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HIV-Positive Status Disclosure Barriers in Stable Heterosexual Partners in Warri, Nigeria.

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This is to certify that the doctoral dissertation by

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Abstract

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MSc, University of Benin, 1999

FIMLS, Lagos State University Teaching Hospital, 1996

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

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Abstract

Nondisclosure of positive status drives the secondary transmission of human immunodeficiency virus (HIV) infection. This cross sectional quantitative survey study grounded by the consequence theory evaluates fear of stigma, lack of social support, and level of HIV-related knowledge as barriers to self-disclosure of HIV-positive status to stable heterosexual partners. A sample of 303 HIV-infected respondents (111 men and 192 women) accessing antiretroviral therapy at 4 designated centers in Warri, Nigeria, completed the self-administered questionnaires. Logistic regression analysis was used to assess the association between these factors and spousal HIV-positive status disclosure. Results demonstrated: (a) social support availability significantly predicted HIV status disclosure (*OR* = 1.038, *CI* = 1.022, 1.053, *p* = .000); (b) no significant correlation between high scores on HIV knowledge scale and HIV status disclosure (*OR* = .992, *CI* =.921, 1.067, *p* = .822); and (c) high stigma scale scores significantly predicted disclosure of HIV status in an inverse association (*OR* =.982, *CI* = .968, .997, *p* = .020). Independent *t* test analysis demonstrated that the gender difference in disclosure rates (females, 67.7%; males, 64.9%) was statistically nonsignificant at *t* (301) = -504, .614, *p* > .05. Multivariate analyses found marital status, length of relationship, knowledge of partners HIV status, and duration of HIV diagnosis as disclosure predictors. This study, which established a disclosure rate of 66.7%, and a discordance rate of 40.9%, may promote timely HIV-positive status disclosure and prevent secondary HIV transmission at the local level, resulting in the control of HIV epidemic at a global level.

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Dedication

I dedicate this dissertation first, to my late father, Chief Gilbert Oyiagu Ugwu (aka “Copy-to,” “Odogwu 1 of Ukana”), a renowned educator who would have been elated to witness his daughter attaining the highest educational level. I did this for you, Dad!

Second, I dedicate this dissertation to everyone who is either living with or who has been impacted by HIV/AIDS. The battle against the virus continues, but with collective effort, we shall be victorious.

Acknowledgments

My scholarly journey at Walden University, Minneapolis, Minnesota, started in the 2011 Spring semester and came to an end in the 2016 Spring semester. It has been 5 years of incessant work to complete this doctoral degree. Although the journey was tumultuous, several persons held my hand at some point to lighten my burden, and I appreciate them all.

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Chapter 1: Introduction to the Study

Introduction

HIV) causes acquired immunodeficiency syndrome (AIDS). The virus, which is transmitted via body fluids, has continued to spread rapidly across the globe, particularly in developing nations (Wu, Rou, Xu, Lou, & Detels, 2005). Several strategies have become available to prevent or reduce the spread of HIV, including limiting the number of sexual partners, not sharing needles, and consistently using sexual protection such as condoms (Centers for Disease Control and Prevention [CDC], 2015). A secondary way to control the spread of HIV is through status disclosure. Nondisclosure among heterosexual partners thwarts HIV prevention efforts by exposing others previously uninfected by HIV to secondary infection. The purpose of this study was to evaluate the barriers to disclosure of HIV-positive status, particularly to the partners in stable heterosexual relationships. Public health agencies could use the results of the study to establish HIV/AIDS control programs targeting the prevention of secondary transmission.

In Chapter 1, I introduce the research problem and provide background information. In addition, I discuss the magnitude of the problem to justify why I chose it for study. Also included in Chapter 1 are the research questions and hypotheses, a preview of the theoretical perspective forming the framework of this study, and definitions of some key terms. I discuss the assumptions, scope, delimitations, and limitations of the study, and I explain the significance of the study as well as the social change implications of the results.

Background

Sub-Saharan Africa has experienced high rates of HIV/AIDS (United Nations Programme on HIV/AIDS [UNAIDS], 2014a). The nature of the devastation and the issues of interest have varied from nation to nation. Researchers have studied both the effect at the individual level (Taraphdar et al., 2011; Tekola, Reniers, Mariam, Araya, & Davey, 2008), as well as the impact of HIV/AIDS at the national level (Dauda, 2011; Durevall & Lindskog, 2011; Ferreira, Pessôa, & Dos Santos, 2011). Previous researchers have considered education or income as indicators of national economic growth, but more recently researchers have focused on other attributes such as health (Basavaraj, Navya, & Rashmi, 2010). Ill health reduces productivity and might lead to job loss and financial constraints resulting from poor access to health care. Productivity also can be affected by a reduced quality of life (QOL), which has been described as a sense of well-being and includes such other general aspects as happiness and satisfaction with life (Basavaraj et al., 2010). Researchers have demonstrated the impact of HIV/AIDS on human capital, which is a factor in a nation's economic growth (Ferreira et al., 2011). Tekola et al. (2008) found that adult HIV/AIDS deaths in Addis Ababa families indicated a decline in the socioeconomic status (SES), with poor families more likely than those with higher SES to feel the impact.

On a global scale, HIV is a major public health issue, and more than 39 million lives have been claimed by HIV-related causes to date (World Health Organization [WHO], 2014a). Nigeria is the most populous nation in Africa and has a large number of persons living with HIV/AIDS (PLWHA; Aliyu, Varkey, Salihu, IIiyasu, & Abubakar,

2010). Nigeria's progress report on global AIDS response has indicated an increasing population of people living with HIV (PLWHIV) and that the country carries the second heaviest burden of HIV among all countries in Africa (National Agency for the Control of AIDS [NACA], 2012). Recent data for Nigeria, a country ranking second to South Africa on the population of PLWHIV, stand at 3,200,000; HIV-related deaths at 210,000; and new HIV infections at 220,000 (UNAIDS, n.d.).

Issues relevant to HIV/AIDS continue to receive global attention (Groves, Maman, & Moodley, 2012) as evidenced by the decisions of world leaders to adopting eight millennium development goals (MDGs; Hogan, Baltussen, Hayashi, Lauer, & Salomon, 2005). The sixth of the eight goals, all of which are related to health, was to combat HIV/AIDS and other diseases (WHO, 2015b). The two commitments of MDG 6 were to halt and reverse the spread of HIV/AIDS by 2015 and ensure treatment access to infected persons by 2010 (Prendergast, Essajee, & Penazzato, 2015). Although Nigeria has made some progress in its national response to HIV/AIDS, the country continues to struggle to overcome the psychosocial issues associated with HIV and its complications (Adejumo, 2011; Adeyemo et al., 2011; Akani & Erhabor, 2006).

Nigeria has been listed by United Nations as one of the five countries facing the triple threat of high HIV burden, low treatment coverage, and little or no decline in HIV incidence rates (UNAIDS, 2014b). Heterosexual relationships are driving new HIV infections, and most transmissions causing epidemics in Sub-Saharan Africa occur between heterosexuals (De Cock, Jaffe, & Curran, 2012). Serodiscordance is a global challenge resulting from the increasing risk of the virus being transmitted to noninfected

partners (Osinde, Kaye, & Kakaire, 2011). Nondisclosure in this population has exacerbated the transmission rates of HIV (Groves et al., 2012). I conducted this study to address the paucity of data on the factors militating against self-disclosure to stable heterosexual partners in Warri, Nigeria.

Problem Statement

HIV transmission rates could be contained through disclosure, a strategy that has proven effective in controlling the virus (Shacham, Small, Onen, Stamm, & Overton, 2012). Disclosure of seropositive status could reduce HIV transmission rates by decreasing the incidence of at-risk behaviors resulting from heightened awareness of infection prevention (Amoran, 2012). In addition to increasing HIV transmission rates, HIV status nondisclosure to stable sexual partners denies the partners the right to engage in the decision-making process in regard to adopting protective behaviors and prevents the partners from accessing early antiretroviral therapy (ART; Serovich & Mosack, 2003). The most common reasons for nondisclosure are fear of (a) rejection, (b) loss of intimacy, and (c) stigmatization (Adeyemo et al., 2011). Other factors discussed in the literature as discouraging HIV status disclosure included the type of social relationships (Bairan et al., 2007; Chen et al., 2011), fear, and stigma, with social relationships being the most important (Bairan et al., 2007). Loubiere et al. (2009), on the other hand, identified stigma as the main barrier to HIV disclosure. Although some of these disclosure barriers have been studied among individuals in multiple relationships, there has been a paucity of disclosure information about these barriers in stable and committed

heterosexual relationships, particularly in Nigeria (Amoran, 2012). It was my intention to conduct this study to address this identified gap in the literature.

Purpose of the Study

The purpose of this study was to examine the most common barriers to spousal HIV-positive status disclosure among HIV-infected male and female adults in stable heterosexual relationships in Warri, Nigeria. Addressing nondisclosure issues among stable partners is important to ensure that new infections are kept under control (Loubiere et al., 2009; Shacham et al., 2012; Vu et al., 2012). I evaluated such nondisclosure factors as stigma, social support, and HIV-related knowledge to establish the nature of their relationship to status disclosure. Kairania et al. (2010) reported that disclosure of seropositive results among HIV-discordant couples is generally low in Sub-Saharan Africa. I also sought to identify disclosure patterns and variations in the sample in regard to gender, age, educational level, employment status, and the nature of their current relationships. In this study, HIV-positive status disclosure was the dependent variable (DV), and the independent variables (IVs) were stigma, lack of social support, and level of HIV/AIDS-related knowledge.

Research Questions and Hypotheses

The study was guided by three research questions (RQs) and their hypotheses.

Research Question 1: How is disclosure of HIV-positive status to partners in steady heterosexual relationships impacted by social support?

$H_0$1: The lack of social support does not affect HIV-positive status disclosure to steady heterosexual partners.

H_a1: The lack of social support does affect HIV-positive status disclosure to steady heterosexual partners.

Research Question 2: How does HIV-positive status disclosure to stable heterosexual partners correlate with knowledge of HIV/AIDS?

$H_0 2$: There is no correlation between HIV cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

$H_a 2$: There is a correlation between HIV/AIDS cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

Research Question 3: How does disclosure of HIV-positive status to stable heterosexual partners correlate with stigmatization?

$H_0 3$: There is no correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

$H_a 3$: There is a correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

Theoretical Framework

To better understand the factors that could discourage disclosure of HIV infection, I used the consequence theory as a framework. The theory, which was developed by Serovich in 2001, suggests that the relationship between disease disclosure and disease progression is mediated by the consequences anticipated as the result of such disclosure. The proposition of the consequence theory (Serovich, 2001) is that people tend to support options that are beneficial and rewarding when they are faced with situations in which they have to make choices. In the case of disclosing HIV-positive status to sexual

partners, PLWHIV are likely to weigh the consequences of disclosure against the perceived benefits of disclosure and nondisclosure before deciding to disclose their seropositive status. The consequence theory relates to this study in that it focuses on the motivators of HIV disclosure. Evaluating these factors and the barriers might precipitate disclosure in the face of reported disclosure barriers.

Nature of the Study

The quantitative, cross-sectional study used a survey to collect data to quantify the correlation between the DV of disclosure of HIV-positive status and the IVs of stigma, lack of social support, and level of HIV/AIDS-related knowledge among heterosexual partners in stable relationships. A cross-sectional survey design offered the advantage of low cost, allowing me to collect data from a defined sample at a particular point in time to yield generalizable results (Aschengrau & Seage, 2008); in addition, the design was useful in describing the pattern of the relationships between the DV and the IVs (Frankfort-Nachmias & Nachmias, 2008). A cross-sectional survey design was appropriate for this study because the participants were making scheduled visits to the study sites to receive treatment. The sites were specifically designated as centers where PLWHIV could receive care. I administered the self-administered questionnaires to HIV-positive adults who were 18 years of age and older. I recruited the participants after they had signed the informed consent.

The data analyses involved the use of various statistical applications and tools. Statistical tests included basic descriptive statistics for the sample. I used the unpaired *t* test to compare the mean difference in disclosure patterns between male and female

participants and between educated and uneducated participants. I used multiple logistic regression analyses to establish any correlation between each of the IVs and the DV. The choice of logistic regression was based on the disclosure outcome having dichotomous categories. I also conducted ANOVA for disclosures in the two categories of stable heterosexual relationships (i.e., married in monogamous relationships and single in stable relationships). I used SPSS v. 2.1 to compute the analyses.

Definitions of Terms

Acquired immune deficiency syndrome (AIDS): A stage in HIV infection in which the immune system is so compromised that other opportunistic infections begin to manifest (CDC, 2015).

Cluster of differentiation 4 (CD4): A type of white blood cell that plays an important role in protecting the body against infections by fortifying the immune system. CD4 cells are specific cells of the immune system (CDC, 2015).

Concurrent sexual partnership: Overlapping sexual relationships at a point in time (Mah & Halperin, 2010).

Discrimination: The consequence of stigma against certain categories of persons that results in their being treated differently without justification (Mahajan et al., 2008).

Heterosexual partners: Sexual partnerships between individuals of the opposite gender.

Human immunodeficiency virus (HIV): The virus that spreads though bodily fluids and causes AIDS, a life-threatening disease, by attacking the CD4 cells (CDC, 2015).

Self-disclosure: The sharing of personal information with other people using verbal or nonverbal communication (Chaudoir & Fisher, 2010).

Serodiscordance: One partner in a primary relationship is HIV positive and the other is HIV negative (Matovu, 2010; Persson, 2013).

Social support: The belief that that one is loved, cared for, esteemed, and valued (Cobb, as cited in Grav, Hellzèn, Romild, & Stordal, 2011).

Stable heterosexual relationships as applied in this study: Sexual relationships between adults that have lasted for at least 6 months.

Stigma: An undesirable or a discrediting attribute that reduces an individual's status in the eyes of society (Goffman, 1963).

Assumptions

I made the following assumptions in this study:

1. I would be able to obtain an adequate number of participants based upon the fact that the study sites in Warri (Central Hospital, Assumption Hospital, Ekpan General Hospital, and Military Base Hospital) had a large concentration of individuals from the target population who were committed to taking ART to manage the disease and improve their QOL.
2. I also assumed that administrators at the study facilities would offer their maximum cooperation at the time of data collection.
3. I assumed that the English literate respondents, all of whom had to be literate in English as one criterion, would understand the survey questions and provide appropriate and honest responses.

Scope and Delimitations

I evaluated the factors militating against spousal HIV-positive status disclosure using one DV (HIV-positive status disclosure), and three IVs (stigma, lack of social support, and level of HIV/AIDS-related knowledge).These factors have been identified in previous literature as potential barriers to chronic disease disclosure.

The delimitations of this study were as follows:

1. The study was delimitated to adults ages 18 years and older who were literate in English.
2. The study was delimited to PLWHIV attending the designated study centers.
3. The study was delimited to PLWHIV who were in stable heterosexual partnerships at the time of the study.
4. The study was delimited to the Warri geographical area of Nigeria.
5. The study was delimited to a cross-sectional survey design employing quantitative method of analysis. The strengths of quantitative research design lie in it being used; to make generalizations when data are collected from randomly selected and appropriate sample size; to test an already established hypothesis; to test and validate already established theories; to make predictions from analyzed data, and to replicate previous studies as the influence of the researcher on quantitative study is minimal.
6. This study had considered adopting the ‘Disclosure Processes Model’ designed by Chaudoir and Fisher (2010), as the theoretical framework. This theory which is an advanced framework for disclosure theory posits that

antecedent goals and avoidance motivational systems motivate the effect of disclosure (Chaudoir & Fisher, 2010). Application of this approach could bring out disclosure outcomes that serve as barriers to further disclosures considering that a disclosure event could impact subsequent disclosures in a feedback loop (Chaudior, Fisher, & Simon, 2011). However, I chose the consequence theory over the disclosure processes model because of the complexity of the varied components of the disclosure processes model involving disclosure to multiple individuals within and outside of intimate relationships. The consequence theory on the other hand involves disclosure to only one individual, which in this study, was a stable heterosexual partner.

Limitations

The study had the following limitations:

1. Three specific factors were evaluated in this study as barriers to spousal HIV positive status disclosure. There could be other factors that discourage self-disclosure of HIV positive status to stable heterosexual partners.
2. The study did not ascertain whether the presence or absence of the factors evaluated preceded HIV positive status disclosure.
3. Recruitment of respondents with English language literacy excluded information that could be obtained if the survey was done in the native dialects of the respondents.

Significance of the Study and Implication for Social Change

As reported by the NACA (2012), heterosexual sex, especially if it is low risk, has made the greatest contribution to the incidence of HIV in Nigeria to a magnitude of 80%. There is a need to prevent new infections resulting from the nondisclosure of seropositive status by infected persons in stable heterosexual partnerships (Loubiere et al., 2009; Shacham et al., 2012; Vu et al., 2012). The use of preventive barriers such as condoms is low among individuals involved in low-risk sexual relationships, such as in cohabiting or married partners (Maharaj & Cleland, 2005; NACA, 2012). Nondisclosure of HIV-positive status places an enormous burden on efforts to control the spread of new infections (Adejumo, 2011). The significance of this study is that the secondary transmission of HIV might be prevented at the local level, and the disease epidemic might be controlled on a global scale.

The findings might contribute to positive social change by offering approaches that not only encourage spousal disclosure of HIV status but also might have an impact on the control and prevention of secondary HIV transmissions (Loukid et al., 2014). The results of the study also could provide public health practitioners in Nigeria with information that they could integrate into existing programs aimed at preventing HIV transmission in order to establish more effective control outcomes, particularly among individuals in discordant partnerships. The expected outcome is a decrease in the rate of HIV infection transmission.

Summary

HIV is a major concern to individuals who are affected by or infected with the virus. The secondary transmission of HIV between heterosexual partners resulting from the inability of the HIV-positive partners to self-disclose their status remains a source of concern. The stigmatization and discrimination associated with HIV/AIDS are stressors that contribute to disclosure difficulties, thereby aggravating the risk of infection transmission (Genberg et al., 2009).

In Chapter 1, I introduced the problem, the purpose of the study, the RQs and the hypotheses, and the theoretical foundation. I explained that the intent of this quantitative, cross-sectional survey study was to evaluate the factors prohibiting HIV-positive status disclosure to significant others in stable heterosexual relationships. The results might contribute to social change by providing public health agencies and program planners with relevant knowledge required to encourage PLWHIV to disclose their status in an effort to control HIV transmission rates.

In Chapter 2, I review the literature on HIV/AIDS epidemiology and intervention efforts targeting reductions in the acquisition and transmission of HIV. I also discuss the consequence theory, the theoretical framework, in more detail. Disclosure patterns in different geographical locations, along with the associated consequences; the motivators and demotivators of disclosure processes; couples discordancy, and the concomitant challenges; and the various barriers to disclosure are presented. The stigmatization and discrimination of PLWHA negate intervention efforts and are referenced as disclosure demotivators. I also describe the role of litigation in infecting HIV-negative partners

resulting from nondisclosure by PLWHIV, the sociodemographic factors that can influence disclosure decisions, the positive as well as the negative consequences of HIV status disclosure to sexual partners.

Chapter 2: Literature Review

Introduction

In this literature review, I present information about the issues related to the transmission of HIV among persons in stable heterosexual relationships resulting from the nondisclosure of HIV-positive status to significant others. I explain the epidemiology of the disease with data on disclosure and nondisclosure patterns. In addition to the global efforts established to control and prevent the acquisition and spread of HIV, other efforts at the individual level, such as the adoption of safe sex practices (e.g., use of condoms) and beyond, have the potential to make significant contributions to curtail infection transmission. I emphasize the importance of understanding the various barriers to HIV-positive status disclosure to sexual partners as a means of militating against the spread of HIV. There are inherent challenges confronting couples in serodiscordant situations, such as fear of divorce, maltreatment, ostracism, and child-bearing decision (S. V. Patel et al., 2012), with nondisclosure by infected partners presenting additional challenges. I offer suggestions for intervention strategies that can be implemented to curb the incidence rate of infection within the adult population.

I present the epidemiology of HIV infection in some geographical locations across the globe in the literature review. In addition, I describe the efforts made to date by public health agencies to curtail the infection rates of HIV/AIDS. Despite ongoing efforts to keep HIV/AIDS in check, barriers continue to potentiate the incidence and spread of the infection. I discuss all of these topics in this chapter based upon the results of previous studies. Finally, I identify the sociodemographic factors that could influence

spousal disclosure of HIV status by PLWHIV in Warri, a city in the Niger Delta area of Nigeria.

I grounded the study on the theory driven by considerations of the cost-benefit analysis of spousal HIV-positive disclosure. There was the likelihood that PLWHIV who participated in the study would disclose their HIV-positive status in anticipation of the associated rewards, despite the consequences. This theoretical framework, the consequence theory, was designed by Serovich in 2001.

Search Strategy

Keeping the aforementioned background information in mind, I sought articles from several sources that focused on HIV nondisclosure and disclosure motivators. The sources included Walden University Library databases, ProQuest, PubMed, SAGE journals, Bio Medical Central journals, Google Scholar, PsycINFO, CINAHL, Cochrane, and Medline. In addition to these electronic sources, I obtained information from Nigerian government sources as well as WHO and CDC websites. Key search terms included, but were not limited to, *HIV seropositive disclosure*, *HIV concordance*, *heterosexual partners*, *spousal disclosure*, *heterosexual relationships*, *disclosure theories*, *social support*, *stigmatization*, *discrimination*, *HIV knowledge*, *nondisclosure*, and *disease epidemiology*.

Consequence Theory

In evaluating the barriers to spousal self-disclosure of HIV/AIDS, understanding the factors that motivate or promote disclosure is important in putting all of the issues into perspective. The consequence theory (Serovich, 2001) provided a framework to

facilitate this understanding. The consequence theory suggests that the relationship between disease disclosure and disease progression is mediated by the consequences anticipated as the result of the disclosure (Serovich, 2001). HIV-seropositive disclosure to stable heterosexual partners is associated with beneficial and detrimental consequences, as discussed earlier in this study. The final decision to disclose or not disclose lies with the infected spouses, and this decision depends on a number of factors best known to the infected partners.

In general, and as noted by Serovich (2001), people tend to support options that are beneficial and rewarding when they are faced with situations in which they have to make choices. In the case of disclosing HIV status to partners, PLWHIV are likely to weigh the consequences of disclosure against the perceived benefits of disclosure and nondisclosure. According to Geneviève, José, and Chantal (2012), the benefits to PLWHIV lean more toward the safety of their partners as well as the need for the partners to be informed. Therefore, if there is an understanding of the consequences associated with disclosure, along with the importance or benefits derived from status disclosure, HIV-infected persons would be willing disclose their status to their partners. In other words, disclosure happens if potential positive consequences are greater than potential negative consequences (Serovich, 2001).

On the other hand, if the anticipated consequences of disclosing were to exacerbate the disclosers' situations, the result could be nondisclosure and possible HIV transmission to negative sexual partners. This brings up the potential dangers posed by stigma and discrimination against PLWHIV and the need to address them so that the

individuals persons could become more willing to disclose to their sexual partners on the basis of more beneficial (e.g., emotional, physical, and social resources) than detrimental (e.g., rejection, isolation, fear, possible loss of housing, insurance, etc.) consequences.

Other researchers have asserted that Serovich's (2001) consequence theory is based upon the social exchange theory, which posits that the decision to disclose one's disease status happens only after considering the benefits and costs of the disclosure carefully (Fennie et al., 2014). Perceptions of the negative consequences could explain the reluctance to disclose disease status. Chaudoir and Fisher (2010) designed the disclosure processes model, an advanced theoretical framework with several components, one of which is that antecedent goals and avoidance motivational systems influence the effect of disclosure. Application of this approach (i.e., the disclosure processes model) could bring out disclosure outcomes that serve as barriers to further disclosures, considering that a disclosure event could impact subsequent disclosures in a feedback loop (Chaudoir et al., 2011).

In addition to these theories, other theories have been applied in an attempt to understand the disclosure process between sexual partners. I selected the consequence theory over the disclosure processes model because of the complexity of the various components of the disclosure processes model that involve disclosure to multiple individuals within or outside of intimate relationships. The consequence theory involves disclosure to only one individual, namely, the sexual partner.

I studied the disclosure outcomes of the participants and the motivation to disclose HIV status to their respective monogamous heterosexual partners. Use of the

consequence theory allowed me to identify the relationship between the decision to disclose HIV status, along with the anticipated substantial consequences and rewards of such disclosure, to stable heterosexual partners. I addressed fear of stigma, lack of social support, and level of HIV-related knowledge as the major factors that encourage nondisclosure, while testing this theory of competing consequences.

The consequence theory provided a framework explaining the motivation to disclose HIV status, that is, by assessing the potential consequences of disclosure (Serovich, 2001). Perceptions of negative consequences can inhibit the motivation to disclose HIV-positive status (Zea, Reisen, Poppen, Bianchi, & Echeverry, 2007). Akin to the consequence theory is the theory of social exchange, which posits that people generally make choices after weighing the risks and benefits associated with those choices (Fennie et al., 2014).

Epidemiology of HIV/AIDS

The HIV/AIDS epidemic continues to impact millions of lives worldwide. With more than 35 million PLWHIV (CDC, 2014), the prevalence of HIV is a global public health concern, with Sub-Saharan Africa enduring the brunt of the disease. Data collected from the Demographic and Health Surveys in 2007 and subsequently reviewed by Negin and Cumming (2010) showed that approximately 3 million older adults 50 years of age and older, 18 million ages 15 to 49 years, and 21 million younger than 15 years are living with HIV. Nigeria, with an estimated 3.4 million PLWHIV, has a prevalence rate of 3.1% recorded for adults ages 15 to 49 years (WHO, 2014b). New HIV infections reported in 2013 by the WHO (2014b) comprised 2.1 million newly infected persons, with 15

countries contributing to 75% of this new infection rate: Brazil, Cameroon, China, India, Indonesia, Kenya, Mozambique, Nigeria, the Russian Federation, South Africa, Uganda, the United Republic of Tanzania, the United States, Zambia, and Zimbabwe. Nigeria, South Africa, and Uganda are the three countries that UNAIDS (2014b) reported as having 45% of all new HIV infections among the countries in the Sub-Saharan African region. According to 2014 global health statistics presented by the WHO (2015a), an estimated 2.3 million persons were newly infected in 2012, out of which new infections in Sub-Saharan African nations accounted for 70%.

Matovu (2010) reported that a high proportion of the HIV infection and transmission rates in Sub-Saharan Africa happens within HIV-discordant, stable partnerships. In some of these partnerships, the carriers might not be aware of their seropositive status, whereas in others, the carriers know about their status but are hesitant to self-disclose. Most of these infections in Africa are known to occur in stable heterosexual relationships (Wagner et al., 2010.)

Public Health Intervention Efforts

Several interventions have been instituted in an effort to curb the spread of the HIV/AIDS epidemic. Following is a discussion of these interventions.

Voluntary Counseling and Testing

The provision of voluntary counseling and testing (VCT) services enable people to know their status and take appropriate action. The VCT of sexual partners are an opportunity for prevention in addition to entry into clinical care (Brown et al., 2012). VCT services have been shown to be associated with HIV risk reduction behavior (Mall,

Middlekoop, Mark, Wood, & Bekker, 2013). However, these prevention efforts need to be maximized. Medley et al. (2013) found that along with adequate implementation on a large scale, integrating couples' HIV VCT services and offering them evidence-based interventions on knowing their status would significantly reduce the incidence of HIV within such relationships. Brown et al. (2012) noted that a critical strategy for potential treatment and prevention would be to reach out to the sexual partners of individuals who have tested positive for HIV. Consistent with previous studies, Were et al. (2006) demonstrated that the provision of home-based VCT services to the partners of individuals initiating ART not only received wide acceptability but also presented an opportunity to identify a large number of persons who had been undiagnosed previously.

Disclosure of HIV status after accessing VCT services is an important intervention strategy in reducing the incidence rate of the epidemic (Anglewicz & Chintasanya, 2011). According to Ssali, Wasagami, Kateeba, Nantume, and Kiboneka (2012), HIV-positive status disclosure is associated with the number of counseling sessions that infected individuals receive. This result was evident in the study conducted in Uganda by Ssali et al. on 117 patients who at the time that VCT services were offered had not disclosed their HIV-positive status. However, following the counseling session and after tracking these patients for 36 months, Ssali et al. found that about 65% of them had disclosed their serostatus.

People living with HIV have different reasons for making their status known to others, depending on the nature of the relationships. According to S. N. Ssali et al. (2010), intent to receive support, relationship ties, explanation for altered appearance or

behavior, and curtailing of infection spread were the most common reasons for disclosure among the 54% of the study sample who disclosed to their spouses or partners.

Condom Use

Promoting the use of condoms as a barrier to HIV acquisition or transmission is one strategy to prevent the incidence of the infection. Adeyemo et al. (2011) noted that accepting condom use as a way to reduce the risk of infection transmission promotes disclosure. Promoting the use of condoms is an effective intervention that focuses on premarital, extramarital, or casual sexual encounters while failing to address the needs of married and cohabiting couples (Maharaj & Cleland, 2005). The use of condoms among sexual partners in committed relationships is low (Maharaj & Cleland, 2005). An investigation of the heterosexual participants in a study in India showed that one third of the men and one fourth of the women were inconsistent in their use of condoms with their stable heterosexual partners (Chakrapani, Newman, Shunmugam, & Dubrow, 2010).

Partner Concurrency

Researchers have suggested that concurrency could be driving the transmission of HIV. Udoh, Mantell, Sandfort, and Eighmy (2009) attributed concurrent sexual partnerships as one of the factors exacerbating the prevalence of HIV in the Niger Delta area of Nigeria. However, despite an HIV prevalence rate among heterosexuals of 25% and high levels of concurrency among men, researchers have not established concurrency as a driver of HIV transmission in South Africa (Kretzschmar & Caraël, 2012). Saddiq, Tolhurst, Lalloo, and Theobald (2010) examined the relationship between polygamy and HIV transmission in Maiduguri in Nigeria and found that vulnerability to HIV was not

shaped by the practice of polygamy, but by the dynamics of the sexual relations and practices. Reniers and Watkins (2010) conducted a study to understand the effect of concurrent sexual partners on HIV transmission using empirical evidence with a focus on polygyny, a form of concurrency. They found that mathematical models of concurrency were not specific enough to explain the effect of polygyny on HIV transmission. Consistent with this finding, Aral (2010) reported a negative association between HIV prevalence and polygyny.

Antiretroviral Therapy

People living with HIV have had an improved QOL and have been living longer since the introduction of the highly active retroviral therapy (ART) (Basavaraj et al., 2010; Seid, Wasie, & Admassu, 2012; Siegel, Lekas, & Schrimshaw, 2005). Health statistics from the WHO (2015a) showed that new HIV cases declined globally by 33% between 2012 and 2014 from 3.4 million to 2.3 million because of the availability of ART. Early use of ART was found to reduce HIV transmission rates among couples significantly (Havlir & Beyrer, 2012). Adherence to the prescribed regimen has been acknowledged as a principal factor resulting in the success of ART in abating the spread of HIV (Okoror, Falade, Olorunlana, Walker, & Okareh, 2013). Okoror et al. (2013) expected that with this development, infected persons would be comfortable talking freely about their status. This point was corroborated by Vu et al. (2012), who identified a significant relationship between HIV disclosure and entry into an ART program. An association has been established between disclosure of HIV status in Africa and better ART (Patel et al., 2012).

Self-Disclosure

Disclosure is difficult for individuals who live in stigmatized conditions (Chaudoir & Fisher, 2010). Receiving positive results to HIV testing is stressful, as is having to disclose this information to friends, family, and sexual partners. According to a study conducted in Hawaii by Sullivan (2009), many PLWHIV have difficulty disclosing their positive status to their sexual partners. Although HIV disclosure has been shown to improve physical health, psychological well-being, and health behaviors, status disclosure has not been accepted as universally positive (Hult, Wrubel, Bränström, Acree, & Moskowitz, 2012).

Legislation

Legislative approaches to prevent the transmission of HIV have been put forward at various levels of government with the intent of making at-risk behaviors that predispose others to the infection a criminal offence (Lehman et al., 2014). In the United States, about two thirds of the states have enacted legislation criminalizing HIV transmission (Lehman et al., 2014). No information concerning legislation criminalizing HIV transmission to sexual partners has been found in Africa.

Ciccarone et al. (2003) noted that it is not uncommon for HIV-infected persons to engage in risky sexual behaviors without disclosing their status. They reported that 13% of HIV-discordant partners in their study engaged in unprotected sex without disclosure, an at-risk behavior capable of transmitting HIV to unsuspecting partners. Partners become vulnerable to acquiring the infection because of the complacency of their HIV-seropositive partners. Complacency among HIV-infected persons about their reduced risk

has resulted in less intention to adopt safe sex practices, thereby predisposing their sexual partners to infection with HIV (Riley & Baah-Odoom, 2012).

Barriers to HIV Status Disclosure

Nondisclosure of seropositive status is a major challenge facing developing nations in regard to HIV/AIDS care (Ncama, 2007). Despite the advantages of disclosure, including the potential positive effects of preventing HIV transmission and an improved QOL for infected persons through adherence to HIV treatment, many PLWHIV are still not self-disclosing their status to their steady sexual partners (Loukid et al., 2014). PLWHIV balance their disclosure decisions with the need for secrecy as a way of exerting social control (Mill, Edwards, Jackson, MacLean, & Chaw-Kant, 2010). Several researchers have documented varied barriers to seropositivity disclosure among sexual partners. Following are descriptions of these barriers.

Fear of Discrimination and Stigmatization

A significant barrier to the disclosure of HIV status to sexual partners is fear. Seid et al. (2012) studied the factors associated with HIV disclosure to sexual partners in Ethiopia and reported a high partner disclosure rate of 93.1%. However, among the individuals who concealed their status, fears of divorce, stigma and discrimination, accusation of infidelity, breach of infidelity, and physical abuse were identified as barriers to their status disclosure (Seid et al., 2012).

Stigma. Stigma is an important element affecting the QOL of PLWHIV (Emlet, 2007). Researchers have defined stigma in different ways. As an example, Goffman (as

cited in Mahajan et al., 2008) defined stigma as "attribute that is deeply discrediting" and that reduces the bearer "from a whole and usual person to a tainted, discounted one" (p. 70). Stigma also has been described as "the labeling associated with the diagnosis of HIV or AIDS which serves as a social control mechanism to distance the infected from the uninfected" (Mill et al., 2010, p. 1478). Disapproval in the forms of rejection, exclusion, labeling, stereotyping, and discrimination are some of the negative consequences of stigmatization that contribute to ostracizing some individuals and identifying them as different from others (Nthomang et al., 2009). Stigma toward HIV-infected persons is an impediment to public health because it can negatively impact the health, QOL, social support, and well-being of infected individuals (Logie & Gadalla, 2009).

HIV-related stigma is a life-threatening phenomenon that is a major barrier to accessing prevention, care, and treatment services (Kalichman & Simbayi, 2003; Mahajan et al., 2008; Nthomang et al., 2009). According to Galvan, Davis, Banks, and Bing (2008), HIV-related stigma can be either perceived or enacted. Perceived stigma can be the real or imagined fear of societal discriminatory attitudes toward infected individuals; enacted stigma is discrimination against individuals based upon specific attributes (Galvan et al., 2008).

A study involving a systematic review of literature on HIV/AIDS-related stigma was conducted by Mahajan et al. (2008) to document the current state of research, identify gaps in the available evidence, and highlight promising strategies to address stigma. While searching the literature relevant to HIV/AIDS-related stigma, Mahajan et

al. found variable manifestations of stigma with resultant challenges in such areas as defining, measuring, assessing the impact of, and reducing stigma. HIV/AIDS-related stigma is embedded in the structure and culture of society, both of which encourage the nonacceptance of persons who are HIV positive (Nthomang et al., 2009).

Discrimination. According to Gilmore and Somerville (as cited in Nyblade, 2006), discrimination refers to negative forms of distinction, exclusion, or restriction that affect individuals based upon their attributes. Mahajan et al. (2008) described discrimination as a consequence of stigma, meaning that certain individuals are treated differently without objective justification. Fear of being discriminated against has been reported in the literature as one of the factors in concealing HIV-positive status.

Peretti-Watel, Spire, Obadia, and Moatti (2007) tested the hypothesis that stigma, fear, and discrimination exacerbated the spread of HIV infection. The researchers conducted a cross-sectional survey and analyzed the relationship between discrimination and unsafe sex among a randomly selected sample of 2,136 respondents living with HIV/AIDS in France. Results indicated a strong relationship between discrimination and the practice of unsafe sex behaviors among HIV-infected persons (Peretti-Watel et al., 2007). They noted this strong relationship in heterosexual associations, an indicator that this group is the main route of HIV transmission in France. In a related study, S. N. Ssali et al. (2010) listed fear of abandonment, inaccessibility to disclosure target, and unwillingness to upset disclosure target as common reasons for concealing their HIV-positive status. This finding is consistent with the findings from a study in India

identifying fear of discrimination, blame, and disruption of family structures as factors in not disclosing HIV status to sexual partners (S. V. Patel et al., 2012).

HIV/AIDS Cognition

HIV/AIDS awareness has risen over the years because of the various strategies adopted by public health agencies, including public service announcements on radio and television; advertisements on billboards, posters, and hand bills; and information disseminated through pamphlets provided in clinic waiting rooms (Galletly & Pinkerson, 2006). All of these venues are directed at providing information and educating the populace about HIV/AIDS; however, it appears that the knowledge has not translated to zero infection rates, particularly in Sub-Saharan Africa, an area of the continent that continues to record new infections. Ochako, Ulwodi, Njagi, Kimetu, and Onyango (2011) examined trends in HIV/AIDS comprehensive knowledge among Kenyan urban women from 1993 to 2009, and they found the women's knowledge to be low, despite a significant increase in knowledge from 9% in 1993 to 54% in 2009.

The role of HIV/AIDS-related knowledge in nondisclosure of seropositive status to sexual partners has been reported in the literature. Benotsch et al. (2012) found that of the 310 respondents who self-identified as PLWHA, 18.6% had misled their sexual partners about their positive status. When the participants were given information about HIV, the researchers found that those who had misled their partners had significantly lower HIV knowledge scores than those who had not, a finding indicating that HIV knowledge could have a role in the nondisclosure of HIV status to sexual partners. A

related study by Adejumo (2011) in Nigeria also identified negative HIV cognition as one of the major barriers to HIV self-disclosure.

A bivariate analysis of the relationship of HIV serostatus disclosure to HIV-related knowledge and stigma was conducted by Yang et al. (2006). Results demonstrated a negative association between willingness to disclose positive status and misconceptions about HIV transmission, with stigma mediating this negative relationship. Yang et al. suggested that failure to address stigma, despite HIV awareness, is ineffective in controlling HIV transmission.

Among health care professionals, there seems to be a deficiency in HIV/AIDS cognition, as revealed in a study by Kyriazis et al. (2010) to screen and assess the knowledge and attitudes of newly qualified doctors toward HIV infection. Although the knowledge and attitudes of 98% of the new doctors were satisfactory in general terms, about 13.7% and 7.8% of them still believed that HIV transmission was feasible through social kissing and insect bites, respectively. In addition, Kyriazis et al. found that about 55% of the doctors believed that HIV-infected patients should be treated in isolated wards. This knowledge gap, even among health care professionals, could be worse among nonprofessionals and could exacerbate nondisclosure challenges among lay persons.

HIV-infected persons may not disclose their status for various reasons. Some researchers have listed the discloser barriers to HIV-positive status to sexual partners as stigmatization and discrimination (Clum et al., 2013; Joge, Deo, Choudhari, Malkar, & Ughade, 2013; Seid et al., 2012; Talley & Bettencourt, 2010; Vu et al., 2012); fear of lack

of social support and loss of financial dependency (Kiula, Damian, & Msuya, 2013); ignorance of the disease (Benotsch et al., 2012); history of abuse (Clum et al., 2013; Seid et al., 2012); desire to have children (Jasseron et al., 2013); fear of rejection/divorce (Seid et al., 2012); and religious immorality (Préau, Bouhnik, Roussiau, Lert, & Spire, 2008). These findings are in contrast with the study in Zimbabwe by R. Patel et al. (2012), who found that "positive disclosure beliefs correlate significantly with psychosocial measures, including lower perceived stigma, higher self-esteem, and lower depression" (p. 358).

A developing nation such as Nigeria has a prevalent culture of secrecy, where most things are mystic, including being infected with HIV. This mystery is heightened by the lack of knowledge about the acquisition and transmission of HIV (Ogunjuyigbe, Adeyemi, & Obiyan, 2009). Despite scientific advancements that led to ART, stigmatization of PLWHA is still common. Although stigmatization among stable partners occurs in degrees ranging from the loss of conjugal intimacy to outright spousal rejection (Brou et al., 2007), both of which can cause or heighten emotional distress, researchers have found that psychosocial stress as well as depression can be assuaged by providing social support to PLWHIV (Stutterheim et al., 2011; Vyavaharkar et al., 2010).

Seropositive Status Denial

Kako, Stevens, and Karani (2011) noted that the reactions of Kenyan women newly diagnosed with HIV included immediate intense emotions, the desire to keep their HIV status secret, acceptance of HIV diagnosis, and liberation in disclosure. Other people infected with HIV might find it difficult to come to terms with their positive status because it can be such a devastating experience. Kalichman, Eaton, and Cherry (2010)

examined the prevalence of AIDS denial and found that one in five participants was unable to assess HIV treatment owing to their disbelief that HIV causes AIDS. This skepticism resulted in poorer health outcomes for the study participants because of their refusal to accept treatment (Kalichman et al., 2010).

Couples Discordancy

Serodiscordance in a primary relationship occurs when one partner is HIV positive and the other is HIV negative (Persson, 2013). The transmission of HIV among heterosexual couples is the most common route, thus contributing to a significant proportion of incidence on a global scale (Matovu, 2010; Persson, 2013). The situation in Sub-Saharan Africa, where most couples who are either infected or affected live in discordancy (Eyawo et al., 2010), reflects this finding. Previous researchers have reported that between 5% and 31% of couples in Africa are in serodiscordant partnerships (Lingappa et al., as cited in Beyeza-Kasheya et al., 2010).

A large proportion of men and women in intimate relationships have unprotected sex. Because married or cohabiting partners are not likely to use barriers (Maharaj & Cleland, 2005), they face an increased risk of HIV transmission. A study conducted in Uganda by Bunnell et al. (2005) suggested that unsafe sexual behaviors could be attributed to the lack of understanding of the mechanism of discordancy in stable relationships that make partners believe such myths as the following: hidden infection not yet detected by HIV tests, belief in immunity, the thought that gentle sex protects the negative partner from being infected, and belief in protection from God. In any case, the HIV-negative partners in such relationships are exposed to the risk of infection.

Although men were thought to be the index cases in couple discordancy, a meta-analysis and systematic review of the literature that presented data from 14 countries and 27 cohorts of discordant couples conducted by Eyawo et al. (2010) to investigate the gender balance of discordant partners in stable heterosexual partnerships indicated otherwise. Eyawo et al. found the percentage of women to be 47% and concluded that there was no significant gender difference in the index case infections. As a result, the researchers suggested that HIV prevention strategies in couple discordancy focus on both genders because each is equally likely to be the index partner. This suggestion helps to explain the focus on this population and the hope that HIV infection rates can be controlled, especially in discordant partnerships, amid all of the misconceptions.

Managing HIV Infection in Discordancy

Management of HIV in serodiscordant relationships involves consideration of the interpersonal dynamics of the partners. There are inherent challenges facing discordant couples that are peculiar to their unique situations. As noted by VanDevanter, Thacker, Bass, and Arnold (1999), HIV-discordant couples are confronted with challenges that impact the disease on the seronegative person and their interpersonal relationships with their partners. Among these challenges are issues of mistrust, loss of commitment to the relationship, stress of coping while providing long-term care to the infected partners, and loss of sexual intimacy occasioned by the need to negotiate safer sex (VanDevanter et al., 1999). Typical reactions by the negative partners might include anger, fear, and sadness about the implication of infidelity occasioned by the infection (Ware et al., 2012). Anticipation of these challenges could provide insight into the reasons PLWHIV and who

are in stable heterosexual relationships circumvent these unpleasant situations by not disclosing their status.

As reported in the literature, there are benefits of HIV status disclosure in discordancy, one of which is that disclosure can serve as an incentive to engage in safer sex practices (Loubiere et al., 2009). However, Obemeyer, Baijai, and Pegurri (2011) noted through a review of other literature that the number of individuals who keep their status completely secret is low, although the process of disclosure varies across settings. They suggested that making more services available and making more structural changes could facilitate HIV disclosure as much as individual approaches and counseling could.

Although some preventive programs have been designed to protect the HIV-negative partner in discordant situations, these programs have not been entrenched (Beyeza-Kashesya et al., 2010). A retrospective, observational cohort study of discordant couples was conducted in China between 2003 and 2011 by Jia et al. (2013) to assess the recommendation made by the WHO that ART be offered to the HIV-negative partners in discordancy to reduce the risk of transmission. Results of the study of 38,862 participants with 101,295.1 person years of follow-up for seronegative partners showed that the rates of HIV infection were as follows: 2.6 per 100 person years and 1.3 per 100 person years for treatment-naive cohorts (n = 14,805) and treated cohorts (n = 24,057), respectively. Jia et al. suggested that as a public health intervention strategy, the treatment of seronegative partners in discordant unions is a feasible preventive approach. Their suggestion was consistent with that of Ware et al. (2012), who added that the use of

preexposure prophylaxis in couple discordancy could be associated with an improved desire to reduce the risk of transmission.

Another study that corroborated these finding was conducted by Cohen et al. (2011), who examined 1,763 couples from nine countries. One partner in each couple was HIV-1 positive, but the other was uninfected. Infected partners with cluster of differentiation 4 (CD4) counts of between 350 and 550 cells per cubic millimeter were randomly assigned in a 1:1 ratio and immediately started on ART, but treatment was delayed for infected couples, either with CD4 cell counts of less than 250 cells per cubic millimeter or when symptoms were evident. Cohen et al. found that early initiation of ART reduced the rates of HIV transmission and clinical events. A related observational cohort study by Reynolds et al. (2011) evaluated the impact of ART on HIV-1 transmission rates among 250 discordant couples in Uganda who were followed up from 2004 to 2009. They established that individuals on ART who also had consistent condom use had remarkable low viral loads and concluded that HIV-1 might be reduced among HIV-1-discordant couples following initiation of ART.

Social Support and Chronic Diseases

PLWHIV continue to live longer because of the availability of ART, meaning that HIV has become a chronic disease (Cahill & Valadéz, 2013) that shares features similar to those of other chronic diseases such as hypertension, diabetes, and cancer. The effect is that the family members or caregivers of infected persons will play a role in the management of this condition through the provision of social support, among other

resources. This support means less psychological stress, such as depression, for the infected persons (Vyavaharkar et al., 2011).

Social support is an important aspect of the social resources perceived to be available (Galvan et al., 2008), and its role cannot be overemphasized in the management of chronic diseases. However, Yadav (2010) suggested that social support should be conceptualized in terms of adequacy, not availability. Being infected with HIV presents challenging life circumstances that affect other aspects of mental health; the management of HIV infection could be facilitated by social support (McDowell & Serovich, 2007). Charkhian et al. (2014) studied 120 patients living with HIV/AIDS in Tehran, Iran, and found that social support was significantly associated with the patients' overall QOL. An increase in the social support provided to PLWHIV resulted in a positive correlation with QOL.

The benefits of social support in the face of stressors have been reported in the literature. A cross-sectional study that examined relationships among functional social support, HIV-related stigma, social problem solving, and depressive symptoms among male and nonpregnant female participants assessed to be at high risk of depression established that depressive symptoms were associated with more perceived HIV-related stigma, less social support provided by others, and dysfunctional social problem solving (Prachakul, Grant, & Keltner, 2007). In a related study of HIV-infected African American women living in the rural southeastern United States, perceived availability of social support, sources of support, satisfaction with support, and internalized stigma were found to have a significant correlation with depression (Vyavaharkar et al., 2010).

Vyavaharkar et al. (2010) noted that these findings have implications for the design and implementation of programs directed at decreasing HIV-associated stigma by promoting social support.

Consequences of Disclosure of HIV Status

Disclosure of HIV-positive status has negative and positive consequences (Stutterheim et al., 2011). The researchers studied 667 PLWHIV comprising three groups, namely, those who had disclosed their status to a select few, those who had concealed their status, and those whose disease symptoms were apparent, to ascertain the psychological and social effects of stigma on these groups. On investigating HIV-related variables such as psychosocial distress, self-esteem, and social support, Stutterheim et al. (2011) found that disclosure and concealment had negative and positive consequences.

Benefits of Serostatus Disclosure

Individuals who disclose stressful events are likely to have positive outcomes. HIV disclosure gives infected persons access to social support, which has been shown to improve health through a variety of mechanisms, including access to resources, enhanced immune response, and improved health-related behaviors (Waddell & Messeri, 2006).

Disclosure of HIV-positive status is "a necessary first step in accessing treatment and support as well as in taking measures to prevent the transmission of the virus to others" (Sowell & Phillips, 2010, p. 397). The seronegative partners in discordant relationships will make informed decisions about safer sex practices aimed at safeguarding against infection acquisition (Yonah, Fredrick, & Leyna, 2014). According

to Lunze et al. (2013), nondisclosure of HIV-positive status to stable partners hinders sex negotiations and results in a higher risk of transmission.

Despite the psychosocial stress and the perceived fear of stigmatization, PLWHIV disclose their status based upon the potential benefits of disclosing. Disclosure rates have been found to be 2.7 times higher among couples in steady relationships than in casual ones (Vu et al., 2012). According to Vu et al. (2012), steady partners feel responsible for caring for their partners' health as well as the welfare of any children in the relationships. In a study conducted in India by Patel et al. (2012), spousal support, care from family members, protection of the significant other from infection, and prevention of unintended pregnancy were identified as advantages of partner disclosure of HIV-positive status.

Negative Consequences of Serostatus Disclosure

Stigma and discrimination continue to be barriers to the disclosure of HIV-positive status, which can result in such negative outcomes as rejection, assault, separation, and divorce. Herek (as cited in Sowell & Phillips, 2010) pointed out that even though research and education on HIV/AIDS have been ongoing for more than two decades, the widespread fear and ignorance about its transmission and prevention remain the basis for stigma and discrimination

Siegel et al. (2005) examined the reasons infected women would disclose their status to their spouses and found that the women felt responsible to share the diagnosis with sexual partners and were not deterred by anticipated spousal rejection. The researchers did, however, note that the women experienced significant emotional distress resulting from a reduced self-esteem precipitated by the diagnosis. Other researchers have

indicated that women's disclosure to their partners led to violent treatment. In a cross-sectional study conducted in the northern part of Nigeria, a 22% rate of domestic violence toward 289 women infected with HIV was reported by Iliyasu, Abubaar, Babashani, and Galadanci (2011). Predictors of domestic violence were age, marital status, disclosure, and partner's educational level (Iliyasu et al., 2011).

After studying the process and outcomes of HIV status disclosure among Chinese women, Chen et al. (2011) noted that HIV-infected women in discordant marriages faced considerable stigmatization in their quest for social support. The study demonstrated a burden on their QOL that ranged from a lack of support to termination of their marriages (Chen et al., 2011). Such experiences could potentiate nondisclosure decisions by other individuals yet to disclose to their partners.

Litigation to Control HIV Transmission among Sexual Partners

Considering that hiding HIV-positive status from partners in stable relationships makes the latter vulnerable to infection acquisition when barriers such as condoms are not used, some researchers have argued that nondisclosers should be subjected to criminal prosecution as a way to reduce HIV transmission rates. After a case of HIV transmission by a Glenochil male prisoner to a female partner in 1993, Scotland made it a criminal offence for infected persons aware of their status to transmit the virus to their sexual partners (Bird & Brown, 2001). Although the motive for infected persons with full knowledge of their positive status to have unprotected sex without disclosing to partners is not always certain, vengeance could play a role. However, Moskowitz and Roloff

(2008) reported that vengeance was not related to individuals' perceptions that they had infected others with HIV.

Sixty-five percent of the respondents to a survey carried out to determine the pattern and predictors of attitudes toward criminalizing HIV-infected persons who had unprotected sex with their partners without disclosure supported charging nondisclosers (Horvath, Weinmeyer, & Rosser, 2010). Vogel (2012), however, argued against criminalizing nondisclosers based upon the notion that the transmission of HIV to sexual partners is dependent on significant risk of harm, noting that there is lower risk of transmitting HIV when the carriers have lower viral loads. This assertion supported the statement issued by the Swiss Federal Commission for HIV/AIDS in 2008 that the nontransmissibility of HIV to sexual partners due to undetectable viral load, following adherence to ART (Castro et al., 2012). Undetectable viral load in an HIV-infected person is a stage assumed to be low risk for infecting others (Castro et al., 2012).

Laws have been enacted in Canada against HIV nondisclosers to sexual partners, with varied arguments for and against the disclosure laws following their enactment. One argument posits that individuals who are infected with HIV but have low risk of transmission should not be prosecuted for keeping medical conditions from their sexual partners, noting that criminalization has an extremely ostracizing and discriminating effect on PLWHIV (Vogel, 2012). Although it is considered criminal in Canada for infected persons to purposely conceal seropositive status and predispose other people to HIV infection, the effectiveness of using legislation to control HIV transmission remains questionable (O'Byrne, 2012).

On the contrary, Kondro (2012) pointed out that criminalization could be a rebound because persons not yet infected could live under the illusion that the criminal law provides protection against infection acquisition, thereby negating the effort of public health. Galletly and Pinkerson (2006) demonstrated that criminal HIV disclosure laws could counter the efforts of public health leaders to reduce the stigmatizing attitude toward PLWHIV. There has been documented evidence that legislation might worsen HIV transmission rates (O'Byrne, 2012). Recognizing that criminal law in itself is not opposed to HIV prevention, O'Byrne argued that "the criminalization of serostatus non disclosure [*sic*] might not create a social context that facilitates safer sex, serostatus awareness and HIV prevention efforts" (p. 77), thereby exacerbating the spread of the virus.

Whether the enactment of disclosure laws has been effective in controlling at-risk behaviors or instituting safeguards against HIV infection remains uncertain. Galletly, Glasman, Pinkerton, and DiFranceisco (2012) examined the correlation between the awareness of New Jersey's HIV exposure law and HIV-related attitudes, beliefs, and sexual and seropositive disclosure behaviors among HIV-infected persons. Although the results showed that 51% of the participants knew about the HIV exposure law, there was no association between this awareness and the disclosure behaviors of the HIV-positive participants (Galletly, Glasman, et al., 2012). This finding is in accordance with the findings from study of the Michigan's HIV exposure law, which noted that awareness of the law was not associated with increased seropositive disclosure to sexual partners or

increased perceived responsibility for preventing HIV spread (Galletly, Pinkerton, & DiFranceisco, 2012).

Patterns of HIV-Positive Disclosure and Nondisclosure

Ample research on the patterns of disclosure or nondisclosure of status by HIV-infected individuals is available. These patterns vary by country, gender, race, and relationship ties with the discloser. Adeyemo et al. (2011) conducted their study in Lagos, Nigeria, and found that nondisclosure of HIV status was common among individuals with multiple sexual partners. Amoran (2012) conducted a cross-sectional study in Nigeria on the prevalence and determinants of HIV status disclosure among PLWHA in Ogun State and noted that those who had disclosed to their main sexual partners were represented by 50.9% of their participants.

Akani and Erhabor (2006) evaluated the rates of, patterns of, and barriers to HIV-serostatus disclosure in the Niger Delta area of Nigeria by using a pretested, interviewer-administered questionnaire. They identified different patterns of disclosure, with the rate of disclosure to sexual partners (23.6%) being second to disclosure to pastors (27.8%). Disclosure rates of 22.3%, 10.4%, 9.7%, and 6.3% were reported for parents, family members, siblings, and friends, respectively. Married respondents were willing to disclose to their partners with the notion that seropositive status disclosure could foster social and economic support (Akani & Erhabor, 2006).

Results from global studies on rates of disclosure have indicated proportions ranging between 32.7% and 92.7%, with more women than men experiencing negative reactions after disclosing their status (Hardon et al., 2013). In a cross-sectional study on

patients who attended Washington University's HIV clinic (Shacham et al., 2012), 97% of the participants reported that they had disclosed their HIV status to all of their partners, both primary and casual. In a related study conducted in Barbados among HIV-infected postparturient women, only 28.8% of the study sample had disclosed their status to other people, including their current sexual partners (Kumar, Waterman, Kumari, & Carter, 2006).

The study in Lagos, Nigeria, by Adeyemo et al. (2011) showed a disclosure rate of 61.5%. Although this rate was encouraging, it was small in comparison to disclosure rates of 81.0% and 80.2% for men and women, respectively, in Uganda among discordant couples (Kairania et al., 2010). Although the disclosure was made in the presence of a counselor, Kairania et al. (2010) suggested that the high disclosure rates reported in the study could be obtained if a couples counseling approach was adopted to facilitate HIV status disclosure.

Vu et al. (2012) studied the factors that promote HIV-seropositive status disclosure to sex partners by using a stratified analysis. Results indicated that stigma and the use of ART correlated significantly with status disclosure to partners in stable relationships; they showed no association between HIV status disclosures among partners in casual relationships. Research has identified a significant proportion of nondisclosers among women with a strong desire for pregnancy (DFP). Finger, Clum, Trent, and Ellen (2012) conducted a cross-sectional study of 130 young women with behaviorally acquired HIV to find out whether there was relationship between DFP and both sociodemographic variables and sexual risk behaviors. Multivariate analyses indicated a

decreased HIV disclosure rate among these women, a behavior that put them at risk for sexually transmitted disease as well as secondary transmission of HIV to their partners (Finger et al., 2012).

Sociodemographic Factors Influencing Spousal Disclosure

Prevention of maternal-child transmission of HIV has gained support through the counseling and testing of pregnant women accessing antenatal care in most clinics. During the counseling sessions, the women are encouraged to disclose their test results to their partners so that they also can be tested. However, the timing of the disclosures by HIV-positive women varies. Disclosure time might be at the end of the pregnancy, during weaning time, or at the resumption of sexual activity (Madiba & Latsoalo, 2013). Some women will disclose their status when it becomes apparent that explanations will be demanded as to why they are feeding their babies with formula rather than breastfeeding them. HIV-infected women who live with extended families need their partners' support and protection to be able to withstand the sociocultural expectation to breastfeed their newborn infants. Nondisclosure to partners could make adherence to infant feeding difficult (Madiba & Latsoalo, 2013).

Researchers have asserted that most women who are married or are in stable relationships are more likely than single women to disclose their HIV-seropositive status to their sexual partners (Kumar et al., 2006; Olagbuji et al., 2011). It appears that for married individuals, disclosure is driven by a sense of obligation or responsibility toward the significant other; for singles, there is no such strong relationship commitment.

Groves et al. (2012) contended that emphasizing individuals' moral responsibility to HIV self-disclosure to partners is an approach that could encourage HIV-seropositive status disclosure. They also noted that based upon HIV-positive women's narrative in South Africa that labeling nondisclosure as immoral could be counterproductive in advancing HIV prevention. Accounting for this finding are that women become overburdened with blame because they are tested for HIV at a higher rate than men and that the issue of morality undervalues the complexity of sexual relationships (Groves et al., 2012).

Sexual negotiations could result in HIV-serostatus disclosure among partners with a strong desire to have children and who want to prevent the transmission of HIV. With the help of assisted reproduction technology, discordant couples are able to satisfy this desire and adopt a healthy lifestyle that reduces the risk of infecting the negative partners. Fulfilling the desire to procreate can happen only when spousal self-disclosure takes place. Other researchers have identified the role of financial independence as a factor in self-disclosure of HIV-positive status. Kumar et al. (2006) found that women were likely to disclose their positive status to their partners if they were employed.

Implications of Previous Studies on the Present Study

Most of the strategies that have been employed to reduce the transmission of HIV have targeted at-risk individuals based upon predisposing behaviors that include intravenous drug use and engagement in other risky sexual behaviors. However, more attention needs to be focused on individuals who are predisposed to HIV acquisition, despite being in stable heterosexual partnerships. Nondisclosure of HIV-positive status to

their significant others, along with a myriad of associated enabling factors, has been documented across the globe. In general, a sense of inequality exists among individuals infected with the virus, with stigmatization primarily serving as in institutional and social control mechanism contributing to their marginalization (Mill et al., 2010). Stigmatizing attitudes toward PLWHIV could contribute to complacency that leads to unsafe sex intentions (Riley & Baah-Odoom, 2012).

Researchers have identified a correlation between a diagnosis of HIV and the inception of stigma. Kingori et al. (2012) noted that HIV-positive individuals who experienced stigma because of people's attitude toward them were not likely to disclose their seropositive status. This assertion supported Wolitski, Pals, Kidder, Courtenary-Quick, and Holtgrave's (2009) finding of a strong association between perceived stigma among HIV-infected persons and decreased HIV disclosure. In addition to discrimination and stigmatization as mediators of nondisclosure of HIV-positive status, other important factors in predicting HIV-positive disclosure include age, gender, level of education, and financial independence (Yonah et al., 2014).

I recognized the need to address stigma and its ramifications so that its impact on serostatus nondisclosure can be ameliorated. I evaluated the factors hindering the timely disclosure of HIV-positive status to partners in stable heterosexual relationships, particularly the interaction between spousal concealment of HIV status and variables such as perceived stigma, lack of social support, and level of HIV-related knowledge. I also examined the patterns of spousal disclosure by PLWHIV in an effort to provide public health agencies with information that could help them to develop intervention

programs that could boost present control strategies against the transmission of HIV to others.

Summary

I presented a review of the literature on the prevalence of HIV-positive status disclosure between sexual partners. I discussed the most common disclosure concerns that emerged from the literature: stigmatization; discrimination; lack of social support; and misconceptions about the transmissibility of HIV between sexual partners, particularly in discordant situations. Several researchers, some of whose studies I reviewed in this chapter, have examined the factors serving as barriers to the disclosure of HIV serostatus in sexual partnerships, but most of these studies have highlighted the barriers using qualitative methods. Although it is important for these potential barriers to be identified, it is equally important to express in quantitative terms how these barriers correlate with the nondisclosure of seropositive status, particularly in stable heterosexual partnerships.

In addition, despite some studies being conducted on HIV disclosure between sexual partners in Nigeria, there has been a paucity of quantitative data on the self-disclosure dynamics in stable sexual partnerships in Warri, Nigeria. Gaps in the reviewed literature illustrated the need to evaluate these disclosure barriers among HIV-infected heterosexual partners more closely.

In Chapter 3, I explain the method of inquiry that I used to conduct this cross-sectional study, and I outline the risks and benefits of this method of inquiry. I also provide information about the participants, sample size, research design, and choice of

research design. I describe the measurement scales that I used to study the variables and explain the appropriateness of the instruments to study the variables of interest. The sampling protocol included the procedure for obtaining informed consent from prospective participants. I also address other ethical considerations in this chapter and present the various statistics that I used to analyze the data.

Chapter 3: Research Method

Introduction

This chapter provides a detailed description of the research method, rationale for the study, and justification of the research design to evaluate nondisclosure issues between sexual partners in stable heterosexual relationships. I present an overview of the research approach and the theoretical construct, along with explanations of the study setting, sample, sampling plan, and data collection and data analysis plans. Also included are descriptions of the instruments and an iteration of the RQs and hypotheses as well as how I operationalized the variables. I conclude Chapter 3 with a discussion of the ethical considerations.

Purpose of the Study

I conducted this study to examine the relationship between the DV of HIV status disclosure and the IVs of stigma, lack of social support, and level of HIV-related knowledge between partners in stable heterosexual relationships. Disclosure of HIV-positive status has been shown to be an effective strategy in the control of the secondary transmission of HIV between sexual partners (Loukid et al., 2014). Despite medical advances such as ART and several preventive efforts to control HIV transmission, new infections continue to emerge because many PLWHIV have not disclosed their status to their steady sexual partners (Loukid et al., 2014). A major challenge in HIV/AIDS care, particularly in resource-poor countries, is acceptance and disclosure of HIV-positive status by PLWHIV (Ncama, 2007). Researchers have identified certain barriers to disclosure, namely, stigmatization (Clum et al., 2013; Joge et al., 2013; Seid et al., 2012;

Talley & Bettencourt, 2010; Vu et al., 2012); lack of social support (Kiula et al., 2013); and lack of knowledge about HIV (Benotsch et al., 2012), that encourage nondisclosure of HIV-positive status to sexual partners. I evaluated these specific barriers in an effort to establish the nature of the relationship between the stated factors and the nondisclosure of HIV status between adult partners in stable heterosexual relationships in Warri, Nigeria.

Research Design and Rationale

I followed a cross-sectional survey design, which had several advantages for use in this study. Aside from being the predominant design employed in research focusing on the social sciences, researchers have found the cross-sectional design useful in describing patterns of relationships among variables (Frankfort-Nachmias & Nachmias, 2008). In addition, in a cross-sectional study, data collection occurs at a single point in time (L. M. Sullivan, 2012). Results from cross-sectional studies have been found to be generalizable when they are based on a sample of the general population (Aschengrau & Seage, 2008).

This quantitative approach required the application of a survey (Crosby, DiClemente, & Salazar, 2006) because data collection involved numerical values that I had to analyze using various statistical procedures (Garwood, 2006). A quantitative method is suited to studies involving large target populations and provides replicable numerical data that facilitate making predictions from the analyses. An important feature of quantitative investigations is that any influence from the researchers is minimal, thus allowing the results to be generalizable as well as presented based upon statistical tests of significance (Garwood, 2006).

I used deductive theory, meaning that I tested an established theory. Quantitative research can be used to test and validate already established theories, described as interrelated set of constructs formed into propositions that specify the relationships among variables (Creswell, 2009). Researchers can use theories to describe how and why variables are related. In addition to providing a conceptual foundation to reliable knowledge, theories are useful in helping researchers to make predictions and provide explanations for the phenomena of interest (Frankfort-Nachmias & Nachmias, 2008).

I used the consequence theory (Serovich, 2001) to describe the relationship between the DV of HIV-seropositive disclosure and the IVs of stigma, lack of social support, and level of HIV-related knowledge. This theory posits that HIV-positive individuals are likely to disclose their status to their sexual partners if the benefits outweigh the costs. The consequence theory was appropriate to measure the variables in the study because I expected that the IVs would explain the DV. Researchers have provided evidence supporting the consequence theory in the prediction of disclosure (Zea et al., 2007). In terms of research duration, I did not anticipate any constraints either in time or in the availability of resource in conducting this study, despite not receiving any form of funding from external sources.

Methodology

Study Area

The setting for the study was the semiurban area of Warri, which is located in the Niger Delta area of southern Nigeria. Warri has a population of approximately 5.36 million people (National Geospatial-Intelligence Agency, n.d.). The three local

governments in Warri are Warri North, Warri South, and Warri South West, all of which comprise many ethnic groups. The people of Warri are mainly business people, farmers, fishers, and professionals in various careers. Delta State is the leading producer of crude oil in Nigeria, and Warri is one of the largest oil-producing locations in Africa.

Population

The cross-sectional study had several inclusion criteria: I recruited (a) only adults who were 18 years of age and older from four ART-prescribing centers serving Warri; (b) adults who had been HIV seropositive for at least 6 months; and (c) adults who were currently in stable heterosexual relationships, defined as heterosexual relationships of at least 6 months. Exclusion criteria were the following: (a) HIV-infected persons younger than 18 years of age, (b) HIV-positive adults not in relationships at the time of the study, (c) individuals with low English language literacy, and (d) individuals newly diagnosed with HIV within the last 6 months.

Sampling and Sampling Procedures

I used nonprobability convenience sampling to recruit my sample from four ART-designated public access centers in Warri: Central Hospital, Assumption Hospital, Ekpan General Hospital, and Military Base Hospital. Convenience sampling involves the recruitment of participants who are conveniently available (Frankfort-Nachmias & Nachmias, 2008). Justification for this sampling method was the result of my anticipation that some HIV-infected persons in the target population might not have been willing to participate in the study. Convenience sampling is considered a nonprobability sampling method because the probability that a potential participant will be selected is unknown

(L. M. Sullivan, 2012). I approached potential participants with a request to join the study before they left the different ART sites at any time of the day.

Sample Size

Although Creswell (2009) recommended a sample of 20 to 30 participants to achieve saturation, I estimated the sample size required for this study by using a statistical formula developed by L. M. Sullivan (2012) that had a confidence interval (CI) of 95% ($\alpha = .05$), which is acceptable to make statistical inferences (Frankfort-Nachmias & Nachmias, 2008). I calculated the sample size appropriate for this study using the following formula for dichotomous outcomes

$$n = p\,(1\text{-}p)\left(\frac{z}{E}\right)^2$$

where z is the value from the standard normal distribution for the CI used (e.g., $z = 1.96$ for 95%); E is the desired margin of error (i.e., 0.05); and p is the population proportion (L. M. Sullivan, 2012). This formula is considered appropriate for studies intending to estimate proportion on successes in a dichotomous outcome that involves a single population (L. M. Sullivan, 2012).

The target population in this study was PLWHIV. The disclosure rate reported by Akani and Erhabor (2006) in a resource-limited setting in Niger Delta with 187 HIV-positive patients reported a sexual partner disclosure rate of 23.6%. I used this information to calculate the desired sample size by applying the formula

$$n = 0.236\,(1\text{-}0.236)\left(\frac{1.96}{0.05}\right)^2$$

to obtain a proposed sample of 278 participants. I eventually had a sample of 303 participants in the study.

Procedures for Recruitment, Participation, and Data Collection

Once I received approval from Walden University's Institutional Review Board to conduct the study (IRB approval #07-29-15-0283939), I put up a recruitment poster at each study center to solicit participants. The poster explained the inclusion and exclusion criteria to participate. I approached potential participants and ask them to spend 20 minutes to complete the anonymous questionnaires.

Staff members at the four facilities who were interested in helping me to recruit participants identified potential respondents who met the inclusion criteria, described the study to them, and referred prospective participants to me (Emlet, 2007). I provided training for the staff members on recruiting potential study participants. I obtained written consent from interested individuals indicating their willingness to participate in the study before they completed the questionnaires. I made every effort to address any concerns that the participants might have had.

I distributed the self-administered questionnaires, all of which were written in English, to the participants during their scheduled visits to the designated centers to collect their ART. The questionnaires that comprised the survey were designed to obtain information about the respondents' HIV-positive disclosure status, knowledge of HIV infection transmission, and perceptions of social support and stigma-related issues. I asked the respondents to complete the questionnaires after I gave them as much information about the study as they needed or requested. Administration of the

questionnaires in their original English wording assured consistency (Choi & Pak, 2005). There were no time limitations on completing the questionnaires, but I did ask the participants to complete them at the centers and submit them to me immediately upon completion. All respondents who completed the questionnaires received a telephone card recharge voucher from me for their desired telecommunication network provider worth 300 Nigerian naira (approximately $1.50 USD) as thanks for their participation.

Instrumentation and Operationalization of Constructs

I used a survey comprising a battery of four structured questionnaires: the demographics questionnaire (see Appendix A), the Medical Outcome Study Social Support Survey (MOS-SSS; Sherbourne & Stewart, 1991; see Appendix B); the Berger HIV-Stigma Scale (HSS-40; Berger, Ferrans, & Lashley, 2001; see Appendix C); and the HIV-Knowledge Questionnaire (HIV-KQ-18; Carey & Schroder, 2002; see Appendix D).

Medical Outcome Study Social Support Survey

The MOS-SSS, developed by Sherbourne and Stewart (1991), is a multidimensional scale that can be used to measure the perceived availability and other dimensions of social support (Shyu, Tang, Liang, & Weng, 2006). Pierce, Sarason, and Sarason (as cited in Galvan et al., 2008) described perceived social support as individuals' beliefs and evaluations about relationships in their lives, where individuals with high perceived social support describe themselves in more positive terms than persons with low perceived social support. The MOS-SSS is a 19-item multidimensional scale that assesses four aspects of social support: tangible, affectionate, positive social interaction, and emotional or informational. The MOS-SSS takes 10 to 15 minutes to

administer and is rated on a 5-point Likert scale of responses ranging from 1 (*none of the time*) to 5 (*all of the time*) on the perceived availability of social support. A total score is obtained after summing all responses. The scores range from 19 to 95, with higher scores reflecting higher levels of availability of social support (Vyavaharkar et al., 2011).

HIV-Stigma Scale-40

The HSS-40 (Berger et al., 2001) has been widely used to study and measure the perception of stigma by individuals infected with HIV (Bunn, Solomon, Miller, & Forehand, 2007; Emlet, 2007; Wiklander et al., 2013). According to Nyblade (2006), the items used to measure perceived stigma assess two areas: (a) things that happen when people know about an individual's HIV-positive status, and (b) the expectations of what other people think and how supportive or otherwise specific persons are of an infected person

The HSS-40 is a 40-item scale that measures four dimensions of stigma:

> 1) Personalized stigma, perceived stigmatizing consequences of others knowing of one's HIV status; 2) disclosure concerns, fear of disclosing one's own HIV status and fear that those who now would tell others; 3) negative self-image, experiencing oneself as tainted and not as good as others because of one's HIV; and 4) concerns with public attitudes, conceptions of what people might think about a person with HIV. (Wiklander et al., 2013. p. 196)

The HSS-40 has 38 items rated on a 4-point Likert scale ranging from *strongly disagree* to *strongly agree*; the other two items (Items 8 and 21) are reverse scored (Wiklander et al., 2013). All scores are summed to obtain a total score ranging from 40 to

160, with higher scores denoting higher levels of stigma (Emlet, 2007; Wiklander et al., 2013).

HIV-Knowledge Questionnaire-18

The HIV-KQ-18 was developed by Carey and Schroder (2002) to measure HIV-related knowledge. I used this instrument to measure the respondents' HIV/AIDS knowledge. The HIV-KQ-18 is a brief version of the original HIV-KQ-46 that offers an advantage over the original scale because it addresses a more concise and well-established measure of HIV-related knowledge about street outreach, field surveys, and intervention settings (Measurement Instrument Database for the Social Sciences. n.d.). The items on the HIV-KQ-18 ask about HIV transmission and the AIDS disease process; response options are True, False, and Don't Know. I calculated the proportion of all correct answers for all respondents; a response of Don't Know was calculated as incorrect (Kalichman et al., 2005). A single score was tallied as a summary of all responses ranging from 0 to 18, with higher scores denoting higher HIV knowledge (Carey & Schroder, 2002).

Reliability and Validity of the Instruments

Validity of an instrument means that the instrument measures what it was intended to measure; reliability refers to its reproducibility (Frankfort-Nachmias & Nachmias, 2008). The MOS-SSS and the HSS-40 have gone through rigorous testing and have been found to have high validity and reliability (Rand Corporation, 2014). Several researchers have found the psychometric properties of these instruments to be valid and reliable. Yu, Lee, and Woo (2004) evaluated the criterion-related and construct validities

of the Chinese version of the MOS-SSS with 110 inpatients and confirmed that the four-factor structure of the instrument measured the functional aspects of perceived social support, with Cronbach's alphas for the scales ranging from .93 to .96. A test-retest for reliability completed 2 weeks later had a correlation coefficient of .84 (Yu et al., 2004). Vyavaharkar et al. (2011) reported the reliability of the MOS-SSS to measure sources of available social support and satisfaction with support as .91 and .95, respectively.

The suitability of the HSS-40 to measure perceived stigma has been evaluated in studies involving a variety of target populations and has been found to be reliable. Its potential for use with older PLWHIV was studied and found to be valid and reliable in capturing their experiences (Emlet, 2007). Berger et al. (2001) provided evidence of the internal consistency and reliability of the HSS-40, with coefficient alphas between .90 and .93 for the scales and .96 for this 40-item measurement scale.

The HIV-KQ-18 also has been found suitable for use with low-literacy populations. It has demonstrated strong levels of internal consistency and has achieved satisfactory test-retest reliability. It also has been shown to be stable and sensitive to changes resulting from interventions (Carey & Schroder, 2002). In validating the psychometric properties of the HIV-KQ-18, Carey and Schroder (2002) found internal consistency ranging from alphas .75 to .89 across samples.

Demographics Questionnaire

I asked the participants to complete a demographics questionnaire to collect descriptive data on gender, age, educational level, employment status, nature of sexual relationship, HIV infection duration, and partner HIV-status disclosure information.

Permission to Use Survey Instruments

The MOS-SSS and the HSS-40 are available in the public domain online and were reproduced from the Rand Corporation (2014). Other than citing the appropriate developers in the list of references, no further requirements or permissions were necessary.

Data Analysis Plan

I conducted a univariate analysis using data from the four questionnaires to provide basic descriptive statistics about the study sample. Results of the analysis included frequencies, means, standard deviations, and ranges of disclosure patterns across the various grouped categorical variables of gender, marital status, HIV disclosure to sexual partners, and marriage type. Data provided as proportions and rates were presented in tables and graphics.

I also conducted bivariate and multivariate analyses. The unpaired *t* test allowed me to compare the mean difference in disclosure patterns between the male and female participants; between educated and uneducated individuals; and between married and single PLWHIV. I compared the HIV-related knowledge mean scores of male and female participants using the statistical *t* test. I used multiple logistic regression to evaluate the correlation between the variables of lack of spousal support and fear of stigma with status disclosure, and I used ANOVA to evaluate disclosure differences between HIV-infected persons in two categories of stable sexual relationships (i.e., married in monogamous heterosexual relationships and single in stable heterosexual relationships).

I hand scored the four questionnaires and analyzed the data using SPSS v.21.0. All analyses were completed at a CI of 95% (Green & Salkind, 2011). I compute data obtained on the demographics questionnaire to present descriptive statistics for the characteristics of the sample. I labeled and then uploaded the collected data to SPSS v.21.0 before conducting any of the statistical analyses. SPSS has an elaborate data-processing power that ranges from a common test of significance to more complicated procedures that include factor analysis and multiple regressions (Foster, 2006).

I manually screened the returned surveys for completeness and omissions. Unanswered or skipped questions were computed into SPSS as missing values so that I could estimate the data correctly while cleaning them by data deletion. I used a listwise data deletion method to address unanswered questions, which meant dropping all data sets containing missing values. According to McKnight, McKnight, Sidani, and Figueredo (2007), most statistical software packages include a data deletion method as a default requiring little effort from the researcher.

Research Questions and Hypotheses

The study was guided by three research questions and their hypotheses.

Research Question 1: How is disclosure of HIV-positive status to partners in steady heterosexual relationships impacted by social support?

$H_0$1: The lack of social support does not affect HIV-positive status disclosure to steady heterosexual partners.

H_a1: The lack of social support does affect HIV-positive status disclosure to steady heterosexual partners.

I used bivariate logistic to test the association between the DV (disclosure of HIV-positive status) and the IV of social support. I used multivariate logistic regression to test the adjusted association between the DV and the IVs while adjusting for gender, age, educational level, occupation, marital status, length of relationship, length of HIV-positive diagnosis, and HIV status of the study participants' partners. I chose $p \leq .05$ as an acceptable significance level (α). I intended to reject Null Hypothesis 1 and accept Alternate Hypothesis 1 if the value of p was ≤ .05.

Research Question 2: How does HIV-positive status disclosure to stable heterosexual partners correlate with knowledge of HIV/AIDS?

$H_0$2: There is no correlation between HIV cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

H_a2: There is a correlation between HIV/AIDS cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

I used bivariate logistic regression to test the association between the DV (disclosure of HIV-positive status) and the IV of level of HIV/AIDS-related knowledge. I used multivariate logistic regression to test the adjusted association between the DV and the IVs while adjusting for gender, age, educational level, occupation, marital status, length of relationship, length of HIV positive diagnosis, and HIV status of the study participants' partners. I chose $p \leq .05$ as an acceptable significance level (α). I intended to reject Null Hypothesis 2 and accept Alternate Hypothesis 2 if the value of p was ≤ .05.

Research Question 3: How does disclosure of HIV-positive status to stable heterosexual partners correlate with stigmatization?

$H_0$3: There is no correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

H_a3: There is a correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

I used bivariate logistic regression to test the association between the DV (disclosure of HIV-positive status) and the IV of stigma. I used multivariate logistic regression to test the adjusted association between the DV and the IVs while adjusting for gender, age, educational level, occupation, marital status, length of relationship, length of HIV positive diagnosis, and HIV status of the study participants' partners. I chose $p \leq .05$ as an acceptable significance level (α). I intended to reject Null Hypothesis 3 and accept Alternate Hypothesis 3 if the value of p was $\leq .05$.

Threats to Validity

Potential threats to the validity of this survey research were the following:

1. Two or more participants discussing the survey questions to share their responses could have caused response bias.
2. Participants completing the questionnaires in haste and skipping some questionnaire items could have resulted in a biased estimate of the parameters, thus impacting the statistical conclusions among the variables.
3. Unanswered survey questions resulting in missing data could have affected the generalizability of the findings.
4. Modification of items from the original items on the instruments could have posed a threat to construct validity.

5. Incompletion of the demographics questionnaire could have presented as a threat to internal validity.

Ethical Considerations

As mentioned previously, I obtained initial written approval to conduct this study from Walden University's IRB and then from the appropriate authorities at the four ART centers. I did not collect any data until I received these permissions. I informed the participants that conducting this research was a requirement of the doctoral degree that I was pursuing at Walden University in the United States. Because this study involved noninvasive procedures, I obtained a letter of cooperation from my study health care facilities, which had been authorized by the National Health Research Ethics Committee of Nigeria to grant approval to conduct such studies.

The participants were volunteers who read and signed the informed consent. I addressed any concerns that the prospective participants had before they signed the consent form, which contained brief background information about the study, the amount of time needed to complete the questionnaires, and their right to participate in or withdraw from the study without coercion in case any of the questions become too emotional for them to continue. Refusal to participate in the study or early withdrawal from the study did not compromise their treatment regimens.

I also informed the participants that being in the study would not present any physical risks or benefits to them. I explained that their privacy and the confidentiality of their data would be maintained because no questionnaires included any personal

identifiers such as names or addresses. However, I did label each questionnaire numerically to differentiate the completed questionnaires.

I retrieved the completed questionnaires on site. I computed and stored all of the information extracted from the forms unto a dedicated hard disk; the research document was encrypted to prevent unauthorized access to the stored information. I will store the data for 5 years, according to Walden University's ethical requirements. After that, all documentation relevant to the study will be destroyed.

Conflict-of-interest issues were nonexistent because I did not have any dealings with the centers where the study took place. I communicated to the staff at each center where I would need their assistance, such as in identifying potential eligible respondents, distributing the survey forms, collecting the completed forms, and distributing the gift vouchers as the participants exited the study with a thank-you note.

Summary

In Chapter 3, I reiterated the purpose of the study, described the research design, and explained the rationale for the choice of survey design in evaluating the barriers to disclosure of HIV-positive status to adult heterosexual partners in relationships spanning at least 6 months. The questionnaires comprising the survey had been validated in previous studies.

I also discussed the study population, sampling, recruitment, and data collection procedures. I described the operationalized constructs of the instruments and the data analysis plan. I analyzed the collected data using the stated questionnaires to test the hypotheses. The DV was disclosure of HIV-positive status to partners; the IVs were

stigma, lack of social support, and level of HIV-related knowledge. I used multiple logistic regressions to test the stated hypotheses and evaluate the correlation between the dependent and IVs. I carried out bivariate analyses using independent *t* test and ANOVA. I used the independent *t* test to compare the mean difference in disclosure rates between male and female gender, as well the mean difference in disclosure rates between married and single respondents. I used ANOVA to compare the mean difference in HIV disclosure rates among respondents in grouped categories (i.e., age, educational level, single status, length of relationship, duration of HIV infection diagnosis). Potential validity threats to the study were listed, and ethical considerations were addressed. In Chapter 4, I present the results of the statistical analysis of the collected data.

Chapter 4: Results

Introduction

Chapter 4 presents, the purpose of the study, research questions and hypotheses, findings, results, and analysis of the data to evaluate the barriers to disclosure of HIV-positive status among heterosexual partners in stable relationships. The findings are based upon the outcome of quantitative analysis of the data using various statistical and analytical tools. The chapter provides a detailed description of the respondents' demographic characteristics and an explanation of the inferential statistics. It concludes with a discussion of the survey outcome among the participants with respect to the RQs and hypotheses.

The purpose of the study was to examine the relationship between HIV positive status disclosure, and stigma, lack of social support, and level of HIV-related knowledge among partners in stable heterosexual relationships. In the study, I also sought to establish the disclosure patterns and variations among various demographic characteristics based on; gender, age, educational level, employment status, and the nature of their current relationships. In this study, the dependent variable was HIV-positive status disclosure, and the independent variables were stigma, lack of social support, and level of HIV/AIDS- related knowledge.

The study was guided by three research questions and their hypotheses.

Research Question 1: How is disclosure of HIV-positive status to partners in steady heterosexual relationships impacted by social support?

$H_0$1: The lack of social support does not affect HIV-positive status disclosure to steady heterosexual partners.

H_a1: The lack of social support does affect HIV-positive status disclosure to steady heterosexual partners.

Research Question 2: How does HIV-positive status disclosure to stable heterosexual partners correlate with knowledge of HIV/AIDS?

$H_0$2: There is no correlation between HIV cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

H_a2: There is a correlation between HIV/AIDS cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

Research Question 3: How does disclosure of HIV-positive status to stable heterosexual partners correlate with stigmatization?

$H_0$3: There is no correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

H_a3: There is a correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

Pilot Study and Data Collection

I used a demographics questionnaire to collect information about the sociodemographic variables of gender, age, educational level, and occupation; marital status (i.e., married or single); nature of marriage (i.e., monogamous or polygamous); single status (i.e., cohabiting, divorced, widowed, dating, none); partner gender; length of

relationship; duration of HIV diagnosis; HIV-positive status disclosure to partner; time of disclosure; and partner status.

I conducted a pilot test on the demographics questionnaire in a similar setting before using it in this study. I used the MOS-SSS to collect data on social support attributes. I used the HSS-40 to collect data on stigma attributes (Items 8 and 21 on this scale were reverse coded before data analysis). I used the HIV-KQ-18 to collect information on the respondents' HIV-related knowledge. Total scores on these three questionnaires were computed and transformed to create additional variables, namely, TOT_SOCSU, TOT_SS and TOT_KQ, respectively. These, in addition to the coding scheme for the other variables analyzed in this study are outlined in Appendix E.

Data validation was carried out. I checked all four questionnaires in the survey for completeness and consistency before entering the data into SPSS v.21.0 for data analysis (Green & Salkind, 2011). Returned forms with more than one missing items on each questionnaire were excluded, in addition to respondents who had been in relationships for less than 6 months. HIV-positive status disclosure was considered the criterion variable; the predictor variables were fear of stigma, lack of social support, level of HIV-related knowledge, and demographics.

The participants were recruited from PLWHIV who were accessing antiretroviral therapy (ART) from Nigerian government-designated centers in Warri during November and December 2015. I apportioned 100 surveys to each facility and distributed them to individuals who met the inclusion criteria. Of the 400 surveys that I distributed, 386 were returned with the signed consent form resulting in an overall survey response rate of

75.8% prior to data validation. A total of 303 respondents correctly completed the four self-administered questionnaires comprising the survey. One hundred and ninety-two (63.4%) respondents were women, and 111 (36.6%) were men. The majority of participants (*n* = 105, 34.7%) were within the age ranges of 30 to 39 years; only four (1.3%) respondents were above 60 years of age. The percentage representations of respondents who were between age ranges of 19 and 29 years, 40 to 49 years, and 50 to 59 years were, 27.1%, 26.4%, and 10.6% respectively.

Results

Descriptive Statistics

Of the 303 respondents who correctly completed the questionnaires, the majority of survey respondents (*n* = 128, 42.2%) had attained a secondary school level of education. Those who had attained university education were as follows: (*n* = 88, 29.0%); tertiary (*n* = 58, 19.1%); and primary (*n* = 24, 7.9%); only (*n* = 5, 1.7%) had no classroom education. Most of the respondents were self-employed (*n* = 114, 37.6%) while the unemployed respondents were (*n* = 55, 18.2%). The remaining respondents were either civil servants (*n* = 62, 20.5%) or engaged in trading (*n* = 72, 23%).More than half of the respondents were married (*n* = 176, 58.1%), with 93.8% (*n* = 165) in monogamous relationships; the remaining 6.2% (*n* = 11) were in polygamous relationships. The 41.9% who were single were cohabiting (*n* = 16, 12.6%); divorced (*n* = 10, 7.9%); widowed (*n* = 17, 13.4%); or dating (*n* = 84, 66.1%).

The majority of the respondents had been in stable relationships for more than 2 years (*n* = 205, 67.7%), 50 (18.5%) had been in stable relationships for 1 to 2 years, and

48 (15.8%) had been in stable relationships for 7 to 12 months. Most of the respondents (n = 129, 42.6%) had received an HIV-positive diagnosis for more than 2 years while those who tested positive to HIV within 6 months were (n = 60, 19.8%), 7-12 months (n = 42, 13.9%), and between 1 and 2 years (n = 72, 23.8%).

Table 1

Sociodemographic Characteristics of the Participants

Characteristics	*F*	%
Gender		
Male	111	36.6
Female	192	63.4
Age (years)		
18-29	82	27.1
30-39	105	34.7
40-49	80	26.4
50- 59	32	10.6
> 60	4	1.3
Educational level		
No classroom education	5	1.7
Primary	24	7.9
Secondary	128	42.2
Tertiary	58	19.1
University	88	29.0
Occupation		
Self-employed	114	37.6
Civil Servant	62	20.5
Not employed	55	18.2
Trading	72	23
Marital status		
Single	127	41.9
Cohabiting	16	12.6
Divorced	10	7.9
Widowed	17	13.4
Dating	84	66.1
Married	176	58.1
Nature of marriage		
Monogamous	165	93.8
Polygamous	11	6.2
Length of relationship		
7-12 months	48	15.8
1-2 years	50	18.5
> 2 years	205	67.7
Time since HIV diagnosis		
< 6 months	60	19.8
7-12 months	42	13.9

Characteristics	*F*	%
		(Table 1 Continues)
1-2 years	72	23.8
> 2 years	129	42.6
Partner's HIV status		
Negative	124	40.9
Positive	93	30.7
Don't know	86	28.4
HIV status disclosure to partner		
No	101	33.3
Yes	202	66.7
Time of disclosure		
> 6 months	57	28.2
7-12 months	28	13.9
1-2 years	42	20.8
> 2 years	75	37.1

The total HIV-positive status disclosure rate among the sample was 66.7%. The proportion of participants who had disclosed their status to their stable partners was higher among the women (67.7%) than the men (64.9%). Among the study respondents a proportion of 28.4% (*n* = 86) did not know the HIV status of their partners; 40.9% (*n* = 124) and 30.7% (*n* = 93) knew that their partners were HIV negative or positive, respectively. Time between HIV-positive status diagnosis and time of disclosure to partners varied. In less than 6 months since HIV diagnosis, 57 (28.2%) participants had disclosed their status to their partners. Other participants who had made the disclosure were represented by 13.9% (*n* = 28, 7-12 months); 20.8% (*n* = 42, 1-2 years; and 37.1% (n = 74, > 2 years), respectively. Comparisons of HIV disclosure and nondisclosure patterns and rates among other various demographic groups were summarized and are presented in Table 2.

Table 2

HIV Status Spousal Disclosure Patterns of the Respondents

Category		*n*	HIV-positive status disclosure to stable sexual partners		HIV-positive status disclosure rates (%)
			NO	YES	
Gender	Male	111	39	72	64.9
	Female	192	62	130	67.7
Age (years)	18 -29	82	37	45	54.9
	30-39	105	28	77	73.3
	40-49	80	25	55	68.8
	50-59	32	9	23	71.9
	> 60	4	2	2	50.0
Educational level	No classroom education	5	2	3	60.0
	Primary	24	9	15	62.5
	Secondary	128	38	90	70.3
	Tertiary	58	19	39	67.2
	University	88	33	55	62.5
Occupation	Self- employed	114	33	81	71.1
	Civil servant	62	21	41	66.1
	Not employed	55	26	29	52.7
	Trading	72	21	51	70.8
Marital status	Single	127	75	52	40.9
	Married	176	26	150	85.2
Marriage type	Monogamous	165	22	143	86.7
	Polygamous	11	4	7	63.6
Single status	Cohabiting	16	11	5	31.3
	Divorced	10	7	3	30.0
	Widowed	17	8	9	52.9
	Dating	84	49	35	41.7
Length of relationship	7-12 months	48	25	23	47.9
	1-2 years	50	27	23	46.0
	> 2 years	205	49	156	76.1
Partner's HIV status	Negative	124	26	98	79.0
	Positive	93	3	90	96.8
	Don't know	86	72	14	16.3
Duration of HIV infection diagnosis	Less than 6 months	60	31	29	48.3
	7-12 months	42	13	29	69.0
	1-2 years	72	30	42	58.3
	> 2 years	129	27	102	79.1
Time of disclosure	< 6 months	57	-	57	28.2
	7-12 months	28	-	28	13.9
	1-2 years	42	-	42	20.8
	> 2 years	75	-	75	37.1

Figures 1 to 10 depict graphical representations of some of the demographics characteristics.

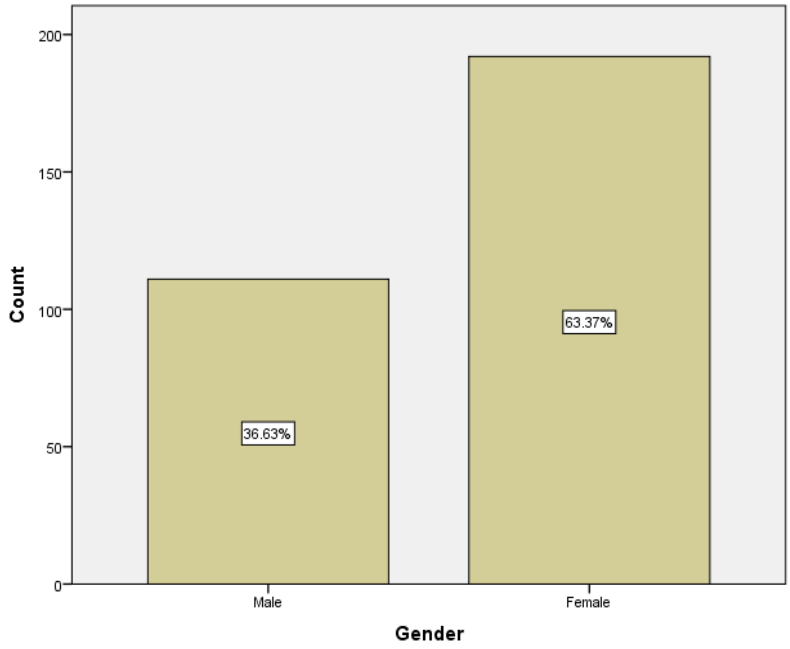

Figure 1. Bar graph of gender.

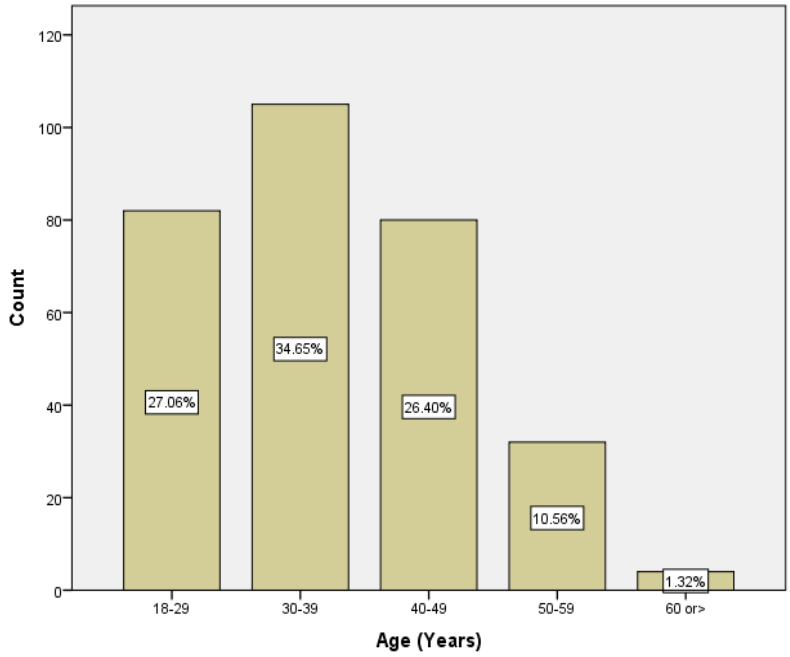

Figure 2. Bar graph of age.

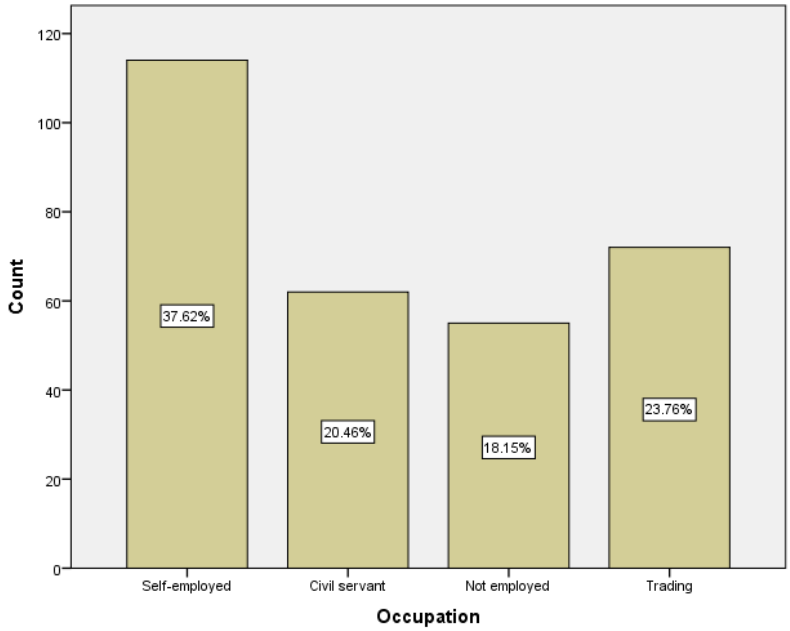

Figure 3. Bar graph of occupation.

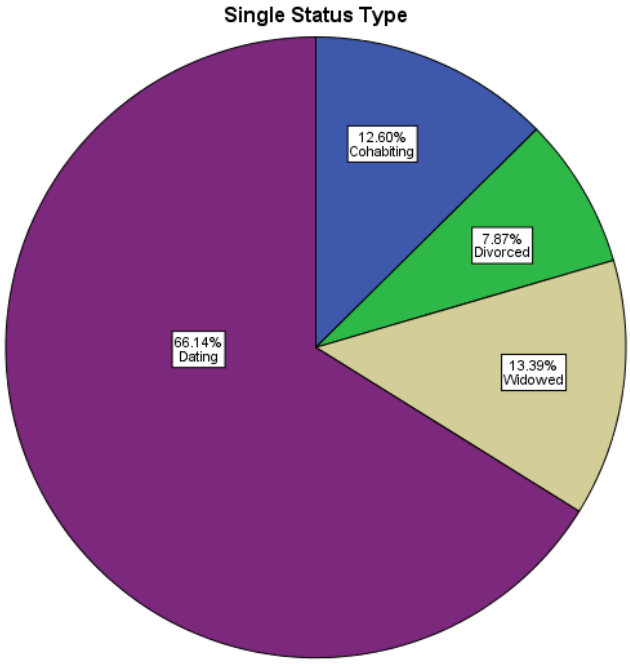

Figure 4. Pie chart of single status type.

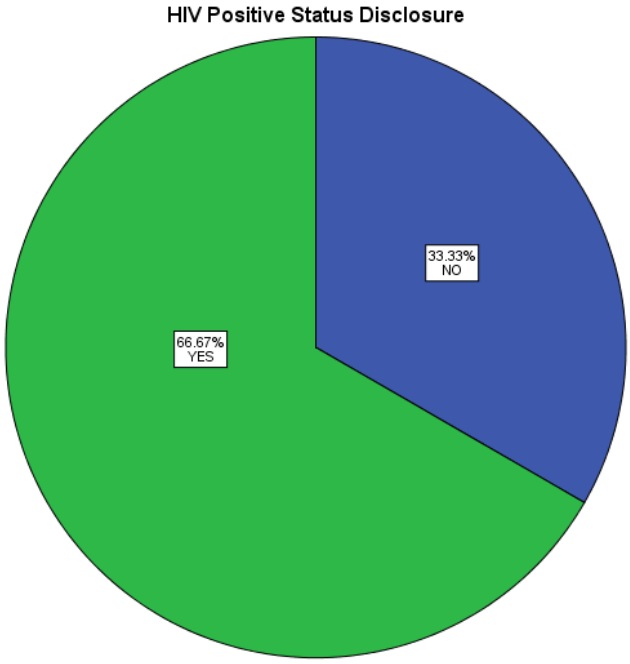

Figure 5. Pie chart of HIV-positive status disclosure.

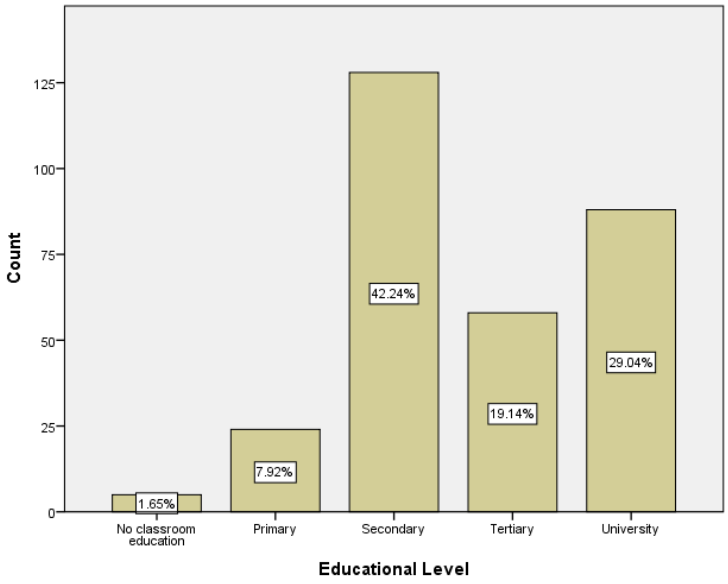

Figure 6. Bar graph of educational level.

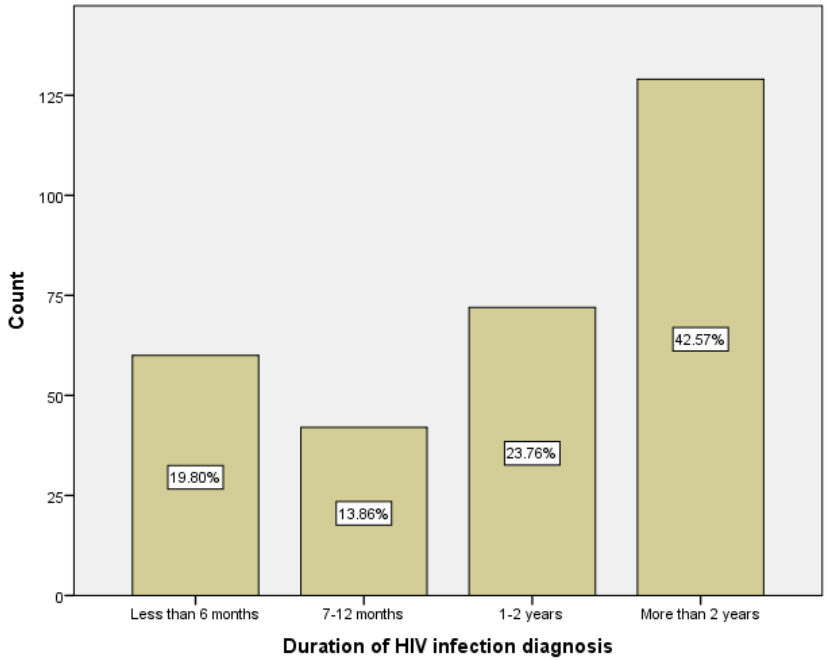

Figure 7. Bar graph of HIV infection duration.

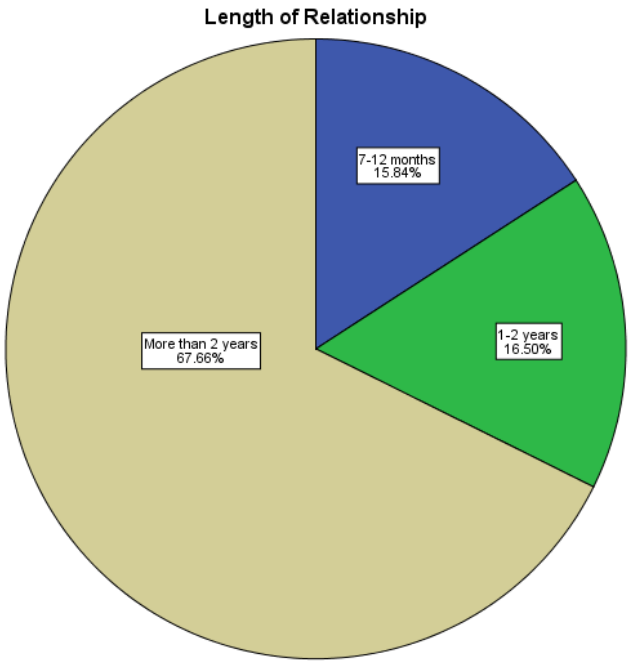

Figure 8. Pie chart of length of relationship.

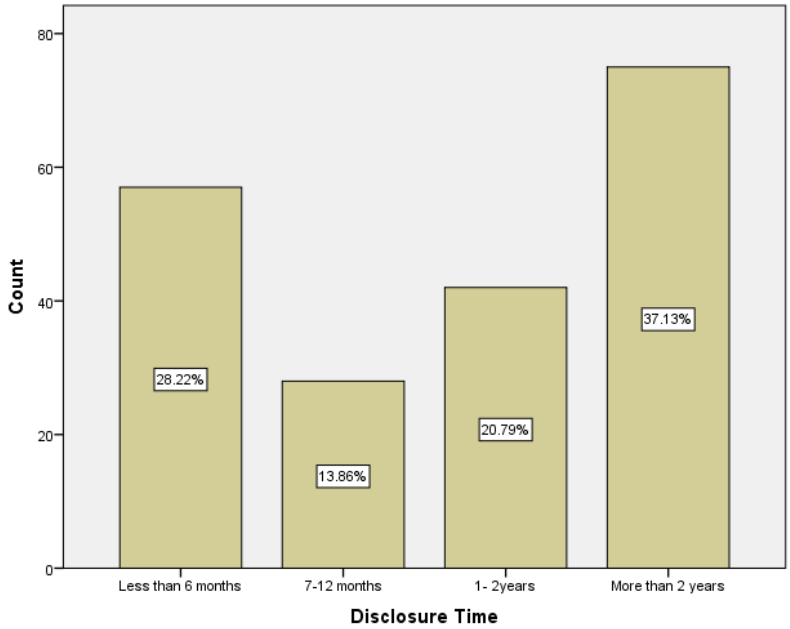

Figure 9. Bar graph of disclosure time.

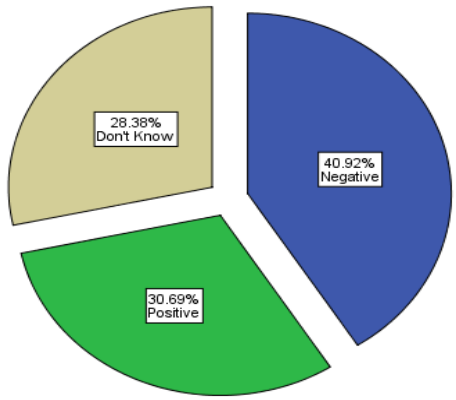

Figure 10. Pie chart of knowledge of HIV status of partner.

Measurement Scale Scores

Table 3 shows the descriptive summary of the respondents' total scores for each questionnaire. The respective mean scores and standard deviations were approximately $M = 65.9$, $SD = 17.6$ (MOS-SSS); $M = 104.6$, $SD = 16.6$ (HSS-40); and $M = 12.8$, $SD = 3.3$ (HIV-KQ-18). The scores for the social support scale ranged from 19 to 95, with higher scores indicating high availability of social support. The sum of the scores on the stigma scale ranged from 40 to 160, with high scores indicating a high level of stigma. Scores on the HIV KQ-18 ranged from 0 to 18, with high scores denoting high HIV cognition.

Table 3

Total Scores for Survey Questionnaires

	Sum	Mode	*M*	*SD*	Variance	Min	Max
TOT_SOCSU	19975.00	95.00	65.9241	17.59828	309.700	19.0	95.00
TOT_SS	31690.00	107.00	104.5875	16.56828	274.508	51.0	145.00
TOT_KQ	3879.00	15.00	12.8020	3.26131	10.636	1.00	18.00

Table 4 shows the mean score and standard deviation for each sociodemographic category on the survey questionnaires.

Table 4

Means and Standard Deviations of Survey Questionnaire Scores

		TOT_SOCSU ($n = 298$) *M* (*SD*)	TOT_KQ ($N = 303$) *M* (*SD*)	TOT_SS ($n = 292$) *M* (*SD*)
Gender	Male	65.3 (17.7)	12.6 (3.5)	105.3 (16.4)
	Female	66.3 (17.6)	12.9 (3.1)	104.2 (16.7)
Age (years)	18 -29	65.6 (15.8)	12.7 (3.1)	107.7 (16.1)
	30-39	66.0 (18.1)	12.8 (3.4)	106.2 (15.9)
	40-49	65.2 (18.8)	13.0 (2.9)	100.9 (17.2)
	50-59	68.4 (17.4)	12.5 (4.0)	101.6 (16.6)

		TOT_SOCSU (n = 298) M (SD)	TOT_KQ (N = 303) M (SD)	TOT_SS (n = 292) M (SD)
				(Table 4 continues)
	> 60	73.3 (18.1)	14.5 (4.0)	95.0 (16.8)
Educational level	No classroom education	65.0 (10.8)	14.2 (2.8)	100.0 (12.1)
	Primary	61.8 (21.0)	12.1 (3.3)	109.2 (12.0)
	Secondary	66.8 (17.0)	12.6 (3.4)	104.0 (17.7)
	Tertiary	64.4 (16.5)	13.2 (2.8)	104.0 (19.0)
	University	67.0 (18.5)	12.9 (3.4)	104.9 (16.1)
Occupation	Self-employed	68.9 (17.7)	12.6 (3.2)	103.1 (17.8)
	Civil servant	65.8 (15.7)	12.9 (3.2)	103.1 (15.7)
	Not employed	59.7 (18.9)	13.5 (3.1)	109.7 (14.8)
	Trading	66.3 (16.8)	12.5 (3.5)	104.4 (16.1)
Marital Status	Single	62.4 (17.4)	13.2 (2.8)	106.6 (16.2)
	Married	68.5 (17.3)	12.5 (3.5)	103.1 (16.7)
Marriage type	Monogamous	69.2 (17.4)	12.6 (3.6)	103.4 (17.0)
	Polygamous	58. 4 (13.0)	11.4 (3.2)	99.4 (12.0)
Single status	Cohabiting	52.3 (21.8)	13.8 (2.1)	104.7 (14.8)
	Divorced	58.9 (21.5)	13.8 (3.0)	103.3 (12.7)
	Widowed	61.8 (16.9)	13.0 (2.8)	103.2 (16.0)
	Dating	64.1 (16.0)	13.1 (2.9)	108.0 (16.9)

Univariate Analysis

I compared patterns of spousal HIV-positive status disclosure and nondisclosure between male and female respondents (see Table 5). I found that the overall spousal disclosure rate was 66.7%. HIV status disclosure was higher among married respondents (85.2%) than among singles (40.9%). Other socioeconomic attributes demonstrated that based upon occupation, the self-employed respondents had the highest disclosure rate of 71.1%; nonemployed respondents had the lowest disclosure rate of 52.7%. Additional results showed that approximately 40.9% of the participants were discordant, based upon the proportion who reported knowing their partners' HIV status to be negative. Disclosure rate was the lowest (16.3%) among the participants who did not know the HIV status of their partners.

Table 5

*Gender * HIV-Positive Status Disclosure to Partner Cross-Tabulation*

			HIV-positive status disclosure to partner		Total
			No	Yes	
Gender	Male	Count	39	72	111
		% within gender	35.1%	64.9%	100.0%
		% within HIV-positive status disclosure to partner	38.6%	35.6%	36.6%
	Female	Count	62	130	192
		% within gender	32.3%	67.7%	100.0%
		% within HIV-positive status disclosure to partner	61.4%	64.4%	63.4%
Total		Count	101	202	303
		% within gender	33.3%	66.7%	100.0%
		% within HIV-positive status disclosure to partner	100.0%	100.0%	100.0%

Bivariate Analysis

The rates of spousal HIV disclosure between male and female participants were 64.9% and 67.7%, respectively, indicating that more female than male participants living with HIV disclosed their HIV-positive status to their stable sexual partners. However, I conducted a comparison using the independent sample *t* test to ascertain statistical difference in HIV status disclosure between the two genders. The *t* test analysis result (see Table 6) showed no significant difference between the mean rates of HIV-positive status disclosure between male and female respondents, $t\ (301) = -504$, NS,.614, $p > .05$. Other disclosure comparisons that I completed using *t*-test analyses found a significant difference in HIV status disclosure between single and married respondents, $t\ (301) = -8.621, .00$, $p < .05$. I found no significant difference between the disclosure patterns between persons in monogamous and polygamous marriages, $t\ (301) = 1.491, .165$, $p > .05$.

Table 6

Independent Samples t *Test (Male vs. Female Disclosure)*

		Levene's test for equality of variances		*t* test for equality of means						
		F	Sig.	T	*Df*	Sig. (2-tailed)	*MD*	*SE* difference	95% CI of the difference	
									Lower	Upper
HIV-positive status disclosure to partner	Equal variances assumed	.968	.326	-.504	301	.614	-.028	.056	-.139	.082
	Equal variances not assumed			-.501	225.489	.617	-.028	.057	-.140	.083

ANOVA Analyses

The results of the ANOVA analyses for testing HIV disclosure differences among the various categories of respondents (see Tables 7-13) showed no statistical difference in HIV disclosure by age (p = .082), educational level (p = .788), occupation (p = .095), or single status (p = .551). This was indicated by the respective F statistic values being nonsignificant at .05. However, the F statistic was significant at .000 for length of relationship, HIV diagnosis duration, and knowledge of partner's HIV status, suggesting that there were significant differences in HIV disclosure outcomes in these groups.

Table 7

ANOVA by Age

ANOVA by age					
HIV-positive status disclosure to partner					
	SS	*Df*	*MS*	*F*	Sig.
Between groups	1.839	4	.460	2.092	.082
Within groups	65.494	298	.220		
Total	67.333	302			

Table 8

ANOVA by Educational Level

ANOVA by educational level					
HIV-positive status disclosure to partner					
	SS	*Df*	*MS*	*F*	Sig.
Between groups	.389	4	.097	.433	.785
Within groups	66.945	298	.225		
Total	67.333	302			

Table 9

ANOVA by Occupation

ANOVA by occupation					
HIV-positive status disclosure to partner					
	SS	*Df*	*MS*	*F*	Sig.
Between groups	1.415	3	.472	2.139	.095
Within groups	65.919	299	.220		
Total	67.333	302			

Table 10

ANOVA by Single Status

ANOVA by single status					
HIV-positive status disclosure to partner					
	SS	*Df*	*MS*	*F*	Sig.
Between groups	.519	3	.173	.705	.551
Within groups	30.189	123	.245		
Total	30.709	126			

Table 11

ANOVA by Length of Relationship

ANOVA by length of relationship					
HIV-positive status disclosure to partner					
	SS	*Df*	*MS*	*F*	Sig.
Between groups	5.646	2	2.823	13.730	.000
Within groups	61.687	300	.206		
Total	67.333	302			

Table 12

ANOVA by Duration of HIV Diagnosis

ANOVA by duration of HIV diagnosis					
HIV-positive status disclosure to partner					
	SS	*Df*	*MS*	*F*	Sig.
Between groups	4.525	3	1.508	7.180	.000
Within groups	62.808	299	.210		
Total	67.333	302			

Table 13

ANOVA by Knowledge of Partner's Status

ANOVA by Knowledge of partner's status					
HIV-positive status disclosure to partner					
	SS	*Df*	*MS*	*F*	Sig.
Between groups	32.161	2	16.080	137.156	.000
Within groups	35.173	300	.117		
Total	67.333	302			

Alternate Hypothesis 1

Research Question 1: How is disclosure of HIV-positive status to partners in steady heterosexual relationships impacted by social support?

$H_0$1: The lack of social support does not affect HIV-positive status disclosure to steady heterosexual partners.

H_a1: The lack of social support does affect HIV-positive status disclosure to steady heterosexual partners.

Alternate Hypothesis 1 posited that lack of social support affects the willingness of PLWHIV to disclose their status to their stable sexual partners. I conducted a bivariate logistic regression analysis to examine the relationship between HIV-positive status disclosure (criterion variable) and social support (predictor variable), as measured by the scores obtained using the MOS-SSS. As shown in Table 14, availability of social support

significantly predicted spousal HIV-positive status disclosure (OR = 1.038; CI = 1.022, 1.053; p = .000).The positive sign associated with B = .037 indicated that PLWHIV were 1.038 times likely to disclosure their HIV status with increased availability of social support. The significance of this analysis was based upon the value of $p < .05$, as well as the observation that the CI did not contain 1, thereby supporting Alternate Hypothesis 1.

Table 14

Logistic Regression Output of TOT_SOCSU Versus HIV-Positive Status Disclosure

Variables in the equation									
		B	*SE*	Wald	*df*	Sig.	Exp(*B*)	95% CI for EXP(B)	
								Lower	Upper
Step 1[a]	TOT_SOCSU	.037	.008	23.544	1	.000	1.038	1.022	1.053
	Constant	-1.681	.494	11.576	1	.001	.186		

[a.]Variable(s) entered on Step 1: TOT_SOCSU.

Alternate Hypothesis 2

Research Question 2: How does HIV-positive status disclosure to stable heterosexual partners correlate with knowledge of HIV/AIDS?

$H_0$2: There is no correlation between HIV cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

H_a2: There is a correlation between HIV/AIDS cognition and the willingness to disclose HIV-positive status to stable heterosexual partners.

Alternate Hypothesis 2 posited that there is a positive correlation between HIV-related knowledge and the willingness to disclose HIV status to stable sexual partners. After testing this hypothesis to examine the relationship between spousal HIV disclosure and HIV-related knowledge using bivariate logistic analysis (see Table 15), the results showed no significant correlation between high scores on HIV-KQ-18 scale and HIV-

positive status disclosure (*OR* = .992, *CI* = .921, 1.067, *p* = .822).The *CI* contained 1, indicating the nonsignificance of the relationship between the criterion and the predictor variables. The value of *B* = -.008 indicated an inverse relationship between HIV-related knowledge and HIV disclosure. This finding failed to support Alternate Hypothesis 2.

Table 15

Logistic Regression Output of TOT_KQ Versus HIV-Positive Status Disclosure

Variables in the equation									
		B	*SE*	Wald	*df*	Sig.	Exp(*B*)	95% CI for EXP(B)	
								Lower	Upper
Step 1[a]	TOT_KQ	-.008	.038	.050	1	.822	.992	.921	1.067
	Constant	.801	.497	2.595	1	.107	2.228		

[a.] variable(s) entered on Step 1: tot_kq.

Alternate Hypothesis 3

Research Question 3: How does disclosure of HIV-positive status to stable heterosexual partners correlate with stigmatization?

$H_0$3: There is no correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

H_a3: There is a correlation between stigmatization and HIV-positive status disclosure to stable heterosexual partners.

Alternate Hypothesis 3 posited that stigma predicts spousal HIV disclosure to stable sexual partners. The relationship between stigma and HIV-positive status disclosure was tested with bivariate logistic regression (see Table 16), with the result showing that stigma significantly predicted HIV disclosure (OR = .982, CI = .968, .997,

p = .020). In addition to the test statistic value being < .05, the absence of 1 in the CI further explained the significance of the analyses. There was an inverse relationship between HIV disclosure and stigma, as indicated by B = -.018, with the implication that PLWHIV were .982 times less likely to disclose their status with increasing stigmatization, thus supporting Alternate Hypothesis 3.

Table 16

Logistic Regression of TOT_SS Versus HIV-Positive Status Disclosure

Variables in the equation									
		B	*SE*	Wald	*Df*	Sig.	Exp(*B*)	95% CI for EXP(B)	
								Lower	Upper
Step 1[a]	TOT_SS	-.018	.008	5.419	1	.020	.982	.968	.997
	Constant	2.577	.825	9.764	1	.002	13.152		

[a.] Variable(s) entered on step 1: TOT_SS.

Multivariate Analyses

I conducted multivariable logistic analyses to simultaneously examine the contributions of TOT_SOCSU, TOT_SS, TOT_KQ, sex, age, educational level, occupation, marital status (see Table 17), and TOT_SOCSU, TOT_SS, TOT_KQ, partner's HIV status, length of relationship, HIV diagnosis duration, age and gender (see Table 18) to HIV-positive status disclosure.

Table 17

TOT_SOCSU, TOT_SS, TOT_KQ, Sex, Age, Educational Level, Occupation, and Marital Status

Variables in the equation									
		B	*SE*	Wald	*Df*	Sig.	Exp(*B*)	95% CI for EXP(B)	
								Lower	Upper
Step 1[a]	TOT_SOCSU	.032	.009	13.380	1	.000	1.033	1.015	1.051
	TOT_SS	-.010	.009	1.189	1	.276	.990	.973	1.008

(Table 17 Continues)

	B	*SE*	Wald	*Df*	Sig	Exp(*B*)	95% CI for EXP(B) Lower	95% CI for EXP(B) Upper
TOT_KQ	.012	.046	.064	1	.801	1.012	.924	1.107
SEX	.273	.308	.784	1	.376	1.314	.718	2.405
AGE	-.177	.154	1.324	1	.250	.838	.620	1.132
EDUC	.029	.147	.038	1	.845	1.029	.772	1.372
OCCUP	-.042	.131	.103	1	.748	.959	.741	1.240
MARITAL	2.224	.320	48.383	1	.000	9.242	4.939	17.293
Constant	-1.838	1.483	1.537	1	.215	.159		

[a.] Variable(s) entered on Step 1: TOT_SOCSU, TOT_SS, TOT_KQ, SEX, AGE, EDUC, and OCCUP, MARITAL.

Table 18

TOT_SOCSU, TOT_SS, TOT_KQ, Partners' HIV Status, Length of Relationship, HIV Diagnosis Duration, Age, and Gender

Variables in the equation									
		B	*SE*	Wald	*df*	Sig.	Exp(*B*)	95% CI for EXP(B) Lower	95% CI for EXP(B) Upper
Step 1[a]	TOT_SOCSU	.030	.009	10.501	1	.001	1.031	1.012	1.050
	TOT_SS	-.005	.010	.262	1	.609	.995	.976	1.014
	TOT_KQ	-.016	.049	.102	1	.749	.985	.895	1.083
	PARTSTAT	-1.343	.194	47.717	1	.000	.261	.178	.382
	RELENGTH	.513	.204	6.346	1	.012	1.670	1.121	2.489
	HIVDUR	.280	.137	4.179	1	.041	1.323	1.012	1.729
	AGE	.016	.162	.010	1	.922	1.016	.740	1.395
	SEX	.069	.316	.048	1	.826	1.072	.577	1.992
	Constant	-1.075	1.570	.469	1	.494	.341		

[a.] Variable(s) entered on Step 1: TOT_SOCSU, TOT_SS, TOT_KQ, PARTSTAT, RELENGTH, HIVDUR, AGE, and SEX.

Tables 17 and 18 show the inclusion of additional respondents' variables as covariates with the purpose of examining their contribution in predicting the criterion variable, HIV-positive status disclosure. Observation of the test statistics column in Table 17, social support and marital status were significant predictors of the criterion variable because the stated value was $p < .05$. The information in Table 18 identified the predictors with statistical significance as social support ($p = .001$), knowledge of partner's HIV

status (p = .000), length of relationship (p = .012), and HIV diagnosis duration (p = .041). It was observed that a bivariate analysis TOT_SS (stigma) and HIV disclosure indicated a significant (p = .020) association, but in a multiple logistic analyses with other covariates, the predictive property was not significant (p = .609).

Summary

I analyzed the data using the SPSS to obtain information describing the various study sample characteristics. Additionally, I conducted basic univariate analyses to establish the HIV positive status disclosure rates, and the instrumentation scores across the various demographic categories. To make inferential statements, I conducted bivariate analyses namely; independent *t* test and ANOVA-using the independent sample *t* test to compare the mean difference in spousal HIV disclosure rates based on gender; and the ANOVA, to test the mean differences in spousal HIV disclosure rates among sample categories according to; age, educational level, occupation, single status, length of relationship, duration of HIV diagnosis and knowledge of partners HIV serostatus. In relation to the RQs, I conducted a bivariate logistic regression analysis to test three research hypotheses.

Alternate Hypothesis 1 was supported by the statistical analysis of the study data. The finding was significant and indicated that the availability of social support was directly related to the willingness of PLWHIV to disclose their HIV-positive status to stable heterosexual partners. As a result, I rejected the null hypothesis which stated that the lack of social support does not affect HIV-positive status disclosure to steady heterosexual partners.

Statistical data analysis failed to support Alternate Hypothesis 2 because there was no statistical significance in the relationship between HIV-related knowledge and disclosure of HIV-positive status by PLWHIV. Data analysis supported Alternate Hypothesis 3, in which there was an inverse association between stigma and HIV-positive status disclosure. As a result, I accepted the Null Hypothesis 2 while stating that HIV cognition does not predict the willingness of HIV infected persons to disclose positive status to their stable heterosexual partners.

Results of the analysis indicated that PLWHIV were less likely to disclose their status to their heterosexual partners in the presence of stigma. This finding supported the Alternate Hypothesis 3.As a result; I rejected the Null Hypothesis 3 while stating that there is a correlation between the presence of stigmatization and the willingness of PLWHIV to disclose status to their stable heterosexual partners.

Finally, I conducted multiple logistic regression analysis using the respondents' demographics variables to examine their contributions in predicting HIV-positive status disclosure. In Chapter 5, I present an overview of how and why I conducted the study, discuss the findings and the implications for social change, and offer recommendations for future research.

Chapter 5: Discussion

Introduction

Heterosexual transmission of HIV is globally recognized as the primary driver of the HIV/AIDS epidemic. Nondisclosure of HIV-seropositive status has been established as a factor in the increasing rate of HIV (Groves et al., 2012). Nigeria continues to record new HIV infections despite the control measures instituted to prevent and control HIV transmission. The increase in new HIV infections in Nigeria has been noted the most among heterosexual partners, a situation made worse by nondisclosure concerns. The primary purpose of this study was to evaluate the barriers to disclosure of HIV-positive status to heterosexual partners in stable relationships, with a particular focus on the factors of stigma, lack of social support, and level of HIV-related knowledge. I also sought to establish the HIV disclosure rates and patterns among various demographics. The target population comprised PLWHIV who were in stable heterosexual partnerships and who were accessing their ART at four government-designated centers in Warri, Nigeria.

The cross-sectional study adopted a nonprobability sampling technique to recruit participants who met the study inclusion criteria described in Chapter 3. A cross-sectional approach allowed me to collect data at a point in time to yield generalizable results (Aschengrau & Seage, 2008). I collected the data using three standardized questionnaires that were validated and conducted the various statistical analyses using SPSS v.21.0. From the data analysis, I found that availability of social support significantly predicted spousal HIV positive status disclosure (OR = 1.038; CI = 1.022, 1.053; p = .000). The

study result demonstrated no significant correlation between high scores on HIV knowledge scale and spousal HIV positive status disclosure (*OR* = .992, *CI* = .921, 1.067, *p* = .822). Lastly, I found that stigma scale scores significantly predicted spousal disclosure of HIV positive status in an inverse association (*OR* = .982, *CI* = .968, .997, *p* = .020). I conducted and Independent *t* test analysis to compare gender difference in HIV disclosure rates between the male (64.9%) and female (67.7%) respondents, but found no significant statistical gender difference in HIV disclosure rate at *t* (301) = -504, .614, *p* > .05. Additionally, I conducted multivariate analyses found that; marital status, length of relationship, knowledge of partners HIV status, and duration of HIV diagnosis as predicted spousal HIV disclosure. I also established an overall HIV disclosure rate for the study population to be 66.7% and the rate of serodiscordance as 40.9%.

Interpretation of the Findings

The paucity of nondisclosure data in Nigeria needed further evaluation, as reported by Amoran (2012). The study conducted in Lagos, Nigeria, by Adeyemo et al. (2011) reported an HIV-positive status disclosure rate of 61.5% for primary and casual sexual partners. I studied the disclosure rate of heterosexual partners in steady partnerships in Warri, Nigeria, and found a disclosure rate of 66.7%. When compared to the disclosure rate to main sexual partners in Ogun State, Nigeria, that Amoran reported being 50.9%, the rate that I found was impressive, but still not as high as the rate in developed nations. I also found that the disclosure rate of HIV-positive status to stable sexual partners was slightly higher among the female (67.7%) than the male (64.9%) participants. There was no obvious explanation for the slight difference in the rate of

partner disclosure based on gender difference; however, when subjected to statistical analysis, the disclosure difference was not significant.

The HIV discordance rate of 40.9%, as reported by 124 participants, likely was higher based on the finding that the HIV status of 86 partners (representing approximately 28.4% of the sample) was unknown, along with the finding that the disclosure rate was the lowest among the participants who did not know the HIV status of their partners. The significance of this information is that the 28.4% whose HIV status was not accounted for represented a vulnerable pool in Warri who could face an increased rate of HIV infection as the result of their partners' nondisclosure of status. Kelly et al. (2011) stated that knowing their partners' HIV status is an important step in controlling HIV transmission rates. Their partners' HIV status presented in my study was self-reported information provided by the participants, not their partners, warranting caution in the interpretation.

Spousal disclosure of HIV-positive status was higher among the married participants than the single respondents. This result supported Akani and Erhabor's (2006) finding of a higher disclosure rate among the married participants in their study. The difference in the disclosure rate based on marital status could have been attributed to a sense of obligation not to harm one's marital partner. For the single participants, they could have assumed disclosure was not necessary when there was no legal bound. Among the single respondents, the disclosure rate was the highest for those who were widowed; the least disclosure rate was among divorced participants. I could not ascertain whether spousal death had any connection to HIV infection.

In this study, I found a lower rate of disclosure in polygamous marriages than in monogamous marriages. This information adds to the body of literature on the role of polygamy in the spread of HIV, particularly in African countries, where the practice of having multiple wives is acceptable. Individuals who had been in stable heterosexual relationships for longer duration tended to disclose their status more often than those whose relationships were shorter than 2 years. This result led to the assumption that stability in a partnership offered a level of comfort that allowed the infected person to disclose HIV-positive status.

I found that participants who had secondary school as their highest level of education had the highest rate of HIV-positive status disclosure (70%). Participants with no classroom education disclosed the least at a rate of 60%. Considering that there were respondents with tertiary and university education in this category, I would have expected that the higher the educational level, the higher were the chances that spousal HIV-positive status disclosure would have been easier. This finding highlights the difference between being educated and being cognizant of HIV-related issues.

In comparing the disclosure rates based upon age, I found that respondents who were 60 years old and older disclosed the least often to their stable partners (50%). The highest disclosure rate in this category was 73.3%, which I found among respondents between the ages of 30 and 39 years. On comparing HIV-positive status disclosure based upon occupation, I found that the self-employed participants had the highest disclosure rate (71.1%); those without any form of employment had the least disclosure rate of 52.7%.

Although the disclosure rate in the current study sample could be considered encouraging at 66.7%, time of disclosure also could be considered critical. In early HIV status disclosure, negative partners can avert becoming infected by instituting appropriate preventive measures, and potential positive partners can be initiated into early therapy. I found that it took more than 2 years for 37.1% of the respondents to disclose their HIV-positive status to their partners; 28.2% of the respondents disclosed their status within 6 months of HIV diagnosis. Disclosure time is of the essence, particularly in situations of discordance.

The results for research question 1 indicated a significant positive correlation between social support and HIV-positive status disclosure to stable heterosexual partners. This finding implies that the availability of support (comprising emotional, informational, tangible, affectionate, and positive social interaction) means that PLWHIV are likely to disclose their status to their heterosexual partners. This finding is consistent with previous studies that have found that the availability of social support can predict the willingness of PLWHIV to self-disclose their status to others.

For Research Question 2, I attempted to establish the relationship between HIV-related knowledge and the willingness to disclose HIV-seropositive status. Previous researchers have suggested that the reasons for nondisclosure of HIV-positive status could be ignorance, misconceptions, or lack of knowledge about HIV/AIDS. I found no significant correlation between HIV-related knowledge and HIV-positive status disclosure to stable sexual partners.

I found a significant inverse relationship between HIV-positive status disclosure and stigma, a result that was consistent with the findings of Wolitski et al. (2009) and Yonah et al. (2014) associating perceived stigma with decreased HIV-positive status disclosure to sex partners. As stated by Nthomang et al. (2009), HIV-related stigma is considered a life-altering phenomenon that has been recognized as an important factor in the spread of HIV (Nyblade, 2006).

Overall study findings support the concept of the theoretical framework which I employed in this study- the consequence theory. Social support has been reported in literature as being beneficial in improving health conditions. Enhanced access to resources, enhanced immune response, and improved health-related behaviors were reported in literature as the benefits of social support in health (Waddell & Messeri, 2006). For a factor such as social support, it seems logical that availability of social support, being beneficial to PLWHIV, would motive spousal disclosure of HIV positive status. The presence of stigma on the hand has a detrimental effect on PLWHIV and would discourage spousal disclosure of HIV positive status. A degrading attribute such as stigma with a potential to degrade the image of PLWHIV would more often than not, discourage self-disclosure of an infectious disease. The current study demonstrated that spousal disclosure of HIV positive status decreased with an increased perception of stigma. However HIV/ AIDS cognizance which assessed the knowledge regarding the transmission, control, and prevention of HIV, seems not to have any significant interaction with disclosure of HIV positive status among heterosexual partnerships for

this study population. Therefore, the critical factors impacting spousal HIV disclosure as I established in this study were, social support and stigma.

Limitations of the Study

I evaluated three specific factors, namely, fear of stigma, lack of social support, and level of HIV-related knowledge, as potential barriers to spousal HIV-positive status disclosure in stable heterosexual partnerships by conducting a quantitative study. Other possible factors could contribute to nondisclosure issues among heterosexual partnerships among this population. Due to the nature of this study being cross-sectional, I did not ascertain among the participants whether fear of stigma, lack of social support, and level of HIV-related knowledge preceded the decision to disclose their status.

The study also was limited in sample composition because the analysis relied on data collected only from individuals who were literate in English. Notwithstanding these limitations, the study had attributes adding to its credibility, one of which was the anonymous nature of the survey questionnaires, which encouraged the respondents to provide honest responses.

Recommendations

Addressing ways to control the spread of HIV will require a more in-depth examination of certain social, religious, and cultural structures that promote disease acquisition and transmission. I recommend that future researchers evaluate the role of polygamy, a culturally recognized marital institution in Nigeria, in HIV infection transmission among stable heterosexual partners, particularly in relation to HIV-positive status disclosure.

A qualitative study that is exploratory might help to identify other HIV-positive status disclosure motivators and barriers. Future studies may be required to have access to the opinions of PLWHIV in their various native dialects in order to explore other possible cultural contributory factors to HIV-positive status disclosure.

Implications for Social Change

Abstaining, being faithful, and using condoms, the ABC strategy, is the primary and the most effective way to prevent HIV infection and control the spread of new cases of infection. Routes of secondary infection can be interrupted to prevent the transmission of HIV to noninfected heterosexual partners through spousal disclosure of seropositive status. Although there has been no documented evidence of the socioeconomic impact of HIV/AIDS in Nigeria (Ogunjuyigbe et al., 2009), the drain on the scarce resources allocated to the health care system in the country is reflected in the nation's SES. HIV/AIDS could be managed if targeted interventions involving multiple strategies were not only instituted but also implemented.

Disclosure of HIV-positive status remains an effective strategy in the control of HIV transmission rates (Groves et al., 2012). The disclosure barriers evaluated in this study provided data that public health agencies, advocates, and HIV/AIDS prevention and control program planners in Nigeria could use while developing more effective control measures aimed at targeted populations. Incorporating measures that promote timely disclosure could help to prevent the secondary transmission of infections at the local level and might result in more global control of the spread of HIV.

At the individual family level, failure to disclose HIV status to a stable sexual partner denies the spouse the right to partake in the decision making process, regarding the protective behaviors to adopt in other to stay safe from being infected with HIV. The fewer the number of infected persons in the family, the less the burden the disease imposes on the family resources, and the potential for the family to continue to function with minimal destabilization.

To understand how nondisclosure of HIV-positive status drives transmission rates in Nigeria, the culture of secrecy regarding communicable diseases in general must be addressed. This culture of secrecy and silence is the result of the stigma toward PLWHIV based upon ignorance and fear (Famoroti, Fernandes, & Chima, 2013). An effective strategy to reduce the incidence of HIV should involve the creation of platforms that enable individuals to disclose their HIV-positive status willingly, particularly to their stable heterosexual partners without fear of being stigmatized or losing social support.

Serodiscordance plays a significant role in the transmission of new HIV infections among heterosexual couples (Matovu, 2010). Therefore, serodiscordant couples in stable partnerships represent a vulnerable population whose members need to be targeted in HIV control and prevention programs. Among couples who know their serostatus, a high rate of unprotected sex among HIV-infected couples has been reported (Wagner et al., 2010), something that could be driving the epidemic.

African nations, particularly Nigeria, need to tackle the challenges surrounding HIV/AIDS if intervention strategies are to have any significant impact. Levels of government and public health agencies cannot deal with the HIV/AIDS epidemic alone.

Collective effort is required to educate those lacking knowledge about HIV/AIDS. Ogunjuyigbe et al. (2009) highlighted the need for enhanced education on stigma and discrimination toward PLWHIV in Nigeria. PLWHIV need to be in a supportive environment that encourages them to disclose their status to their stable heterosexual partners to prevent further spread (Anglewicz & Chintsanya, 2011) while highlighting the need to accelerate HIV testing and the adoption of positive prevention sexual attitudes. PLWHIV need to be reassured that being infected with HIV is not a crime but that spreading it does humanity a great injustice (Morah, 2007).

Conclusion

The study contributes to existing evidence on the roles of fear of stigma, lack of social support, and level of HIV-related knowledge as predictors of spousal disclosure of positive status by PLWHIV. It also established the prevalence of HIV disclosure rates as well as the rates of discordancy among the participants. The finding showing that delays in HIV status disclosure occurred in the highest proportion of respondents, which signifies that the infected partners were holding back for reasons not expressed in their responses to the survey questionnaires. Therefore, public health agencies in Nigeria need to strengthen their efforts to educate PLWHIV about the benefits of early disclosure, as well as provide psychosocial support through the disclosure process, particularly for discordant couples. There is need for these agencies as well as policymakers to refine HIV prevention and control measures to emphasize the essence of timely disclosures, which could help to alleviate the incidence of secondary HIV infection and transmission in Nigeria. This study contributes to filling a gap in the literature in ascertaining

information about HIV-positive status nondisclosure rates as well as the rate of discordancy in Warri, Nigeria.

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Appendix A: Sociodemographics Questionnaire

Please, mark an [X] next to your selected response.

1. **Gender**
   Male [ ]
   Female [ ]

2. **Age Bracket (Years)**
   18- 29 [ ]
   30- 39 [ ]
   40- 49 [ ]
   50- 59 [ ]
   60 and older [ ]

3. **Educational Level:**
   No classroom education [ ]
   Primary **[ ]**
   Secondary **[**]
   Tertiary [ ]
   University [ ]

4. **Occupation**
   Self-employed [ ]
   Civil servant [ ]
   Not employed [ ]
   Trading [ ]

5. **Marital status**

   Single [ ]
   Married [ ]

(5a) **If Married Please tick relationship Type**
Married to One Partner [ ]
A man married to two or more partners [ ]
A married woman with Co-wives [ ]

(5b) **If Single kindly indicate your status**
Cohabiting [ ]
Divorced [ ]

Widowed [ ]
Dating [ ]
None [ ]

6. Please state the gender of your partner

Male [ ]
Female [ ]

7. Length of relationship

Less than 6 months [ ]
7-12 months [ ]
1-2 years [ ]
More than 2 years [ ]

8. Time since HIV diagnosis

Less than 6 months [ ]
7-12 months [ ]
1-2 years [ ]
More than 2 years [ ]

9. HIV status disclosure to sexual partner

No [ ]
Yes [ ]

9a. If 'YES' Time of Disclosure

Less than 6 months [ ]
7-12 months [ ]
1-2 years [ ]
More than 2 years [ ]

10. What is your partner's HIV status?

Negative [ ]
Positive [ ]
Don't Know [ ]

Appendix B: MOS: Social Support Survey Instrument

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Circle one number on each line

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Emotional /informational support					
Someone you can count on to listen to you when you need to talk	1	2	3	4	5
Someone to give you information to help you understand a situation	1	2	3	4	5
Someone to give you advice about a crisis	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
Someone whose advice you really want	1	2	3	4	5
Someone to share your most private worries and fears with	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a person problem	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5
Tangible support					
Someone to help you if you were confined to bed	1	2	3	4	5
Someone to take you to the doctor if you needed it	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
Someone to help with daily chores if you were sick	1	2	3	4	5
Affectionate support					
Someone who shows you love and affection	1	2	3	4	5
Someone to love and make you feel wanted	1	2	3	4	5
Someone who hugs you	1	2	3	4	5
Positive social interaction					
Someone to have a good time with	1	2	3	4	5
Someone to get together with for relaxation	1	2	3	4	5
Someone to do something enjoyable with	1	2	3	4	5
Additional item					
Someone to do things with to help you get your mind off things	1	2	3	4	5

Appendix C: Berger HIV Stigma Scale

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.

The 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 (**SD**)	Disagree (**D**)	Agree (**A**)	Strongly agree (**SA**)
1	In many areas of my life, no one knows that I have HIV				
2	I feel guilty because I have HIV				
3	People's attitudes about HIV makes me feel worse about myself				
4	Telling someone I have HIV is risky				
5	People with HIV lose their jobs when their employers find out				
6	I work hard to keep my HIV secret				
7	I feel I am not as good as others because I have HIV				
8	I never feel ashamed of having HIV				
9	People with HIV are treated like outcasts				
10	Most people believe that a person who has HIV is dirty				
11	It is easier to avoid new friendships than worry about telling someone that I have HIV				
12	Having HIV makes me feel unclean				
13	Since learning I have HIV, I feel set apart and isolated from the rest of the world				
14	Most people think that a person with HIV is disgusting				
15	Having HIV makes me feel that I'm a bad person				
16	Most people with HIV are rejected when others find out				
17	I am very careful who I tell that I have HIV				
18	Some people who know I have HIV have grown more distant				
19	Since learning I have HIV, I worry about people discriminating against me				
20	Most people are uncomfortable around someone with HIV				
21	I never feel the need to hide the fact that I have HIV				
22	I worry that people may judge me when they learn I have HIV				
23	Having HIV in my body is disgusting to me				

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 (**SD**)	Disagree (**D**)	Agree (**A**)	Strongly agree (**SA**)
24	I have been hurt by how people reacted to learning that I have HIV				
25	I worry that people who know I have HIV will tell others				
26	I regret having told some people that I have HIV				
27	As a rule, telling others that I have HIV has been a mistake				
28	Some people avoid touching me once they know I have HIV				
29	People I care about stopped calling after learning that I have HIV				
30	People told me that getting HIV is what I deserve for how I lived my life				
31	Some people close to me are afraid others will reject them if it becomes known that I have HIV				
32	People don't want me around their children once they know I have HIV				
33	People have physically backed away from me when they learn I have HIV				
34	Some people act as though it's my fault I have HIV				
35	I have stopped socializing with some people because of their reaction to my having HIV				
36	I have lost friends by telling them I have HIV				
37	I have told people close to me to keep the fact that I have HIV secret				
38	People who know have HIV tend to ignore my good points				
39	People seem afraid of me once they learn I have HIV				
40	When people learn you have HIV, they look for flaws in your character				

SCORING for the Berger HIV stigma Scale and Subscales

1) Items are scored as; strongly disagree = 1, disagree = 2, agree = 3; strongly agree = 4. If a subject selects a response in between two options (e.g.: between SD and D), a numerical value midway between the two options would be used (e.g.: 1.5).

2) Two items are reverse-scored: items 8 and 21.
3) After reversing these two items, each scale or subscale's score is calculated by simply adding up the raw values of the items belonging to that scale or subscale. Subscale designations appear in small print in the far right margin of the instrument; it may be desirable to cover or delete those numbers before reproducing the instrument for administration to subjects. Sixteen items belong to more than one subscale, reflecting the inter correlations of the factors on which the subscales are based.

4) The range of possible scores depends on the number of items in the scale. For the total HIV Stigma Scale, scores can range from 40 to 160 [1 x 40 items to 4 x 40 items]. For the personalized stigma subscale, scores can range from 18 to 72. For the disclosure subscale, scores can range from 10 to 40. For the negative self-image subscale, scores can range from 13 to 52. For the public attitude subscale, scores range from 20 to 80.

Appendix D: HIV-KQ-18

For each statement, please circle "TRUE" (T), "FALSE" (F), or "I don't Know" (DK). If you do not know, please do not guess; instead, please circle "DK"

True False Don't Know

1. Coughing and sneezing DO NOT spread HIV. T F DK

2. A person can get HIV by sharing a glass of water with someone who has HIV. T F DK

3. Pulling the penis before a man climaxes/cums keeps a woman from getting HIV through sex. T F DK

4. A woman can get HIV if she has anal sex with a man. T F DK

5. Showering, or washing one's genitals/private parts after sex keeps a person from getting HIV. T F DK

6. All pregnant women infected with HIV will have babies born with AIDS. T F DK

7. People who have been infected with HIV quickly show serious signs of being infected. T F DK

8. There is a vaccine that can stop adults from getting HIV. T F DK

9. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV. T F DK

10. A woman cannot get HIV if she has sex during her period. T F DK

11. There is a female condom that can help decrease a woman's chance of getting HIV. T F DK

12. A natural skin condom works better with HIV than does a latex condom. T F DK

13. A person will NOT get HIV if she or he is taking antibiotics. T F DK

14. Having sex with more than one partner can increase a person's chance of being infected with HIV. T F DK

15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV. T F DK

16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV. T F DK

17. A person can get HIV from oral sex. T F DK

18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV. T F DK

Answer Key HIV-KQ-18

1	TRUE
2	FALSE
3	FALSE
4	TRUE
5	FALSE
6	FALSE
7	FALSE
8	FALSE
9	FALSE
10	FALSE
11	TRUE
12	FALSE
13	FALSE
14	TRUE
15	FALSE
16	FALSE
17	TRUE
18	FALSE

Appendix E: Code Dictionary of Data Variables

Label	Variable name	Type (width)	Codes (values)	Codes (missing data)
Respondents' ID No.	RESID_NO	Numeric (3)	None	None permitted
Gender	SEX	Numeric (1)	Male = 1 Female = 2	9
Age (Years)	AGE	Numeric (2)	18-29 = 0 30-39 = 1 40-49 = 2 50-59 = 3 ≥ 60 = 4	9
Educational level	EDUC	Numeric (1)	No classroom education = 0 Primary = 1 Secondary = 2 Tertiary = 3 University = 4	9
Occupation	OCCUP	Numeric (1)	Self-employed = 0 Civil servant = 1 Not employed = 2 Trading = 3	9
Marital status	MARITAL	Numeric (1)	Single = 0 Married = 1	9
Marital relationship type	MARISTAT	Numeric (1)	Monogamous = 0 Polygamous = 1	9
Single relationship type	SINGSTAT	Numeric (1)	Cohabiting = 0 Divorced = 1 Widowed = 2 Dating = 3 None = 4	
Partner gender	PARTGEND	Numeric (1)	Male = 1 Female = 2	
Length of sexual relationship	RELENGHT	Numeric (1)	< 6 months = 0 7-12 months = 1 1-2 years = 2 > 2 years = 3	
Duration of HIV diagnosis	HIVDUR	Numeric (1)	< 6 months = 0 7-12 months = 1 1-2 years = 2 > 2 years = 3	
Status disclosure to sexual partner	STATDISC	Numeric (1)	No = 0 Yes = 1	
If yes, time of disclosure	DISCTIME	Numeric (1)	< 6 months = 0 7-12 months = 1 1-2 years = 2 > 2 years = 3	

Label	Variable name	Type (width)	Codes (values)	Codes (missing data)
Partner's HIV status	PARTSTAT	Numeric (1)	Negative = 0 Positive = 1 Don't Know = 2	
Social Support Questions (1-19)	QSOCSU	Numeric (1)	None of the time = 1 A little of the time = 2 Some of the time= = 3 Most of the time = 4 All of the time = 5	
HIV-Knowledge Questions (1-18)	KQ	Numeric (1)	True = 0 False = 1 Don't know = 2	
Stigma Scale Questions (1-40)	QSS	Numeric (1)	Strongly disagree = 1 Disagree = 2 Agree = 3 Strongly agree = 4	
Total Scores Computed on Social Support Scale	TOT_SOCSU			
Total Scores Computed on Stigma Scale	TOT_SS			
Total Scores Computed on HIV Knowledge Scale	TOT_KQ			