carried out, HIV-related stigma, negative self-image as a result of HIV, and the combined effect of social support and HIV-related stigma were independent predictors of depression. From multiple logistic regression analyses carried out, there were suggestions that people who report personalized stigma were less likely to be depressed than people who do not report personalized stigma; that people who report having good social support were less likely to be depressed than people who do not report having good social support; and that socio-demographic variables, QOL, and time since diagnosis of HIV do not moderate the effect of social support, and HIV-related stigma on depression in PLWHA.

Interpretation of Findings

Research Question 1

1. What is the individual and combined effect of social support (as measured by score on Duke-UNC functional social support questionnaire) and HIV-related stigma (as measured by score on Berger HIV stigma scale) on depression (as measured by score on Beck depression inventory-II) in PLWHA in Eastern Nigeria?

$H1_0$: There is no relationship between the individual and combined effect of social support and HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

$H1_a$: There is a relationship between the individual and combined effect of social support and HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

Social Support

There was a significant moderate negative correlation between social support and depression (Pearson’s correlation coefficient of -0.378 with $p<0.05$). Good social support was negatively correlated to depression, meaning that the more social support people have, the less likely it is that they will suffer with depression. This finding is consistent with findings by Bekele et al. (2013), Eller et al., 2010, Goodwin et al., 2012, Müller et al., 2012, Teo et al., 2013, and Theeke et al., 2012. Goodwin et al. explored prospective predictors of depression in palliative care and found out that low social support from friends and family was the most significant risk factor for nonremission of depressive illness in palliative care. Müller et al. demonstrated that social support was positively related to physical and mental health; pain, coping, and adjustment; and life satisfaction in people with spinal cord injuries. Theeke et al. also examined the relationship between loneliness, depression, and social support and QOL in chronically ill older people that loneliness correlates with depression, lower quality of life, and lower social support.

Chao (2011), in a longitudinal study carried out in Taiwan, examined the relationship between social support and depression and identified that greater network size; broader networks; frequent contacts; living with family; receiving emotional, instrumental, and financial support; and satisfaction with support being given were negatively correlated with depressive symptoms. Teo et al. (2013) found out that risk of depression was significantly higher in people with baseline social strain, who lacked social support, and with poor overall relationship quality. Bekele et al. (2013) found that perceived social support had significant direct and indirect effects on physical and mental health, including depression. Psychological and social support in the U.S. population were found to be negatively associated with depressive symptoms (-0.42, $p < 0.000$ and -0.29, $p < 0.000$ respectively; Eller et al., 2010).

HIV-Related Sigma

The negative self-image subscale of Berger's HIV stigma scale was significantly (but weakly) positively correlated to depression (Pearson's correlation coefficient of 0.305 with $p<0.05$). People who have negative feelings about themselves as a result of their HIV status are more likely to suffer from depression than people who do not have negative feelings about themselves due to their HIV status. The other subscales of

Berger’s HIV stigma scale (personalised stigma, disclosure stigma, and public attitude stigma) were weakly correlated with depression, but these correlations were not statistically significant 0.121 p = 0.234, 0.03 *p* =0.76, and 0.103 *p* = 0.31 respectively. Berger’s total stigma score was also only weakly correlated with depression with Pearson’s coefficient of 0.08 *p* = 0.076. The positive correlation seen between the HIV stigma scale and depression in this study was consistent with findings of previously conducted studies; (Akena et al., 2012; Charles et al., 2012; Rao et al., 2012). Akena et al. (2012) demonstrated that major depressive disorder was associated with AIDS-related stigma. Charles et al. reported that PLWHA who had experienced personalized stigma and negative self-image had 3.4 and 2.1 times higher risk of severe depression than PLWHA who did not have the same experience. Rao et al. found that HIV-related stigma was positively associated with depressive symptoms and that social support mediated this relationship.

These researchers showed significant correlations between HIV-related stigma and depression in contrast to the findings from this study, which showed only weak or no significant correlations apart from the negative self-image subscale. There are different possible explanations for this, which include PLWHA in Eastern Nigeria not disclosing their HIV status and not feeling stigmatized about their status as people are not aware of this. This was reflected on the Berger HIV stigma scale questionnaires where the respondents consistently stated that they kept their HIV status a secret because they did not want people to know. This may have reduced the level of stigma they felt, and this was reflected on the Berger disclosure stigma subscale correlation with depression. The respondents also did not blame themselves about their HIV status. Most of the respondents were married women who still lived with their husbands. Because they still maintained their marriage in a traditional West African male-dominant society, they may have contracted HIV from their husbands, which could mean that they did not blame themselves for their HIV status and as such did not feel depressed.

This was reflected on the low personalized stigma subscale correlation with depression. It was also evident from the Berger HIV stigma scale questionnaires completed by respondents that they were only minimally worried about the public attitude towards their HIV status, but this could be because the majority of the respondents kept their HIV status secret and the way the public felt about them thus was irrelevant. This was reflected on the nonsignificant correlation seen between the Berger public attitude stigma subscale and depression.

Combined Effect of Social Support and HIV-Related Stigma

When the combined effect of social support and HIV-related stigma was examined through a multiple linear regression model that included an interaction term for social support and HIV-related stigma SSHIVS; Berger total stigma score, combination of social support and HIV-related stigma SSHIVS, and Berger negative self-image as a result of HIV made significant contributions to explaining the dependent variable with Beta values of .825 (*p* value 0.017), .632 (*p* value 0.039), and .458 (*p* value 0.006) respectively as shown in Table 6. The combination of social support and HIV-related stigma SSHIVS on the surface had a minimal nonsignificant effect on depression with a Pearson correlation of -.037 and a *p* value of 0.4. This finding was a result of the fact that good social support, and HIV-related stigma had an opposing effect on each other in the regression model because combining a negative predictor of depression (i.e., social support) and a positive predictor of depression (i.e., HIV-related stigma) meant the two variables cancelled each other out in the correlation analysis shown in Table 7.

If good social support was combined with low or no HIV-related stigma, this combination will predict depression negatively; if poor social support was combined with high HIV-related stigma, the combination will predict depression positively. A combination of social support and HIV-related stigma had a synergistic effect in predicting depression. I did not identify any studies in which the authors examined the combined effect of social support and HIV-related stigma on depression in PLWHA during the literature review for this study. The authors discussed in the individual sections only examined the individual effects of social support and HIV-related stigma on depression in PLWHA. This is a new finding that will hopefully add to the body of evidence in the area of mental health of PLWHA.

These findings have helped me to answer Research Question 1. From the findings discussed so far, I can reject the Null Hypothesis 1and accept Alternative Hypothesis 1.

Research Question 2

2. Do sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL (as measured by score on WHO QOL-BREF scale), and time since diagnosis of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria?

H2_0: Sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL, and time since diagnosis of HIV does not moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria?

H2_a: Sociodemographic factors (i.e., age, gender, sexual orientation, religion, occupation, educational status, and marital status), QOL, and time since diagnosis of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria.

Sociodemographic Factors

Age, gender, occupation, educational background, and marital status were included in the first multiple logistic regression model as independent variables and depression as the dependent variable. Being in the 41 to 50 years age group was a moderate negative independent predictor of depression; meaning that people in the 41 to 50 year age group were less likely to be depressed than people in the other age groups. This relationship was not significant. Being a male was a mild positive independent predictor of depression; meaning that males were more likely to be depressed than females. This relationship was not significant. Being unemployed was a mild negative independent predictor of depression and being self or public sector employed were mild positive independent predictors of depression. These findings were however not significant. Completing primary and secondary schools were mild positive independent predictors of depression but this relationship was not statistically significant. Being married was a mild negative predictor of depression but this relationship was again not statistically significant.

From these findings, it can be said that there is no significant association between socio-demographic factors and depression in PLWHA. This finding is consistent with findings by Clarke et al. (2010) in a Jamaican cross-sectional study in which they explored the role of any patient-specific clinical and social issues as intermediary factors in the relationship between HIV/AIDS and depression. They found that there were no significant differences in depression rates across the different socio-demographic or clinical factors they explored (Clarke et al., 2010).

Quality of Life. Scores from domains one (physical health domain), two (psychological domain), three (social relationship domain), and four (environmental domain) of the WHO QOL questionnaire completed by study participants were included in the logistic regression model. Domains 1, 2, and 4 were nonsignificant predictors of depression. Domain 3 was a moderate independent negative predictor of depression with a Wald value of 4.993, odds ratio of .947, and *p* value of 0.025. This means that the more satisfied people were with their social relationships, social support, and sex life; the less likely they were to be depressed. Putting all the four domains of QOL together;, it can be said that the better the QOL of PLWHA, the less likely it is that they will be depressed. Even though Domains 1, 2, and 4 did not show significant relationships with depression, an association with depression was demonstrated. Domain 2 as already explained in the last chapter showed a significant relationship with depression. This finding is consistent with findings in studies by Vyavaharkar et al. (2011) in which they found that depression was significantly negatively associated with QOL, and Peltzer (2012) in a South African study where low internalized stigma, being employed, less severe HIV infection, and low depressive symptoms were identified as independent predictors of good QOL.

Time Since HIV Diagnosis. Time since HIV diagnosis was a moderate negative predictor of depression; meaning that the longer people have lived with HIV, the less likely they were to be depressed. This suggests that depression was less common in people who have lived with HIV for longer and more common in newly diagnosed people. This finding was not statistically significant. Even though this finding was not statistically significant, it demonstrates that there was an association between length of time people have lived with HIV and depression.

This nonsignificant finding is similar to findings by Ramirez-Avila et al. (2012). Ramirez-Avila et al. identified that depressive symptoms were common among newly diagnosed HIV patients and that this had a significant effect on CD4 count. During the literature review, I noted that there was paucity of research on the effect of time since HIV diagnosis on depression in PLWHA. The other researchers I identified that examined the effect of time since HIV diagnosis on depression had an opposite finding to the finding in this study (Mello et al., 2010). Mello et al. in a Brazilian cross-sectional study found that longer time of diagnosis was positively associated with depressive symptoms.

Other Significant Finding. When sociodemographic factors, QOL, and time since HIV diagnosis were included in the multiple logistic regression model, personalized stigma showed a significant negative relationship with depression with a Wald value of

5.208, odds ratio of .688, and *p* value of 0.02. This finding suggests that the more personalized stigma people reported; the less likely they were to suffer with depression. This finding is inconsistent with the findings from the studies already discussed in this study (Akena et al., 2012; Charles et al., 2012; Rao et al., 2012) which have all reported positive association with depression. Some possible reasons for this counterintuitive finding are as follows: (a) sample size not being large enough; (b) differences in the way study participants interpreted personal experiences and HIV-related stigma; (c) possibility of study participants being more resilient than average people; (d) possibility that study participants have accepted HIV-related stigma and as such no longer perceiving their experiences as stigma; (e) effect of other subscales of HIV stigma on the regression model; (f) effect of cultural factors, spirituality, and marriage [people from Eastern Nigeria may have peculiar characteristics that make them feel stigma less than others and may not personalize any stigma they feel; all the study participants were practicing Christians, and over half of the study participants were married].

It is important to remember that personalized stigma did not show a significant correlation with depression in the multiple linear regression analysis carried out as outlined in Table 5 but showed a significant negative relationship with depression in the multiple logistic regression analysis shown in Table 8. This is likely to be secondary to the inclusion of sociodemographic factors, QOL, and time since HIV diagnosis in the multiple logistic regression model. The finding that the social relationship domain of QOL had a negative relationship with depression is consistent with the finding that social support was negatively correlated with depression. Even though social support in the multiple logistic regression analysis showed a negative relationship with depression; this relationship was not statistically significant.

This is in contrast to the significant negative relationship it had with depression in the multiple linear regression analysis. It is again likely that the inclusion of sociodemographic factors, QOL, and time since HIV diagnosis brought about this differences in findings. Based on these two findings, it can be said that sociodemographic factors, QOL, and time since HIV diagnosis has a none-significant moderating effect on the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria. This finding is consistent with studies by (Akena et al., 2012; Clarke et al., 2010; Moosa, & Jeenah, 2012; Peltzer, 2012).

Findings from a second multiple logistic regression analysis carried out which included depression diagnosis as the dependent variable; interaction terms OCED (occupation and educational background), GEMS (gender and marital status), AGET (age and time since HIV diagnosis), and QOL1234 (physical health, psychological, social relationships, and environmental domains of quality of life); and social support, Berger Total Stigma Score, Berger Personalized Stigma Subscale, Berger Disclosure Stigma Subscale, Berger Negative Self-image Subscale, and Berger Public Attitudes Subscale as independent variables; showed that there were no moderating effects among the variables on one another's association with being depressed or not. It was thus concluded that sociodemographic variables, QOL, and time since diagnosis of HIV did not moderate the effect of social support, and HIV-related stigma on depression in PLWHA. With these findings in mind, Null Hypothesis 2 could not be rejected. Alternative Hypothesis 2 was rejected.

This study was based on the SCT which "explains behavior as the result of three reciprocal factors: behavior, personal factors, and outside events," (Schiavo, 2007, p. 39) that is, environmental factors. SCT helps in understanding and predicting individual and group behavior and identifying methods through which behavior can be changed or modified (Schiavo, 2007). Personal factors include cognitive, affective, and biological events (University of Twente, 2013). Social support and HIV-related stigma are external events/environmental factors which are out of the control of PLWHA and have been shown to have direct impact on depression in PLWHA (Charles et al., 2012; Kinyanda et al., 2011; Vyavaharkar et al., 2012).

Low mood and HIV/AIDS are affective and biological components of individual personal factors respectively. Behavioral, personal, and environmental factors constantly influence each other and this assumption has been demonstrated in findings of this study, that is, that there is a relationship between the individual and combined effect of social support and HIV-related stigma, and depression in PLWHA in Eastern Nigeria. The interaction between behavior, personal, and environmental factors which play a significant role in the development and maintenance of depression; especially in PLWHA can be explained by reciprocal determinism which is one of the constructs of SCT (Boston University, 2013; Sherr et al., 2011). Reciprocal determinism posits that people's behavior influences and can also be influenced by personal factors and their social environment (Boston University, 2013; York University, 2013). This has helped in understanding and explaining the effect of social support and HIV-related stigma on depression in PLWHA, and the role sociodemographic factors, QOL, and year of diagnosis of HIV play in the relationship between social support, HIV-related stigma, and depression.

Limitations of the Study

There are some limitations associated with this study. Data for this study was collected from subjective information given by study participants. This may have brought about social desirability bias where study participants give information they feel would be socially more acceptable there by holding back valuable pieces of information that may have better informed the findings of this study. Purposive sampling was the sampling method for this study. Purposive sampling can reduce the reliability of the study and the study can be difficult to repeat by other researchers (Frankfort-Nachmias & Nachmias, 2008). The study design for this study was cross-sectional design. The study design has helped show relationships; both significant and none significant relationships between depression, social support, HIV-related stigma, social demographic factors, QOL, and time since HIV diagnosis; but it has not helped with establishing causality as cross-sectional study design cannot be used to establish causality (Frankfort-Nachmias & Nachmias, 2008).

Another limitation of cross-sectional study design which may have applied to this study is prevalence-incidence bias also known as Neyman bias which is a type of bias that occurs due to cases being lost because they did not have sufficient time to develop or because they did not have symptoms that were severe enough to warrant treatment at the time of the study. Mild and clinically-stable cases are as such excluded (Frankfort-Nachmias & Nachmias, 2008). There is a chance that people attending the antiretroviral clinic at Federal Medical Center Umuahia constituted mainly of PLWHA who were actively in need of treatment. The other limitation of cross-sectional study that applies to this study is the nongeneralizability of findings from the design (Aschengrau & Seage III, 2008; Frankfort-Nachmias & Nachmias, 2008). This limits the reliability of the study. Including the different HIV-stigma scales in the multiple regression model may have had some effect on the output from the regression model as the different scales were measuring similar factors. Collection of sample for this study over a 2 week period may have brought about collecting data from a particular group of people who have certain common characteristics which may explain why they attended the same clinic over the same period. This is only a possibility as the patients were attending routine clinic appointments.

Even though the study participants could speak English, their use of English language varied widely. This may have adversely affected their understanding of questions asked in the questionnaires and thus not accurately informing the findings of the study. Another limitation to this study is that data were collected from only 7.6% of my sample frame which castes some doubts on how representative of the study population the study sample is. The other factor that may be a limitation to the study is the age of the study participants with about 66% of the study participants being between 30 and 50 years of age. People of a particular age group being the main participants in a study may skew the result of the study and this may have been the case in this study.

There may also be some threats to external validity of this study due to the sampling frame and method as a purposive sampling method may have hindered the generalizability of this study. Similar steps taken by other researchers who have conducted similar studies (Charles et al., 2012) were followed to improve the external validity of this study. The main threat to the internal validity of this study was instrumentation. There may have been inconsistencies in the way study participants completed their questionnaires. I was however consistent in the messages I gave study participants about how to complete the questionnaires.

Recommendations for Further Studies

HIV has continued to be a serious public health problem (AIDS.gov, 2013; WHO, 2012b) and depression remains more common in PLWHA than in the general population (Elbirt et al., 2012; Selvaraj et al., 2013). Sub-Saharan Africa has continued to have the highest HIV burden globally and HIV has remained a major public health problem in Nigeria with about 3.4 million people living with HIV/AIDS in Nigeria by the end of 2012 (UNAIDS, 2012; WHO, 2013a) despite concerted efforts by different public health Organizations and the Nigerian government over the last two decades (National Agency for the Control of AIDS [NACA], 2012; WHO, 2013a). The literature review carried out for this study revealed a paucity of studies in the area of mental health of PLWHA in Nigeria; highlighting the need for more studies to be carried out in this area.

The findings from this study were mostly consistent with similar studies carried out in other parts of the world and in some parts of Africa but some of the findings were new. The finding from the multiple logistic regression analysis that personalized stigma was negatively associated with depression was an unexpected finding which needs to be explored further. There is need to carry out similar research in other HIV centers in Eastern Nigeria. Even though the sample size for this was adequate; having a larger sample size would have given more power to the findings and may have produced more significant results. Carrying out similar studies in which data will be collected over longer period would have more chance of having a sample that would be more representative of the study population. Different HIV centers in Eastern Nigeria pulling together to carry out a multicenter study would help have a larger sample size, increase the power of the study, and increase the generalizability of the study.

It would also be important to carry out studies in the same study population that would specifically examine the effect of the peculiar characteristics of the study population on the relationship between depression, social support, and HIV-related stigma. Some of the characteristics that could be examined include cultural beliefs, perceptions of illness in general, perceptions of HIV/AIDS, perception of stigma related to illness, HIV-related stigma, different Christian denominations, people's understanding of sexual orientation and how they feel about people of differing orientations, and how different genders perceive and seek help for illnesses.

Identifying people who have HIV but do not acknowledge it or acknowledge it but keep it secret and finding a way of obtaining data from them could be of benefit as findings from analysis of data gathered from such a population could inform development of ways of improving the insight of such people into their illness and identifying barriers to seeking and receiving healthcare. Finding a way of reaching such population and collecting data from them without making face to face contact is likely to be helpful. Further exploring the impact of length of time people have lived with HIV on depression in PLWHA could also be of benefit as the findings could inform when PLWHA are at highest risk of being depressed which could ultimately inform the best time to support them, examine their mental health more closely, and initiate treatment for depression.

Implications for Positive Social Change

HIV/AIDS and depression remain serious public health problems and continue to pose significant threat to the lives of many in Sub-Saharan Africa (NACA, 2012; WHO, 2013a). There has been concerted effort to contain HIV/AIDS across the globe over the last three decades. Some progress has been made in this regard but more effort is required to contain the illness more. The rate of depression across the globe has also continued to rise (WHO, 2012a) and the literature review carried out for this study has shown a paucity of research in area of mental health of PLWHA. The assumption at the beginning of this study was that the findings from the study would be consistent with findings from similar studies carried out in the past. This was mostly the case but there were some new findings. The findings from this study will hopefully contribute to the body of literature in the area of mental health of PLWHA, strengthen the findings from similar studies that had findings consistent with findings from the study, and prompt more research to further clarify some new findings from the study. With these in mind; this study has the potential of bringing about positive social change by improving the mental health, psychological wellbeing, and social support/care of PLWHA.

The finding that the more social support people had, the less likely they were to suffer with depression has the potential of bringing about positive social change. This finding which is consistent with findings from previously conducted studies as already discussed (Bekele et al., 2013; Eller et al., 2010; Goodwin et al., 2012; Müller et al., 2012; Teo et al., 2013; Theeke et al., 2012) could inform decision making among public health policy makers. More social support for PLWHA could bring about a reduction in the rate of depression among PLWHA and reduce the level of disability caused by depression. The improvement in the mental health of PLWHA as a result of improved social support could lessen the burden on friends and relatives who care for PLWHA that suffer with depression and bring about positive social change in their immediate environment.

The findings that people who have negative feelings about themselves as a result of their HIV status were significantly more likely to suffer with depression than people who do not is an important finding which is likely to influence social change positively. With this finding, which is consistent with findings of Akena et al. (2012), Charles et al. (2012), and Rao et al. (2012), policy makers could develop policies geared towards making provisions for doing some psychological work around self-image and self-esteem with PLWHA, and changing their perception of their illness positively with the aim of reducing the rate of depression in PLWHA and ultimately improving their general mental health. The finding that the combination of social support and HIV-related stigma had a synergistic effect in predicting depression is also an important one as policy makers could develop public health policies that will be directed at improving social support and reducing the stigma people feel as a result of HIV with a view to achieving better health out than for PLWHA.

The other significant finding that the more satisfied people were with their social relationships, social support, and sex life, the less likely they were to be depressed is also an important finding which has helped clearly identify areas that can predict depression. This finding can help PLWHA identify areas of their lives they need to improve on in other not to be depressed; can help people working with/supporting PLWHA focus their work around these specific areas which ultimately makes their work more effective as their interventions will be tailored to the exact needs of the people they are working with; and finally help policy makers develop public health interventions that are tailored to the exact needs of the target population, that is, PLWHA.

The statistically insignificant finding that the longer people have lived with HIV, the less likely they were to be depressed is also another important finding which could bring about positive social change. Among the respondents depression was less common in people who have lived with HIV for longer and more common in newly diagnosed people. If substantiated in future research, this finding could help policy makers develop public health policies that could ensure that the mental health of PLWHA is assessed more in earlier days of their diagnosis and that more support be put in place for PLWHA at these early stages of their illness.

The use of the SCT which explains behavior as the result of three reciprocal factors: behavior, personal factors (depression), and outside events (social support and HIV-related stigma) has helped inform the relationships between social support, HVrelated stigma, and depression in PLWHA and the moderating effect of sociodemographic factors, QOL, and time since HIV diagnosis in this relationship. The findings from this study as already discussed will hopefully contribute to research literature in the field of mental health of PLWHA, especially in relation to the effect of social support and HIV-related stigma on depression in PLWHA. The findings will also hopefully provide valuable information to public health policy makers in Eastern Nigerian; and bring about improvement in the healthcare given to PLWHA in Eastern Nigeria.

These findings will hopefully bring about positive social change by informing development of public health initiatives aimed at improving the mental health of PLWHA which will hopefully bring about improvement in their QOL and mental health, give them a better sense of belongingness and wellbeing, and also give them more hope for the future. This study has identified areas that require more research with the hope that findings from further research in these areas will help clarify some findings that were not statistically significant in this study and re-test some findings from this study that could not be explained, that is, counterintuitive findings with the hope of bringing about further positive social change at individual, community, societal, and institutional levels.

This study has the potential of contributing significantly to the overall mental health of PLWHA. There are different bodies interested in the findings of this study and the main stakeholders include but are not limited to the study participants, their relatives, and friends, medical and nonmedical staff members at Federal Medical Center Umuahia, public health departments in Eastern Nigeria, health policy makers, and neuropsychiatry centers in Nigeria. I intend to share the findings from this study with the different stakeholders. I plan to publish the findings in international mental health and public health journals, and in a Nigerian journal. I finally intend to present the findings at an international mental health conference, to my colleagues at my current place of work, and at an academic teaching program at FMCU.

Conclusions

HIV has remained a serious public health problem with about 34 million people reported to be affected by HIV globally by the end of 2011, 2.5 million of them being newly affected (WHO, 2012b), and 3.4 million in Nigeria by the end of 2012 (NACA, 2012; WHO, 2013a). The purpose of this study was to examine the effect of Social Support and HIV-related Stigma on Depression in PLWHA with a view to adding more insight into the mental health of PLWHA. The rate of depression globally was rising with a reported 350 million people affected worldwide (WHO, 2012a). It was particularly important to carry out this study because PLWHA who are a vulnerable group of people are known to suffer with several mental health illnesses including depression more than the general population (Elbirt et al., 2012; Selvaraj, Ross, Unnikrishnan, & Hegde, 2013).

The results of this study were in line with previously conducted studies identified in that there was a significant relationship found between social support, some aspects of HIV-related sigma and depression. There were also some important relationships between the examined variables that were not statistically significant that have highlighted the need for further research in the area of mental health of PLWHA. This study also showed that depression was common amongst PLWHA with 24.5% of the study participants suffering with depression and that the rate of depression was higher among newly diagnosed people. This will hopefully further draw the attention of healthcare providers to the mental health needs of PLWHA; knowing that they had higher rates of mental health problems than the general population.

This study has identified areas that PLWHA and their relatives, communities, societies, healthcare organizations, and policy makers could focus their efforts on in other to better meet the healthcare needs of PLWHA. The study has also identified areas that more research is required with a view to adding more insight into the healthcare needs of PLWHA. Some conflicting relationships were also identified in the study which highlights the complex interaction between healthcare, psychological, and social needs of PLWHA and the need for a bio-psycho-social approach to healthcare delivery and multiagency approach to be adopted in supporting this group of people. This will also hopefully be explored further by future researches in this area. The findings from this study will hopefully bring about positive social change by informing the development of public health initiatives aimed at improving the mental health of PLWHA which will hopefully bring about improvement in their QOL and mental health; give them a better sense of belongingness and wellbeing; and also give them more hope for the future. The findings from the study could also hopefully bring about positive social change by improving the wellbeing of the relatives of PLWHA, their friends, and inform public health policies that will hopefully further improve and maintain the general health of PLWHA.

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Appendix A: Effect of Social Support and HIV-Related Stigma on Depression in HIV/AIDS Patients

Study Information Sheet

You are invited to participate in a research study to examine the effect of Social Support and HIV-related Stigma on Depression in People Living with HIV/AIDS (PLWHA). You were selected as a potential participant in this study because you are currently attending the antiretroviral clinic of Federal Medical Center Umuahia. I advise that you read this form and ask any questions you may have before agreeing to participate in the study. This study is being conducted by Dr. Chinedu Umeadi, a doctoral candidate at Walden University, USA and a consultant psychiatrist at Salford Royal Hospital, Salford, United Kingdom. This study is being funded by the student; Dr. Chinedu Umeadi. The data I am hoping to collect from study participants is purely for the purpose of my dissertation and has no connection with my role as a hospital doctor.

Background Information: The purpose of this study is to gain an understanding of the mental health and social needs of people living with HIV/AIDS by examining the effect of Social Support and HIV-related Stigma on Depression in PLWHA; and also by examining how sociodemographic factors (i.e. age, gender, sexual orientation, religion, occupation, annual income, educational status, and marital status), Quality of Life (QOL), and time since diagnosis of HIV affect the relationship between social support, HIV-related stigma, and depression in PLWHA.

Procedures: If you consent to participate in the study; you will receive a study packet next time you attend clinic or today if you consent today. I will ask you to complete the demographic sheet as well as four questionnaires (Beck Depression Inventory [BDI-II], Duke-UNC functional social support questionnaire for measuring social support, Berger HIV stigma scale for measuring HIV-related stigma, and WHO QOL-BREF scale for measuring quality of life). The BDI-II is a 21-item questionnaire for measuring the severity of depression. Information about your mood and how you feel about day to day activities and life in general will be obtained with the BDI-II. The Duke-UNC Functional Social Support Questionnaire (FSSQ) is an eight-item instrument used in measuring the strength of a person's social support network. Information about your support network; including friends and family and how they support you will be collected with the Duke-UNC FSSQ. The Berger HIV-stigma scale consists of 40 questions that utilize a scale; ranging from strongly agree to strongly disagree, and capturing four stigma domains; personalized stigma, disclosure concerns, negative self-image, and public attitudes. The Berger HIV scale will be used to gather information on social and emotional aspects of having HIV. You will be asked questions about some of your experiences, feelings, and opinions as to how people with HIV feel and how they are treated. The WHO Quality of Life-BREF (WHOQOL-BREF) is a 26 item questionnaire covering four domains: physical health (7 items), psychological health (6 items), social relationships (3 items), and environment domains (8 domains); and also contains QOL and general health items. You will be asked questions about how you perceive life in general and your perception of your general wellbeing with the WHOQOL-BREF. Altogether; you should be able to complete surveys in 20 – 30 minutes. You can complete the surveys and mail them back to the researcher in the self-addressed stamped envelope included in your packet.

Confidentiality: The records of this study will be kept private. In any sort of report that might be published, I will not include any information that will make it possible to identify a participant. Research records will be kept in a locked file; only the researcher(s) will have access to the records. In order to protect your privacy, I have not requested your signature. Your completion of this survey would indicate your consent, if you choose to participate.

Voluntary Nature of the Study: Your participation in the study is voluntary and you are free to withdraw at any time during the process of completing the survey. Your decision to participate in this study will not affect your relationship with the antiretroviral clinic in any way. If you decide to withdraw your participation, you may do so without giving reasons and your withdrawal will not affect your relationship with staff (doctors and nurses) of Federal Medical Centre, Umuahia. You may keep this study information sheet as evidence that you were approached to participate in this study.

Risks and Benefits of being in the Study: There are no physical risks to participating in the study. Emotional upset while completing the questionnaires might be a possibility. Participants are not obligated to complete any parts of the questionnaires with which they are not comfortable. The findings of this study will hopefully provide valuable information to public health policy makers in Eastern Nigerian which can bring about improvement in the healthcare given to PLWHA in Eastern Nigeria. This study has the potential of bringing about development of public health initiatives aimed at improving the mental health of PLWHA which will hopefully bring about improvement in their Quality of Life and general wellbeing.

Results:

When this study is completed; a summary of the result will be available at the clinic for you to collect should you wish.

Contacts and Questions: The researcher conducting this study is Dr. Chinedu Umeadi. He can be reached by email at apcumeadi@yahoo.com or chinedu.umeadi@waldenu.edu or by post at P. O. Box 234, Abagana, Anambra state, Nigeria. The researcher's advisor/supervisor is Dr. Peter Anderson who can be reached by email at peter.anderson@waldenu.edu. If you have any questions about your rights as participants, please contact the Walden Institutional Review Board by email at irb@waldenu.edu.

Appendix B: Demographic Questionnaire

Completion of the demographic questionnaire is significant for determining the influence of variety of factors on the results of this study. All of these records will remain confidential. Any reports that may be published will not include any identifiable information of the participants in this study. Please check the appropriate line.

Age Bracket:

______ 18 – 20

______ 21 – 30

______ 31 – 40

______ 41 – 50

_______51 – 60

______ 61 – 70

______ 71 and above

Gender:

______ Male

______ Female

Sexual Orientation:

______ Heterosexual

______Homosexual

______ Bisexual

Religion:

______ Christianity

______ Islam

______ Nonreligious

______ Others

Occupation:

____

Annual Income:

____

Educational background (check the highest level of education attained)

______ Primary school completed

______ Secondary school completed

______ College completed

______ Master’s Degree

______ Doctoral Degree

Marital Status:

______ Single

______ Separated

______ Married

______ Divorced

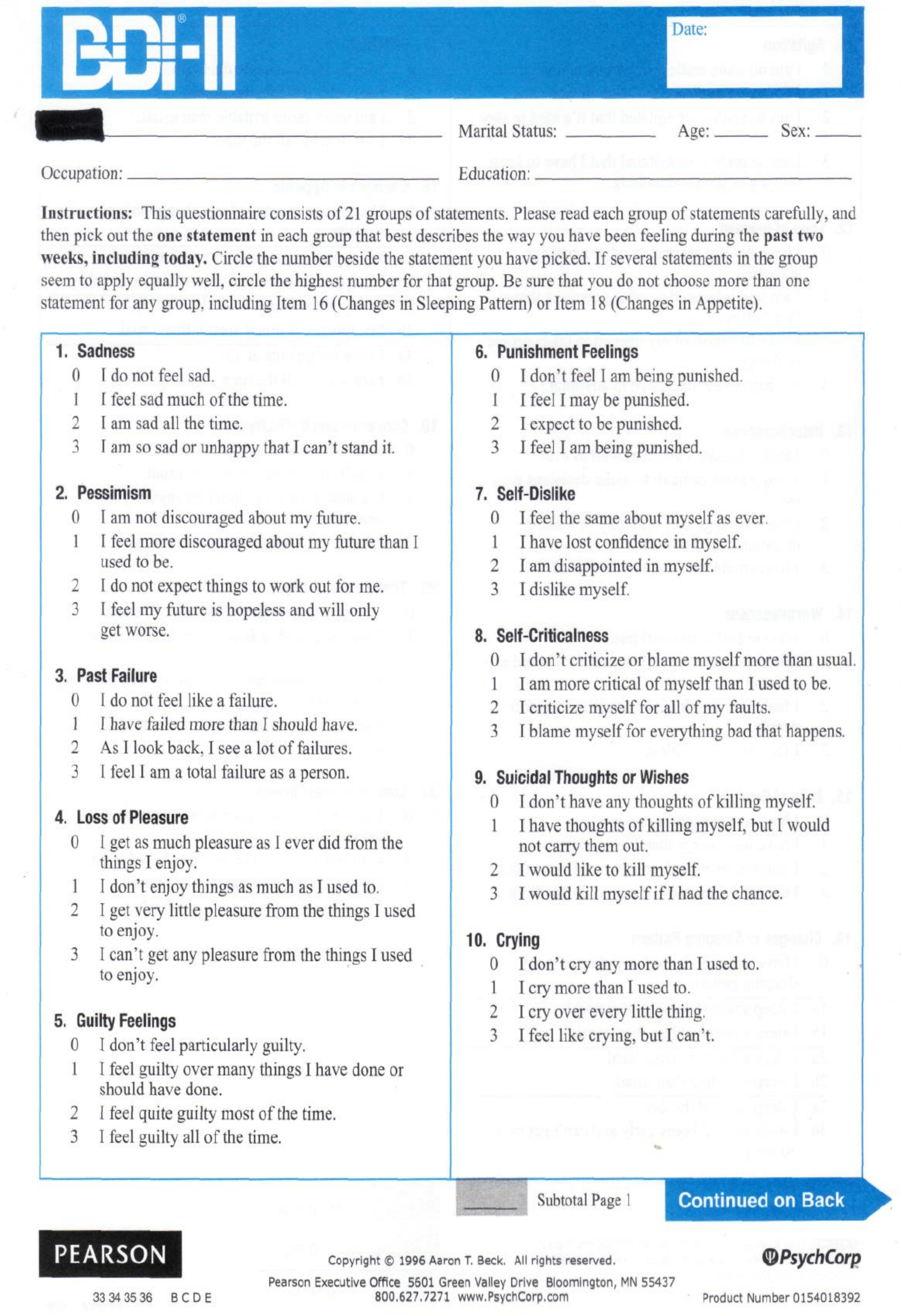
______ Living as Married

______ Widowed

Time since HIV Diagnosis:

____

Appendix C: Beck Depression Inventory



BDI-II®

Date:

[redacted] ____________ Marital Status: ________ Age: ______ Sex: ______

Occupation: ____________ Education: ____________

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today.** Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) 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 so 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 as a person.

4. Loss of Pleasure
- 0 I get as much pleasure as I ever did from the 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 don't feel particularly guilty.
- 1 I feel guilty over many things I 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 I used to be.
- 2 I criticize myself for all of 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 the chance.

10. Crying
- 0 I don't cry any more than I used to.
- 1 I cry more than I used to.
- 2 I cry over every little thing.
- 3 I feel like crying, but I can't.

______ Subtotal Page 1

Continued on Back

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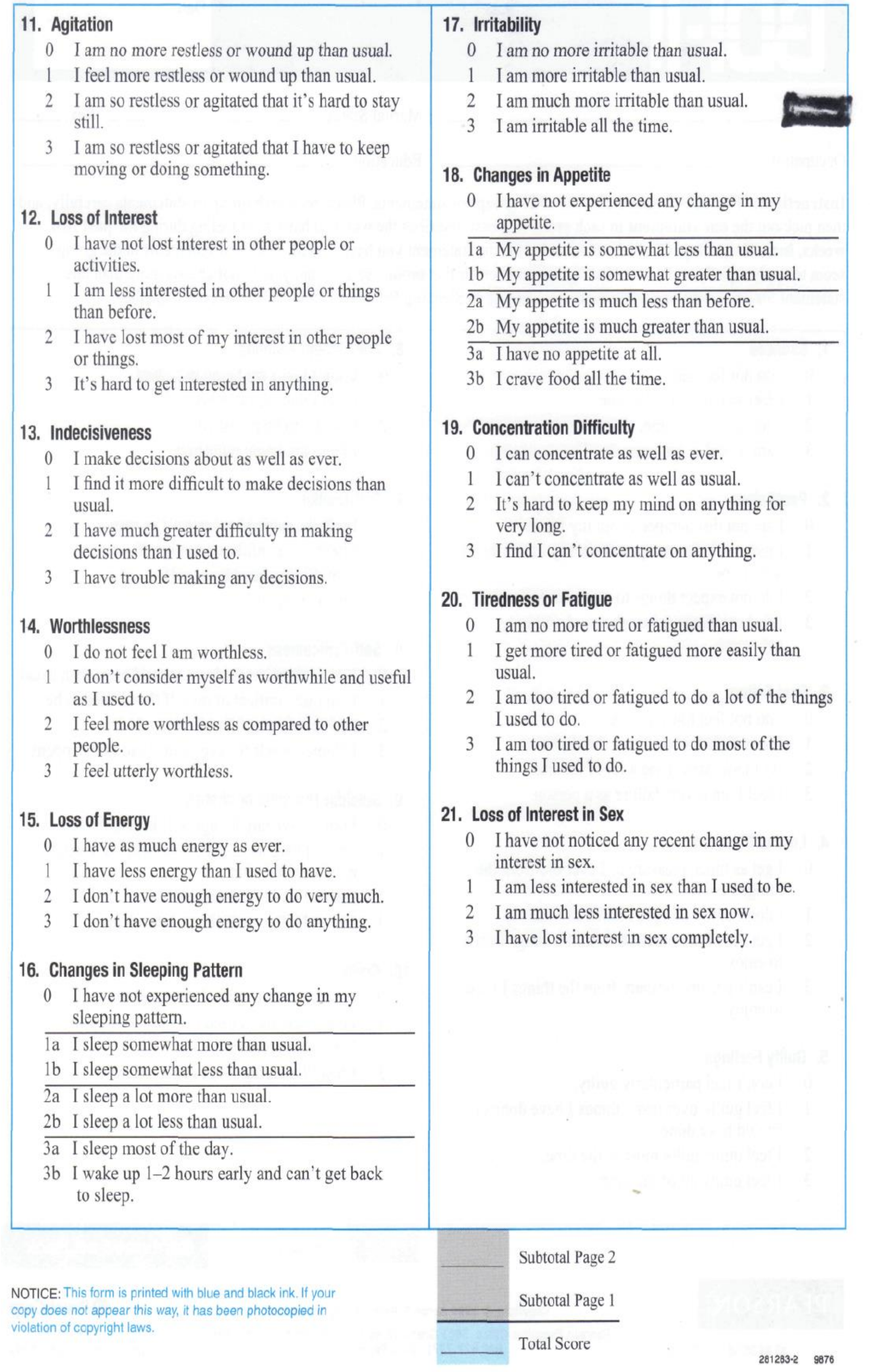

11. Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to stay still.
3 I am so restless or agitated that I have to keep moving or doing something.

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 any 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 don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.
1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.
2a I sleep a lot more than usual.
2b I sleep a lot less than usual.
3a I sleep most of the day.
3b I wake up 1–2 hours early and can't get 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. [redacted]
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any change in my appetite.
1a My appetite is somewhat less than usual.
1b My appetite is somewhat greater than usual.
2a My appetite is much less than before.
2b My appetite is much greater than usual.
3a I have no appetite at all.
3b 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 do.
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 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.

_____ Subtotal Page 2
_____ Subtotal Page 1
_____ Total Score

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Appendix D: Duke–UNC Functional Social Support Questionnaire (FSSQ)

Here is a list of some things that other people do for us or give us that may be helpful or supportive. Please read each statement carefully and place an 'X' in the column that is closest to your situation. Give only 1 answer per row.

	5	4	3	2	1
	As much as I would like	Almost as much as I would like	Some, but would like more	Less than I would like	Much less than I would like
1. I have people who care what happens to me.					
2. I get love and affection.					
3. I get chances to talk to someone about problems at work or with my housework.					
4. I get chances to talk to someone I trust about my personal or family problems.					
5. I get chances to talk about money matters.					
6. I get invitations to go out and do things with other people.					
7. I get useful advice about important things in life.					

8. I get help when I am sick in bed.					

Appendix E: Berger HIV Stigma Scale

Berger HIV Stigma Scale ©1999

This study asks about some of the social and emotional aspects of having HIV. For most of the questions, just circle the letters or numbers that go with your answer. There are no right or wrong answers. Feel free to write in comments as you go through the questions.

This first set of questions asks about some of your experiences, feelings, and opinions as to how people with HIV feel and how they are treated. Please do your best to answer each question.

For each item, circle your answer: Strongly disagree (SD), disagree (D), agree (A), or strongly agree (SA).

Strongly Disagree	Disagree	Agree	Strongly Agree
(SD)	(D)	(A)	(SA)

1. In many areas of my life, no one knows I have HIV.
   SD D A SA
2. I feel guilty because I have HIV.
   SD D A SA
3. People's attitude about HIV makes me feel worse about myself.
   SD D A SA
4. Telling someone I have HIV is risky.
   SD D A SA
5. People with HIV lose their jobs when employers find out.
   SD D A SA
6. I work hard to keep my HIV a secret.
   SD D A SA
7. I feel I am not as good a person as others because I have HIV.
   SD D A SA
8. I never feel ashamed of having HIV.
   SD D A SA
9. People with HIV are treated like outcasts.
   SD D A SA

10. Most people believe that a person who has HIV is dirty.
    SD D A SA
11. It is easier to avoid new friendships than worry about telling someone that I have HIV.

SD D A SA
12. Having HIV makes me feel unclean.
SD D A SA
13. Since learning I have HIV, I feel set apart and isolated from the rest of the world.
SD D A SA
14. Most people think that a person with HIV is disgusting.
SD D A SA
15. Having HIV makes me feel like a bad person.
SD D A SA
16. Most people with HIV are rejected by others when they find out.
SD D A SA
17. I am very careful about who I tell that I have HIV.
SD D A SA
18. Some people who know that I have HIV have grown more distant.
SD D A SA
19. Since learning that I have HIV, I worry about people discriminating against me.
SD D A SA
20. Most people are uncomfortable around people with HIV.
SD D A SA
21. I never feel the need to hide the fact that I have HIV.
SD D A SA
22. I worry that people will judge me when they learn I have HIV.
SD D A SA
23. Having HIV in my body is disgusting to me.
SD D A SA

Many of the items in this next section assume that you have told other people that you have HIV, or that others know. This may not be true for you. If the item refers to something that has not actually happened to you, please imagine yourself in that situation. Then give your answer ("strongly disagree," "disagree," "agree," "strongly agree") based on how you think you would feel or how you think others would react to you.

Strongly Disagree	Disagree	Agree	Strongly Agree
(SD)	(D)	(A)	(SA)

24. I have been hurt by how people reacted to learning I have HIV.
SD D A SA
25. I worry that people who know I have HIV will tell others.
SD D A SA
26. I regret having told some people that I have HIV.
SD D A SA
27. As a rule, telling others that I have HIV has been a mistake.
SD D A SA

28. Some people avoid touching me once they know I have HIV.
SD D A SA

29. People I care about stopped calling me after learning I have HIV.
SD D A SA

30. People have told me that getting HIV is what I deserve for how I lived my life.
SD D A SA

31. Some people close to me are afraid others will reject them if it becomes known I have HIV.
SD D A SA

32. People don’t want me around their children once they know I have HIV.
SD D A SA

33. People have backed away from me when they learn I have HIV.
SD D A SA

34. Some people act as though it’s my fault I have HIV.
SD D A SA

35. I have stopped socializing with some people because of their reactions to my having HIV.
SD D A SA

36. I have lost friends by telling them I have HIV.
SD D A SA

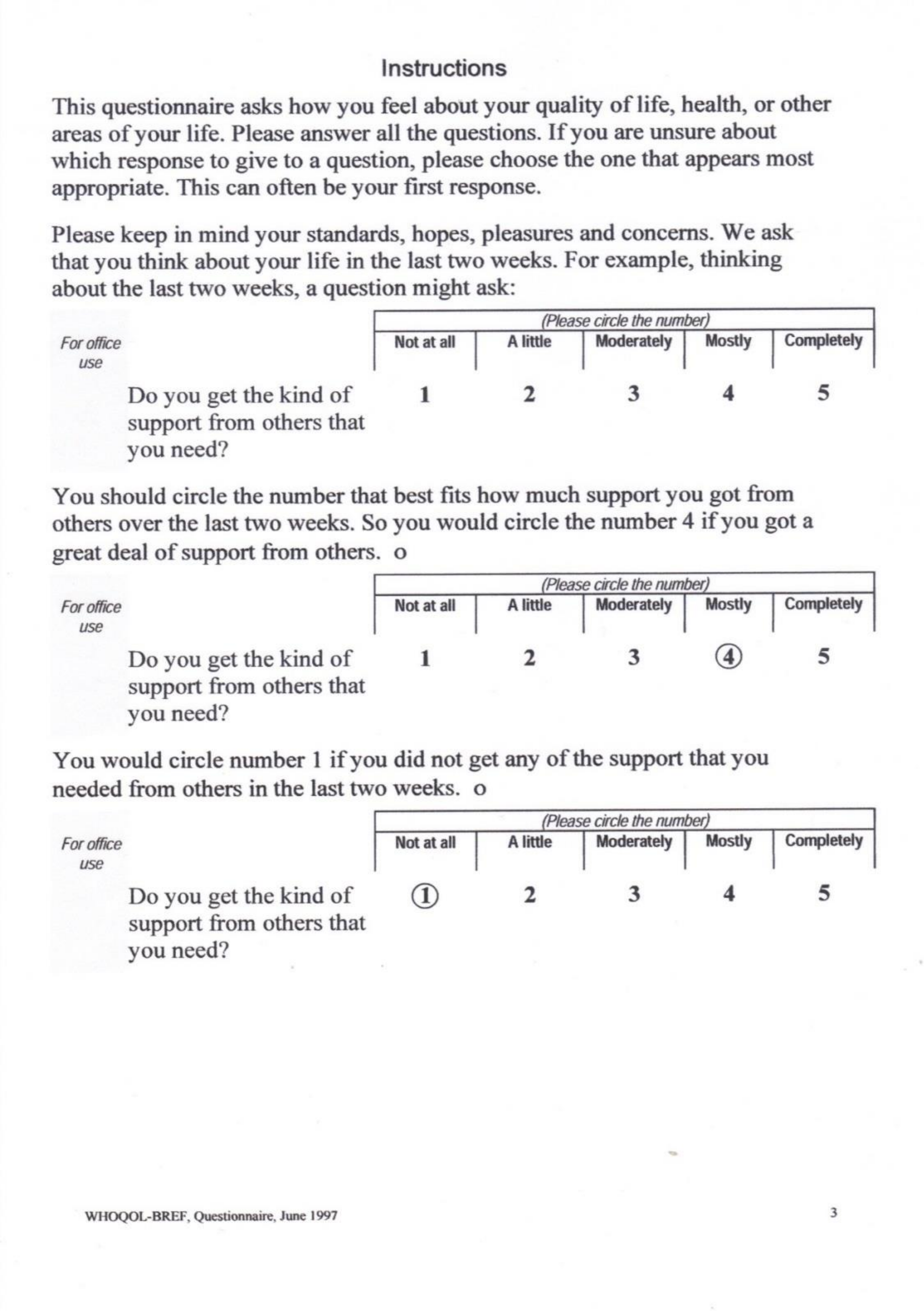
37. I have told people close to me to keep the fact that I have HIV a secret.
SD D A SA

38. People who know I have HIV tend to ignore my good points.
SD D A SA

39. People seem afraid of me once they learn I have HIV.
SD D A SA

40. When people learn you have HIV, they look for flaws in your character.
SD D A SA

Appendix F: WHO QOL-BREF Scale for Measuring Quality of Life



Instructions

This questionnaire asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life in the last two weeks. For example, thinking about the last two weeks, a question might ask:

		(Please circle the number)				
For office use		**Not at all**	**A little**	**Moderately**	**Mostly**	**Completely**
	Do you get the kind of support from others that you need?	1	2	3	4	5

You should circle the number that best fits how much support you got from others over the last two weeks. So you would circle the number 4 if you got a great deal of support from others. o

		(Please circle the number)				
For office use		**Not at all**	**A little**	**Moderately**	**Mostly**	**Completely**
	Do you get the kind of support from others that you need?	1	2	3	[✓ 4]	5

You would circle number 1 if you did not get any of the support that you needed from others in the last two weeks. o

		(Please circle the number)				
For office use		**Not at all**	**A little**	**Moderately**	**Mostly**	**Completely**
	Do you get the kind of support from others that you need?	[✓ 1]	2	3	4	5

WHOQOL-BREF, Questionnaire, June 1997 3

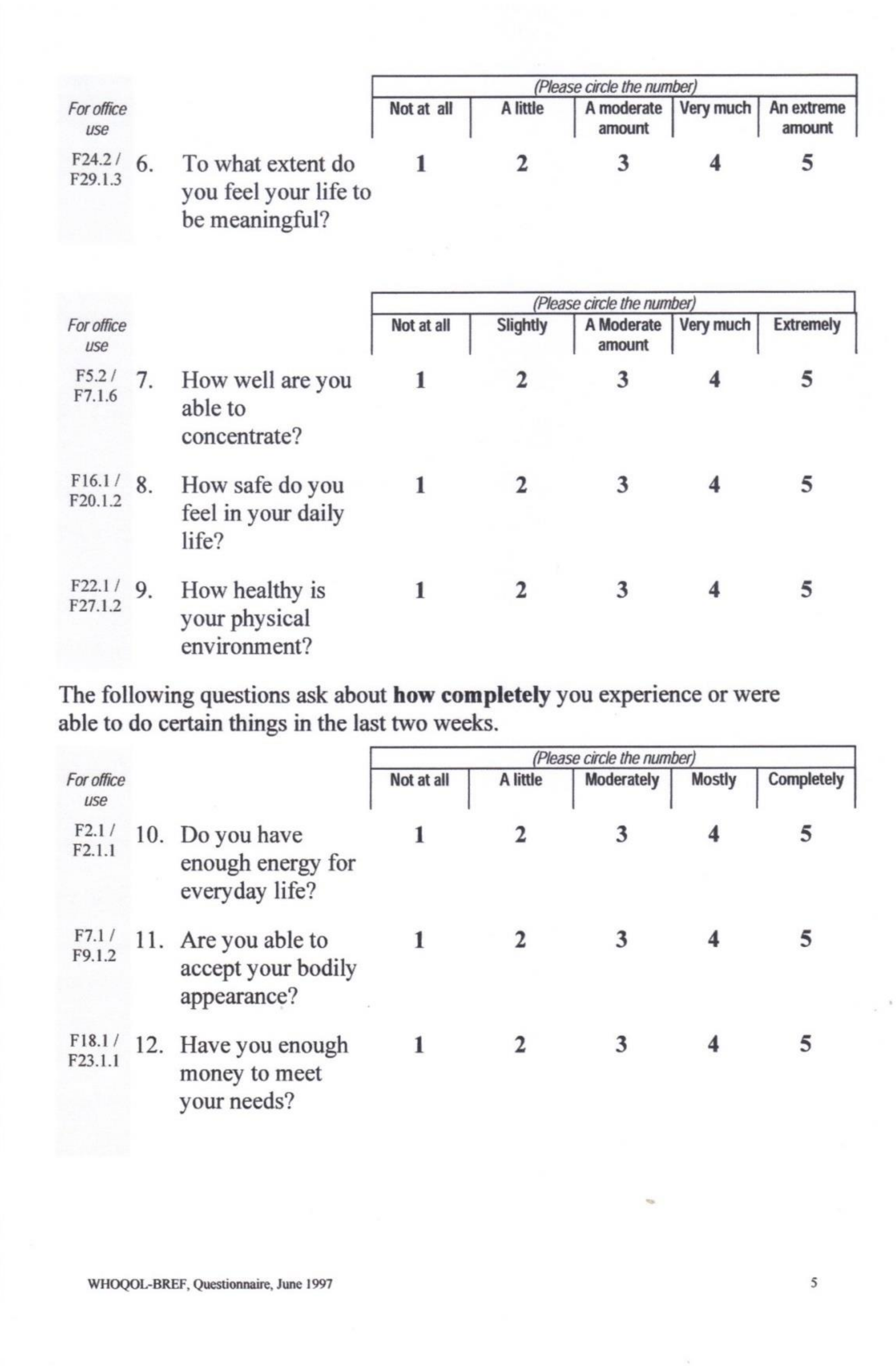
Please read each question, assess your feelings, and circle the number on the scale that gives the best answer for you for each question.

For office use			*(Please circle the number)*				
			Very poor	Poor	Neither poor nor good	Good	Very Good
G1 / G1.1	1.	How would you rate your quality of life?	1	2	3	4	5

For office use			*(Please circle the number)*				
			Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
G4 / G2.3	2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last two weeks.

For office use			*(Please circle the number)*				
			Not at all	A little	A moderate amount	Very much	An extreme amount
F1.4 / F1.2.5	3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
F11.3 / F13.1.4	4.	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
F4.1 / F6.1.2	5.	How much do you enjoy life?	1	2	3	4	5



For office use			*(Please circle the number)* Not at all	A little	A moderate amount	Very much	An extreme amount
F24.2 / F29.1.3	6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

For office use			*(Please circle the number)* Not at all	Slightly	A Moderate amount	Very much	Extremely
F5.2 / F7.1.6	7.	How well are you able to concentrate?	1	2	3	4	5
F16.1 / F20.1.2	8.	How safe do you feel in your daily life?	1	2	3	4	5
F22.1 / F27.1.2	9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

For office use			*(Please circle the number)* Not at all	A little	Moderately	Mostly	Completely
F2.1 / F2.1.1	10.	Do you have enough energy for everyday life?	1	2	3	4	5
F7.1 / F9.1.2	11.	Are you able to accept your bodily appearance?	1	2	3	4	5
F18.1 / F23.1.1	12.	Have you enough money to meet your needs?	1	2	3	4	5

For office use		*(Please circle the number)* Not at all	A little	Moderately	Mostly	Completely
F20.1 / F25.1.1	13. How available to you is the information that you need in your day-to-day life?	**1**	**2**	**3**	**4**	**5**
F21.1 / F26.1.2	14. To what extent do you have the opportunity for leisure activities?	**1**	**2**	**3**	**4**	**5**

For office use		*(Please circle the number)* Very poor	Poor	Neither poor nor well	Well	Very well
F9.1 / F11.1.1	15. How well are you able to get around?	**1**	**2**	**3**	**4**	**5**

The following questions ask you to say how **good** or **satisfied** you have felt about various aspects of your life over the last two weeks.

For office use		*(Please circle the number)* Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
F3.3 / F4.2.2	16. How satisfied are you with your sleep?	**1**	**2**	**3**	**4**	**5**
F10.3 / F12.2.3	17. How satisfied are you with your ability to perform your daily living activities?	**1**	**2**	**3**	**4**	**5**
F12.4 / F16.2.1	18. How satisfied are you with your capacity for work?	**1**	**2**	**3**	**4**	**5**

For office use			*(Please circle the number)*				
			Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**
F6.4 / F8.2.2	19.	How satisfied are you with your abilities?	**1**	**2**	**3**	**4**	**5**
F13.3 / F17.2.3	20.	How satisfied are you with your personal relationships?	**1**	**2**	**3**	**4**	**5**
F15.3 / F3.2.1	21.	How satisfied are you with your sex life?	**1**	**2**	**3**	**4**	**5**
F14.4 / F18.2.5	22.	How satisfied are you with the support you get from your friends?	**1**	**2**	**3**	**4**	**5**
F17.3 / F21.2.2	23.	How satisfied are you with the conditions of your living place?	**1**	**2**	**3**	**4**	**5**
F19.3 / F24.2.1	24.	How satisfied are you with your access to health services?	**1**	**2**	**3**	**4**	**5**
F.23.3 / F28.2.2	25.	How satisfied are you with your mode of transportation?	**1**	**2**	**3**	**4**	**5**

The follow question refers to **how often** you have felt or experienced certain things in the last two weeks.

For office use		*(Please circle the number)* Never	Seldom	Quite often	Very often	Always
F8.1 / F10.1.2	26. How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	**1**	**2**	**3**	**4**	**5**

Did someone help you to fill out this form? *(Please circle Yes or No)* Yes No

How long did it take to fill out this form? ____________________

THANK YOU FOR YOUR HELP

Appendix G: WHO Approval Letter to use the WHO QOL-BREF Scale

World Health Organization Quality of Life (WHOQOL) Instrument Order Form

US English Version Only

Your responses have been successfully submitted.

Your responses have been submitted. Your confirmation code is 1a560ba6ea689d3659a5bbe2ec69ebb1

Please print this page for your records.

The instrument distribution coordinator will be contacting you soon to complete your order.

Thank you.

Thank you for your interest in the World Health Organization Quality of Life — BREF US English Version Instruments.

We distribute the WHOQOL-BREF U.S. English Version free of charge as electronic files.

Any questions can be directed to:

US WHOQOL Center
Attn: Instrument Distribution Coordinator
University of Washington, Department of Health Services
Box 359455
Seattle, Washington, USA 98195-9455
Phone: (800) 291-2193
Fax: (206) 616-3135
Email: seaqol@u.washington.edu

Although this information isn’t required, we would also appreciate a short description of how you plan to use the instrument. The information would be used to enhance the effectiveness of future instruments or revisions.

Sincerely,

Instrument Dissemination Coordinator, US WHOQOL Center

Name (First, Last, Title):

Chinedu Umeadi Dr

Today's Date:

22/05/2014

Organization:

Walden University

Mailing Address (Street, PO Box):

28 Tamar Close, Whitefield

City, State (if USA), Postal Code:

Manchester, UK

Country (if outside USA):

Manchester, M45 8SJ, UK

Phone 1:

+447821186983

E-mail:

apcumeadi@yahoo.com

Study Name:

Effect of Social Support and HIV-related Stigma on Depression in HIV/AIDS patients

---

Sample Population:

People living with HIV AIDS in Eastern Nigeria

Estimated Sample Size:

89

Estimated Study Start and Completion Dates:

July 2014 to November 2014

Brief Description of Project:

This research will examine the effect of social support and HIV-related stigma on depression in people living with HIV/AIDS (PLWHA) in Eastern Nigeria. I will be using a cross sectional study design for the study. The research questions are:
1. What is the individual and combined effect of social support (as measured by score on Duke-UNC functional social support questionnaire) and HIV-related stigma (as measured by score on Berger HIV stigma scale) on depression (as measured by score on Beck depression inventory-II) in PLWHA in Eastern Nigeria?

2. Do sociodemographic factors (i.e. age, gender, sexual orientation, religion, occupation, annual income, educational status, and marital status), QOL (as measured by score on WHO QOL-BREF scale), and time since diagnosis of HIV moderate the relationship between social support, HIV-related stigma, and depression in PLWHA in Eastern Nigeria?

I will recruit study participants from the antiretroviral clinic at Federal Medical Center Umuahia.

User Agreement for the WHOQOL-BREF Instrument

Please read the following information carefully

The UNIVERSITY OF WASHINGTON distributes the **WHOQOL-BREF** and its translations available in the following languages: U.S. English

Therefore, User and UNIVERSITY OF WASHINGTON agree as follows:

1. UNIVERSITY OF WASHINGTON's obligations

UNIVERSITY OF WASHINGTON shall deliver the original **WHOQOL-BREF** and/or the translations requested by "User" subject to the following conditions:

- The translations requested are available, and
- The present agreement is duly completed and signed by "User"

2. "User"'s obligations

2.1 No modification

"User" shall not modify, abridge, condense, adapt, recast or transform the **WHOQOL-BREF** in any manner or form, including but not limited to any minor or significant change in wordings or organization in **WHOQOL-BREF**, without the prior written agreement of UNIVERSITY OF WASHINGTON, which agreement shall not be unreasonably withheld or delayed.

2.2 No translation

"User" shall not translate **WHOQOL-BREF**, without the prior written agreement of **Dr. Donald Patrick**.

2.3 No reproduction

"User" shall not reproduce the **WHOQOL-BREF** except for the limited purpose of generating sufficient copies for use in investigations stated hereunder and shall in no event distribute copies of the **WHOQOL-BREF** to third parties by sale, rental, lease, lending, or any other profit-making means.

2.4. Publication

In case of publication of study results, "User" shall cite (1) "Bonomi AE, Patrick, DL., Bushnell, DM, Martin M (2000). Validation of the United States' version of the World Health Organization Quality of Life (WHOQOL) instrument. *Journal of Clinical Epidemiology, 53*(1), 13-17." in reference section of the publication. (New publications may be added and older ones deleted).

2.5 Provision of data

All data, results and reports obtained by, or prepared in connection with the **WHOQOL-BREF** shall remain the User's property. However, UNIVERSITY OF WASHINGTON may request the User to share data, results and reports obtained through the use of the **WHOQOL-BREF**, which request User can accept or reject in its sole and unfettered discretion. UNIVERSITY OF WASHINGTON shall ensure the anonymisation of such data at three levels, by the removal of: any patient identification, any university or company identification and any therapy name. UNIVERSITY OF WASHINGTON will classify and reorganize such anonymous data and therefore, shall hold all intellectual property rights regarding these data when and if submitted to the data pool.

UNIVERSITY OF WASHINGTON may provide such reorganized data to third parties, for analysis in education, research, consulting, and specifically for the evaluation of cross-cultural equivalence and development of reference values for this **WHOQOL-BREF** or for any other similar project.

2.6 Payment

2.6.1 Royalty fees (Authors)

The use of the **WHOQOL-BREF** is free of author's royalty fees.

2.6.2 Distribution fees (UNIVERSITY OF WASHINGTON)

The use of the **WHOQOL-BREF** in studies is not subject to a distribution fee.

2.6.3 Invoicement

For the use of the **WHOQOL-BREF**, this completed user agreement shall suffice as invoicement.

3. Copyright Infringement

The **WHOQOL-BREF** was developed by the World Health Organization at The University of Washington. The World Health Organization holds copyright over the WHOQOL and all its present and future translations. Each new translation will be made available to third parties once it is available, through the World Health Organization, under the conditions described in the present document.

If, at any time during the term of this agreement, « User » learns of any infringement by a third party of any Intellectual Property Rights in connection with the **WHOQOL-BREF**, « User » shall promptly notify UNIVERSITY OF WASHINGTON. UNIVERSITY OF WASHINGTON shall notify such infringement to **Authors. Authors** will decide to institute or not proceedings against the infringing party.

identiality

All and any information related to the **WHOQOL-BREF** including but not limited to the following: information concerning clinical investigations, creations, systems, materials, software, data and know-how, translations, improvements ideas, specifications, documents, records, notebooks, drawings, and any repositories or representation of such information, whether oral or in writing or software stored, are herein referred to as confidential information. Likewise, any information provided by User to **Authors** relating to this Agreement, including information provided in this Agreement, shall be treated as confidential information.

In consideration of the disclosure of any such confidential information to the other, each party agrees to hold such confidential information in confidence and not divulge it, in whole or in part, to any third party except for the purpose specified in this agreement.

5. Use of name

It is agreed that UNIVERSITY OF WASHINGTON shall not disclose, whether by the public press or otherwise, the name of **“User’ or institution”**, to any third party to this agreement except to the copyright holder(s) of the **WHOQOL-BREF**.

6. Liability

6.1 In case of breach of contract

In the event of total or partial breach by UNIVERSITY OF WASHINGTON of any of its obligations hereunder, UNIVERSITY OF WASHINGTON’s liability shall be limited to the direct loss or damage (excluding loss of profit and operating losses) suffered by “User” as a result of such breach and shall not include any other damages and particular consequential damages.

6.2 In the scope of the use of the “Questionnaire”

Under no circumstances may **Authors** or UNIVERSITY OF WASHINGTON be held liable for direct or consequential damage resulting from the use of the **WHOQOL-BREF**.

6.3 In the event of non-renewal of this Agreement

In the event of non-renewal of this Agreement by UNIVERSITY OF WASHINGTON for any cause or failure by UNIVERSITY OF WASHINGTON to conclude a new agreement with “User” upon the expiry of this Agreement, UNIVERSITY OF WASHINGTON will have no liability for payment of any damages and/or indemnity to “User”.

7. Term and termination

This agreement shall be effective as the date of its signature by “User” and shall continue for a term of 10 (ten) years at least or until the term of the study above mentioned in SUMMARY OF THE STUDY.

Either party may terminate this Agreement immediately upon providing written notice to the other party in the event of: (a) the other party’s unexcused failure to fulfil any of its material obligations under this Agreement or (b) upon the insolvency or bankruptcy of, or the filing of a petition in bankruptcy or similar arrangement by the other party. User may terminate this Agreement for any reason upon 90 days written notice.

Upon expiration or termination of this Agreement UNIVERSITY OF WASHINGTON may retain in its possession confidential information it acquired from **WHOQOL-BREF** while under contract. The obligations which by their terms survive termination, include, without limitation, the applicable ownership, confidentiality and indemnification provisions of this Agreement, shall survive termination.

8. Assignment

This Agreement and any of the rights and obligations of “User” are personal to the “User” and cannot be assigned or transferred by “User” to any third party or by operation of law, except with the written consent of UNIVERSITY OF WASHINGTON notified to “User”.

9. Separate Agreement

This Agreement holds for the above mentioned study only. The use of the**WHOQOL-BREF** in any additional study of the “User” will require a separate agreement **without additional fees, unless significant updates have been added to the user manual (new edition, etc.).**

10. Entire Agreement, Modification, Enforceability

The entire agreement hereto is contained herein and this Agreement cancels and supersedes all prior agreements, oral or written, between the parties hereto with the respect to the subject matter hereto.

This Agreement or any of its terms may not be changed or amended except by written document and the failure by either party hereto to enforce any or all of the provision(s) of this Agreement shall not be deemed a waiver or an amendment of the same and shall not prevent future enforcement thereof.

If any one or more of the provisions or clauses of this Agreement are adjudged by a court to be invalid or unenforceable, this shall in no way prejudice or affect the binding nature of this Agreement as a whole, or the validity or enforceability of each/and every other provision of this Agreement.

11. Governing law

This Agreement shall be governed by and construed in accordance with the laws of the State of Washington. Any disputes will be adjudicated first through the UNIVERSITY OF WASHINGTON and subsequently through courts in the State of Washington.

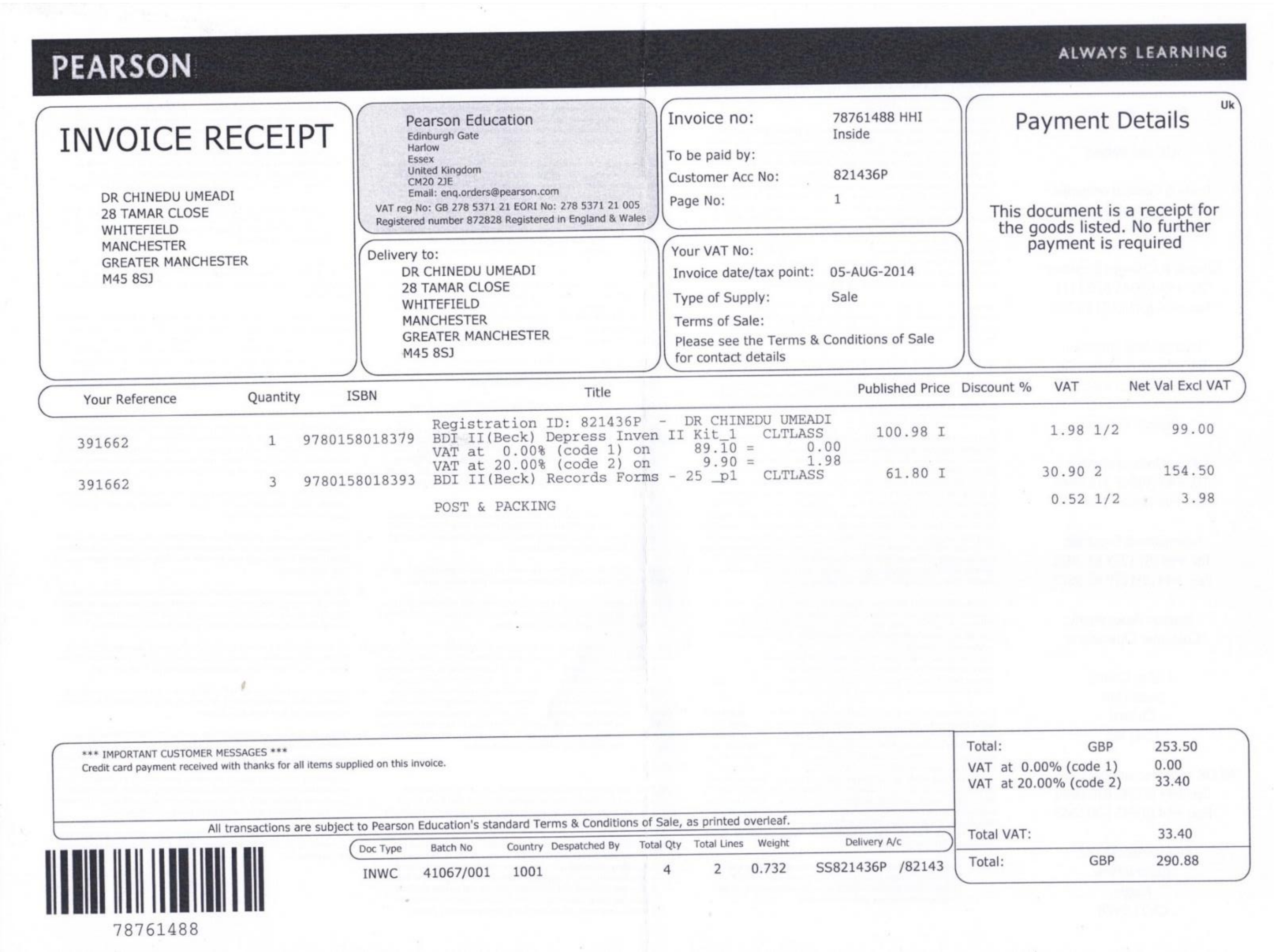
Acceptance of Terms of User Agreement:

●I have read and agree to the terms listed in the user agreement above.

You have completed the user permission form for the WHOQOL-BREF and are now free to download the instrument and scoring information at http://depts.washington.edu/yqol/WHOQOL-BREF

Thank you for your interest in the WHOQOL-BREF!

Appendix H: Invoice for Purchase of 100 copies of BDI-II from Pearson Education Limited



PEARSON ALWAYS LEARNING

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GREATER MANCHESTER
M45 8SJ

Pearson Education
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United Kingdom
CM20 2JE
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WHITEFIELD
MANCHESTER
GREATER MANCHESTER
M45 8SJ

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To be paid by:	
Customer Acc No:	821436P
Page No:	1

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Invoice date/tax point:	05-AUG-2014
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Terms of Sale:	

Please see the Terms & Conditions of Sale for contact details

Payment Details Uk

This document is a receipt for the goods listed. No further payment is required

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391662	1	9780158018379	Registration ID: 821436P - DR CHINEDU UMEADI BDI II(Beck) Depress Inven II Kit_1 CLTLASS VAT at 0.00% (code 1) on 89.10 = 0.00 VAT at 20.00% (code 2) on 9.90 = 1.98	100.98 I		1.98 1/2	99.00
391662	3	9780158018393	BDI II(Beck) Records Forms - 25 _p1 CLTLASS	61.80 I		30.90 2	154.50
			POST & PACKING			0.52 1/2	3.98

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Credit card payment received with thanks for all items supplied on this invoice.

All transactions are subject to Pearson Education's standard Terms & Conditions of Sale, as printed overleaf.

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Total:	GBP	253.50
VAT at 0.00% (code 1)		0.00
VAT at 20.00% (code 2)		33.40
Total VAT:		33.40
Total:	GBP	290.88

78761488

Appendix I: Order Confirmation for Another 50 copies of BDI-II from Pearson Education Limited

Order confirmation

Your order number is 392104 and your customer reference is CUMEADI.

You'll find all your order details below.

How to contact us

If you have any problems or queries, please contact our Customer Services Department on +44 (0) 845 630 88 88 or by email to info@pearsonclinical.co.ukquoting your registration number 821436P and your order number (392104).

Alternatively, you can track your order by visiting http://www.pearsonclinical.co.uk/myaccount/index.aspx?d=c. You'll need your registration number for this. (Please note that your order will not appear immediately in the My Account section, please allow at least 2 hours from time of ordering).

Firm items you have ordered

Title	Quantity	Subtotal
Depression Inventory Ii Record Forms-25 @ £51.50 each ISBN: 9780158018393 | Available | Order number 392104	2	£103.00

Order details

Invoice address
DR CHINEDU UMEADI
28 Tamar Close
Whitefield
Manchester
Greater Manchester
M45 8SJ
United Kingdom

Payment method
VISA: ****-****-****-0075
Expiry: 11/2016
Cardholder: Dr C A Umeadi

Order total

Subtotal:	£103.00
Less Discount:	£0.00
Less any Promotional Discounts:	£0.00
Delivery:	£4.50
Subtotal before VAT:	£107.50
VAT:	£20.60
==	
Order Total:	£128.10
==	

Appendix J: Permission to use DUKE-UNC Functional Social Support Questionnaire

Subject:	Re: Form submission from: Contact Us
From:	Chinedu Umeadi (apcumeadi@yahoo.com)
To:	IBox@asaging.org;
Date:	Friday, 1 August 2014, 2:32

Thank you.

Sent from my iPhone

On 1 Aug 2014, at 01:29, Info Box <IBox@asaging.org> wrote:

TO: Chinedu Umeadi

RE: Permission to use DUKE-UNC functional social support questionnaire

The American Society on Aging grants permission to Chinedu Umeadi, PhD student at Walden University to use the DUKE-UNC functional social support to collect data on social support from study participants.

Please cite: American Society on Aging and American Society of Consultant Pharmacists Foundation. Duke-UNC Functional Social Support Questionnaire (FSSQ) reprinted with permission.

Sincerely,

Jutka

Ms. Jutka Mándoki

Manager, Member Relations

American Society on Aging | 575 Market St, Ste 2100 | San Francisco, CA 94105-2689

☎ 415-974-9630 7 Fax: 415-974-0300 ✉ jmandoki@asaging.org | www.asaging.org

<image001.jpg>

From: info@asaging.org [mailto:info@asaging.org] **On Behalf Of** Chinedu
Sent: Wednesday, July 30, 2014 4:27 PM
To: Info Box
Subject: Form submission from: Contact Us

First Name	Chinedu
Last Name	Umeadi
Email Name	apcumeadi@yahoo.com
Street Address1	28 Tamar Close
Street Address2	Whitefield
City	Manchester, United Kingdom
State	
Zip Code	M45 8sj

Comment

Hi,

I am a PhD student at Walden University and I am carrying out a research on the effect of social support and HIV-related stigma on depression in people living with HIV/AIDS. I plan to use the DUKE-UNC functional social support questionnaire to collect data on social support from my study participants.

The Duke-UNC Functional social support questionnaire I saw online had the American Society of aging as the copyright holders.

I will like to obtain your permission to use the questionnaire. I hope to hear from you soon.

Thanking you,

Chinedu Umeadi

Appendix K: Permission to use the Berger HIV Scale

Subject:	Re: Permission to use the Berger HIV Scale
From:	Chinedu Umeadi (apcumeadi@yahoo.com)
To:	beberger@uic.edu;
Date:	Wednesday, 30 July 2014, 22:10

Dear Barbara,

Thank you for giving me the permission to use the Berger HIV stigma scale. I will use the citation you have provided me with.

With best wishes,

Chinedu

Sent from my iPhone

On 30 Jul 2014, at 21:31, "Berger, Barbara" <beberger@uic.edu> wrote:

Dear Chinedu --

I am attaching electronic copies of the HIV Stigma Scale and scoring instructions. You will notice that there are tiny numbers on the far right of each item in the scale -- these indicate which subscale(s) that item contributes to when calculating the subscale scores. However, I do recommend removing the tiny numbers from any version given to research participants since some people may find them confusing or puzzling.

If you find that the Berger HIV Stigma Scale fits your research plans, you have my permission to use it for research purposes. In that case, please use this citation in referencing the instrument:
Berger, B, Ferrans, CE, & Lashley, FR. (2001). Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale. Research in Nursing and Health, 24, 518-529.

Thank you for your interest in the Berger HIV Stigma Scale, and best wishes on your research --
Barb Berger

Barbara E. Berger, PhD, RN
Department of Biobehavioral Health Science, Rm 714
College of Nursing [m/c 802]
University of Illinois at Chicago
845 S. Damen Ave.
Chicago, IL 60612-7350
phone: 312 996-7844
fax: 312 996-4979

Original Message-----
From: chinedu umeadi [mailto:apcumeadi@yahoo.com]
Sent: Sunday, July 27, 2014 11:00 AM
To: Berger, Barbara
Subject: Re: Permission to use the Berger HIV Scale

Dear Barbara,

I am a PhD student at Walden University and I am looking at the effect of HIV-related stigma and social support on depression in HIV patients.

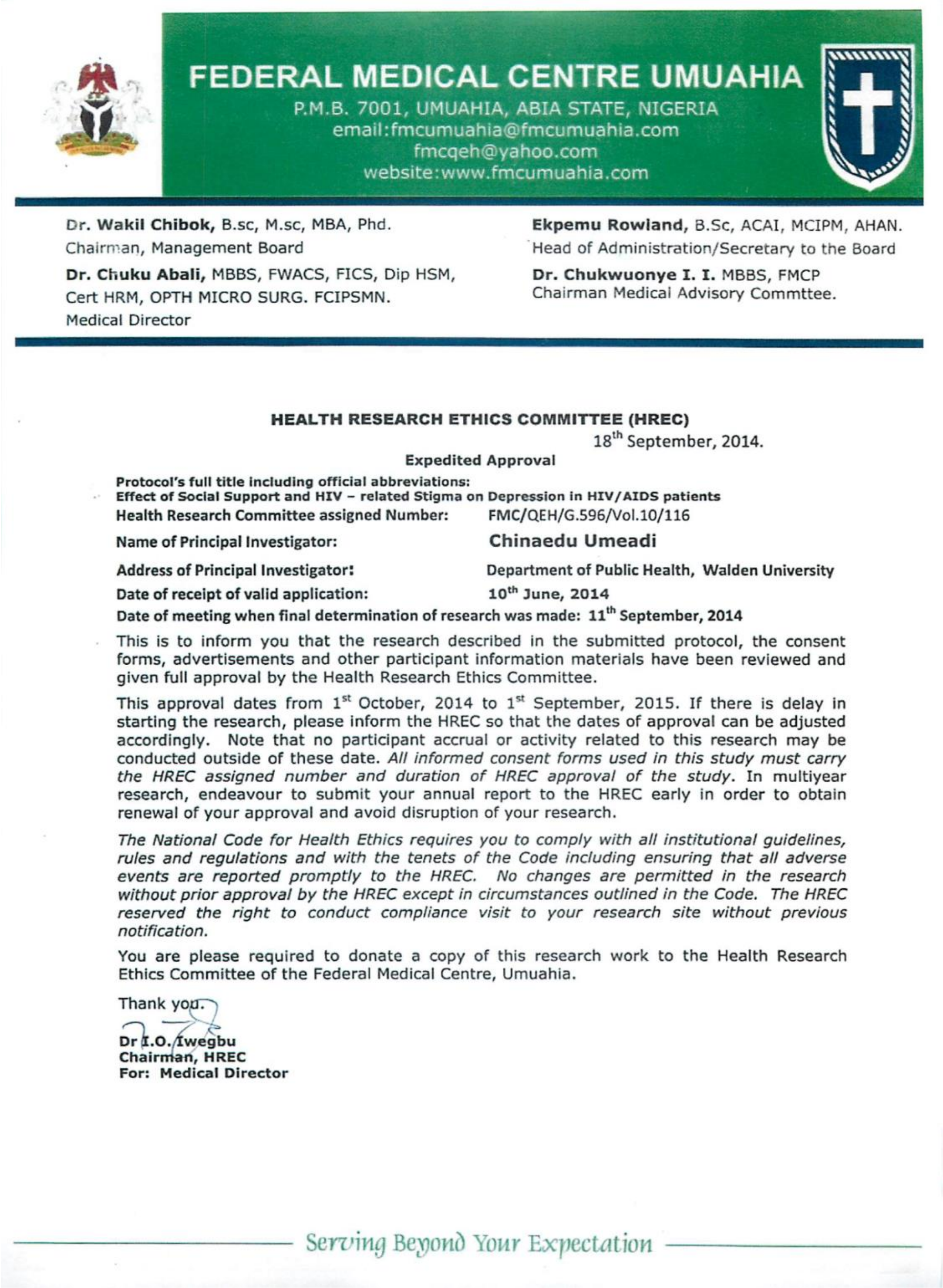
I plan to use the Berger HIV Stigma Scale to collect part of my data. I am writing to ask for your permission to do this.

Hope to hear from you soon.

With best wishes,

Chinedu Umeadi

Appendix L: Federal Medical Center Owerri Ethical Approval Letter



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email:fmcumuahia@fmcumuahia.com
fmcqeh@yahoo.com
website:www.fmcumuahia.com

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Head of Administration/Secretary to the Board

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Cert HRM, OPTH MICRO SURG. FCIPSMN.
Medical Director

Dr. Chukwuonye I. I. MBBS, FMCP
Chairman Medical Advisory Commttee.

HEALTH RESEARCH ETHICS COMMITTEE (HREC)

18th September, 2014.

Expedited Approval

Protocol's full title including official abbreviations:
Effect of Social Support and HIV – related Stigma on Depression in HIV/AIDS patients

Health Research Committee assigned Number:	FMC/QEH/G.596/Vol.10/116
Name of Principal Investigator:	**Chinaedu Umeadi**
Address of Principal Investigator:	**Department of Public Health, Walden University**
Date of receipt of valid application:	**10th June, 2014**

Date of meeting when final determination of research was made: 11th September, 2014

This is to inform you that the research described in the submitted protocol, the consent forms, advertisements and other participant information materials have been reviewed and given full approval by the Health Research Ethics Committee.

This approval dates from 1st October, 2014 to 1st September, 2015. If there is delay in starting the research, please inform the HREC so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these date. *All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study*. In multiyear research, endeavour to submit your annual report to the HREC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code for Health Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the HREC. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserved the right to conduct compliance visit to your research site without previous notification.

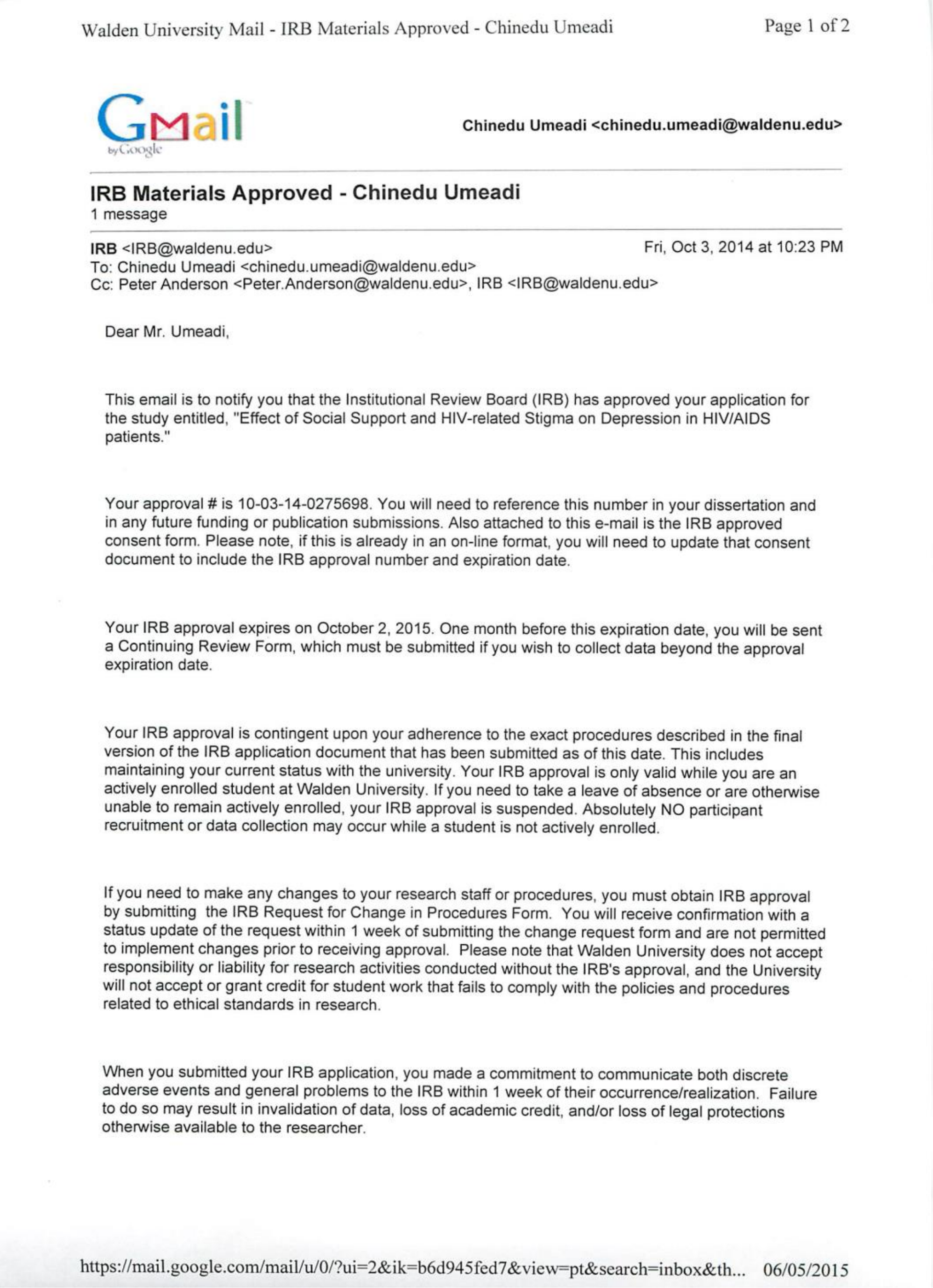
You are please required to donate a copy of this research work to the Health Research Ethics Committee of the Federal Medical Centre, Umuahia.

Thank you.

Dr I.O. Iwegbu
Chairman, HREC
For: Medical Director

Serving Beyond Your Expectation

Appendix M: Walden IRB Approval Email



Gmail by Google

Chinedu Umeadi <chinedu.umeadi@waldenu.edu>

IRB Materials Approved - Chinedu Umeadi

1 message

IRB <IRB@waldenu.edu> Fri, Oct 3, 2014 at 10:23 PM
To: Chinedu Umeadi <chinedu.umeadi@waldenu.edu>
Cc: Peter Anderson <Peter.Anderson@waldenu.edu>, IRB <IRB@waldenu.edu>

Dear Mr. Umeadi,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, "Effect of Social Support and HIV-related Stigma on Depression in HIV/AIDS patients."

Your approval # is 10-03-14-0275698. You will need to reference this number in your dissertation and in any future funding or publication submissions. Also attached to this e-mail is the IRB approved consent form. Please note, if this is already in an on-line format, you will need to update that consent document to include the IRB approval number and expiration date.

Your IRB approval expires on October 2, 2015. One month before this expiration date, you will be sent a Continuing Review Form, which must be submitted if you wish to collect data beyond the approval expiration date.

Your IRB approval is contingent upon your adherence to the exact procedures described in the final version of the IRB application document that has been submitted as of this date. This includes maintaining your current status with the university. Your IRB approval is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, your IRB approval is suspended. Absolutely NO participant recruitment or data collection may occur while a student is not actively enrolled.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB application, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.