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Depression and HIV Risk Among African American Men who have Sex with Men

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Walden University
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Abstract

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MS, Howard University, 2010

BS, Shenandoah University, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

African American men who have sex with men (AAMSM) are at a greater risk of contracting HIV than any other ethnic group, subpopulation, or race. Personal, environmental, and social variables can affect risk behavior. Driven by Beck's cognitive theory of depression, this quantitative study examined the relationship between depression and HIV risk behaviors in a sample of AAMSM (n = 108). Data was gathered via the Beck Depression Inventory and the HIV Risk Behavior Questionnaire. Simple and multiple linear regression analysis were conducted to analyze the data to determine the correlation between HIV risk behavior and depression. According to study findings, there was no significant relationship found between depression and HIV risk behavior in this sample of AAMSM after accounting for the variance associated with the covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income. While the study findings do not indicate depressive symptoms were associated with HIV sexual risk behavior, age, alcohol or drug use, and condom attitudes were significantly and positively related to HIV sexual risk behavior. Future research is recommended to identify factors specific to AAMSM for use in devising African American MSM-centric interventions. The results could inform the development of interventions targeting older AAMSM to alter behaviors associated with alcohol and drug use to impact sexual risk behaviors and reduce HIV transmission in AAMSM, thus resulting in positive social change in their lives and the lives of their families and communities.

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Dedication

This dissertation is dedicated to my husband, my two sons and my beautiful daughter. My diligent work towards becoming a scholar gave me the confidence to know that I am adequate and powerful beyond measure. I dedicate my work as a phenomenal woman that is purposeful, passionate and driven by my thoughts making my thoughts a reality. Having the confidence to fulfill my dreams and the respect, style and grace to hold my head up high not looking back, only to determine as the famous poet Maya Angelo said,

"I am a woman Phenomenally. Phenomenal woman, that's me".

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"I can do all things through Christ who strengthens me".

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Chapter 1: Introduction to the Study

Introduction

HIV/AIDS is a worldwide epidemic and a major health crisis. According to the World Health Organization (WHO, 2010), HIV/AIDS remained a significant public health problem in 2010, with an estimated 34 million people HIV infected worldwide and an estimated 2.7 million people newly infected. While the annual number of AIDS-related deaths declined 18% in the 5 years ending in 2010 to 1.8 million, the number of annual deaths increased in some areas, such as Central Asia, which reported an 11.7 fold increase during the same 5-year period (WHO, 2010). The HIV and AIDS infection rate is the highest in Sub-Saharan Africa, where an estimated 22.5 million people are HIV infected, of whom 2.3 million are children (WHO, 2010). The Centers for Disease Control and Prevention (CDC, 2012) estimated that 1.2 million people were living with HIV/AIDS in the United States in 2010, and approximately 180,900 (15.8%) are unaware of their infection. Incidence has been steady for the past decade with approximately 50,000 new HIV infections in the United States annually (CDC, 2012). While the overall incidence of new infection is stable, some subgroups are disproportionately affected. Men who have sex with men (MSM) have the highest prevalence of HIV infection, and African Americans continue to be at greatest risk (CDC, 2012).

MSM are at highest risk for contracting HIV virus. While MSM represented 4% of the population in 2010, MSM accounted for 60% of all new HIV cases in the United States and 52% of all HIV infected people (CDC, 2012). European American MSM accounted for 11, 200 (22%) of all new HIV cases in 2010, and African American MSM

accounted for 10,600 (21%) on a much smaller population base. The greatest number of new HIV infections (4,800) among MSM occurred among African American MSM (AAMSM) ages 13 to 24 (CDC, 2012). AAMSM were 71 times more likely to contract HIV than the general U.S. population (CDC, 2012). A major concern for this incidence among AAMSM is the risk behavior associated with HIV transmission.

AAMSM engaged in HIV risk behavior at an epidemic level (Kelly et al., 2013). Kelly et al. (2013) found that nearly half of AAMSM study participants engaged in HIV risk behavior with a male partner. HIV risk behavior includes unprotected anal intercourse (UAI) and exchanging bodily fluids. While the mortality rate for those who are HIV infected has diminished due to new drugs, the human toll continues in terms of side effects from treatments, exhaustion, depression, social stigma, suicide, and economic impoverishment (Khan, Faucett, Lichtenberg, Kirsch, & Brown, 2012).

Given the consequences of the transmission of HIV and the difficulty of engaging MSM in research, there is a need for more research into the factors associated with HIV risk behavior, particularly among African American males. Beck, McNally, and Petrak (2003) studied the association between depression and HIV risk behavior; however, the study is more than a decade old and included only one African American participant. The social benefit from the study may be to identify a factor associated with HIV risk behavior not previously identified, which would create an additional opportunity for intervention. The purpose of the study was to examine depression as a factor associated with HIV risk behavior in a sample of AAMSM. In Chapter 1, I will define the scope of

the HIV epidemic, introduce the cognitive behavioral theory (CBT) as the theoretical framework for understanding the phenomenon, and introduce the study methodology.

Background

HIV risk behavior is a complex phenomenon. Most AAMSM are not aware of their HIV status and engage in risky sexual behaviors anyway (Kelly et al., 2013). Factors predicting HIV risk behaviors include weak perceived peer norms for condom use, HIV negative status, marijuana use, substance abuse, intravenous drug use, and age (Hall et al., 2013, Kelly et al., 2013; Khan et al., 2012). Other factors contributing to HIV risk behavior include male prostitution, poverty, unemployment, low income, a lack of education, and the environment (CDC, 2010; Hall, Holtgrave, Tang, & Rhodes, 2013; Hart & Peterson, 2004). Kelly et al. (2013) reported that almost 50% of their sample of 210 AAMSM reported having UAI with male partners in the previous 90 days. In addition, Kelly et al. reported that among the 210 AAMSM in the study, 37% self-reported being HIV positive, and 33.5% did not know their HIV status.

Depression has been reported as a factor influencing risky HIV behavior. In a large-scale study of 4,125 HIV infected individuals, Rosenberg et al. (2014) established that depression is comorbid with HIV infection after accounting for age, income, gender, and ethnicity. Depression among HIV positive MSM has been attributed to poor treatment adherence, poor coping strategies, substance abuse, and side effects from treatment (Malebranche, 2003). An estimated 40% of HIV-positive individuals experience severe depressive symptoms at some point during their illness (Millett et al., 2012).

Depression is associated with feelings of hopeless and a sense that a person's actions will have no impact on the future (Beck, 1976); there is a connection between depression and high-risk behavior. Beck et al. (2003) found an association between depression and high-risk sexual behaviors in a sample of 123 European American MSM located in London. However, the Beck et al. study is more than a decade old and included only one African American in the sample. Based on a comprehensive literature review, there is a gap in the literature regarding the association between depression and HIV risk behaviors in the population of AAMSM. The working hypothesis is that depressed AAMSM engage in HIV risk behavior due to a sense of hopelessness, or associated learned helplessness, which can be mitigated through intervention.

Problem Statement

HIV risk behavior and associated disease transmission are at epidemic levels among AAMSM (CDC, 2012; Kelly et al., 2013). AAMSM are at a greater risk of contracting HIV than any other ethnic group, subpopulation, or race (CDC, 2012). In 2010, AAMSM were 3.7 times more likely than European Americans or Hispanic American MSM to contract an HIV infection (CDC, 2012; Malebranche, 2003). Given that new HIV infections increased among AAMSM than any other group or race, strategies to prevent HIV transmission should target AAMSM (Kelly et al., 2013). There is significant research that exists on the association between HIV infection and depression (Rosenberg et al., 2014), which may affect the rate of and behaviors associated with HIV transmission.

According to research and theories regarding the causes of HIV risk behavior, the behavior is caused by multiple interlinking components (Kelly et al., 2013) including genetics, ethnicity, age, community, family, and individual factors (Khan et al., 2012). Rosenberg et al. (2014) conducted a large-scale study of 4,124 HIV-infected MSM to estimate the prevalence of depression among HIV-infected individuals and reported a significant association between depression and HIV infection among African American males, but HIV risk behavior was not considered. Researchers have not addressed the potential for depression to increase a person's vulnerability to HIV infection by provoking high-risk behaviors in a population of AAMSM. Other studies of MSM including European Americans, Hispanic Americans, Native Americans and Asian Americans have been conducted to determine the association between depression and HIV risk behavior. Stall et al. (2003), Koblin et al. (2006), Yoshikawa et al. (2004), and Safren et al. (2009) all reported that an association exists between depression and HIV risk behavior. According to the published literature on depression and HIV risk behavior among MSM, there is an association between the two variables. The study aims to advance knowledge on a potential risk factor for high-risk sexual behavior, depression, which is amenable to treatment interventions.

Purpose of the Study

The purpose of this quantitative study was to examine the relationship between depression and high-risk sexual behaviors in African American MSM. The study's independent variable was depression as measured by the Beck Depression Inventory II (BDI II; Beck et al., 1996). The dependent variable was high-risk sexual behavior as

measured by the HIV Risk Behavior Questionnaire for University Students (RBQ-US; Balogun et al., 2009). Covariates were age, alcohol and substance use, condom attitudes, HIV knowledge, and income, which were predictive of HIV risk behavior (Kelly et al., 2013; Khan et al., 2012).

Research Questions and Hypotheses

1. What is the relationship between depression and HIV risk behavior in a sample of AAMSM?

*H*o1: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM.

*H*a1: There is a significant relationship between depression and HIV risk behavior in a sample of AAMSM.

2. What is the relationship between depression and HIV risk behavior in a sample of AAMSM after taking into account covariates of age, alcohol and substance use, condom attitudes, HIV knowledge, and income?

*H*o2: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

H_a2: There is a significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

Theoretical Framework

Beck's cognitive theory of depression (BCT) provided the theoretical framework for understanding the relationship between depression and HIV risk behavior (Beck, 1976; Clark & Beck, 1999). BCT posits that dysfunctional thoughts and attitudes moderate the relationship between life events and the development of depressive symptoms (Beck, 1999). Dysfunctional attitudes and thoughts are cognitive distortions that were elicited by stressful events, such as racism or homophobia, and results in low self-esteem and eventually depression, which are commonly experienced by AAMSM.

BCT is used to treat depression and anxiety disorders with significant success (Beck, 1976). Beck developed the BDI-II, a 21-item survey with statements about events as an efficient and inexpensive method to diagnose depression. Large-scale studies provided validation of the BDI-II on a large number of subpopulations (Doering, Cross, Magsarili, Howitt, & Cowan, 2007; Steer, Cavalieri, Lenonard, & Beck, 1999) including young African Americans (Grothe et al., 2005), and it is in widespread use today. A more detailed discussion of the BDI is in Chapter 2.

Nature of Study

A quantitative methodology was used to address the research questions. In a quantitative study, the hypotheses are either accepted or rejected based upon observable results. There are many advantages of using a quantitative methodology: (a) there is a clear identification of independent and dependent variables, (b) the research problem is clearly stated, and (c) there is the ability to achieve high levels of reliability (Leedy & Ormrod, 2012). A quantitative research method is most appropriate when study variables

are clearly defined, and numeric and when the study variables are coincident in time. Study variables included BDI-II scores and RBQ scores, as the dependent and independent variables; the covariates were age, alcohol and substance use, condom attitudes, education, HIV knowledge, and income.

Include a topic sentence. In 2012, there were approximately 2 million gay and bisexual African American males living in the United States (CDC, 2012). Participants were recruited using several methods, including the use of Survey Monkey (SM) population of 10,000+ African American males. Survey Monkey participants were remunerated with an offer to participate in a raffle for a $50.00 gift card (Survey Monkey, 2014). A combination of methods was used. First, agencies that provide services to MSM were contacted and asked to assist with recruitment of participants. Second, four or five key individuals who were AAMSM were identified and asked to complete the survey and then were asked to identify or contact other AAMSM.

One hundred eight study participants completed three documents: (a) demographic information form, (b) Beck Depression Inventory, and (c) HIV Risk Behavior Questionnaire. Survey Monkey anonymized all data before delivery to me, which provided the primary mechanism for participant anonymity and confidentiality. The sample size was determined using the following powering information. Alpha was set at $\alpha = 0.05$ and $p < 0.05$ using two-tailed tests (Tabachnick, & Fidell, 2001). A more complete discussion is contained in Chapter 3.

Participant demographics were characterized using descriptive statistics (mean, standard deviation, frequency, proportions). $H_o1$was tested using linear regression

analysis to test for a correlation between depression and HIV risk behavior. Nonlinear statistical analyses were considered after a scatter plot of depression and HIV risk behavior was created. H_o2 was tested using multiple regression analyses to measure the correlation and calculated odds ratios for the relationship between depression and risky HIV behavior after controlling for age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

Definitions

Depression: For the purposes of this study, a BDI-II score ≥ 20 (Beck, 1996) was considered depressed (Beck, Steer, Ball, & Ranieri, 1996).

*HIV risk behavior***:** HIV risk behavior includes unprotected sex that involves the exchange of bodily fluids, other than kissing, or the sharing of needles by intravenous drug users. The HIV Risk Behavior Questionnaire – College (Balogun et al., 2009) was used to measure HIV risk behavior.

Income: Income is the total self-reported income from all sources during the previous calendar year (Avery, McKay, & Wilson, 2007).

Alcohol and substance use: Participants were asked if they used in the last month any of a series of listed substances (alcohol, marijuana, cocaine, crack, prescription opiates, inhaled nitrites]"poppers"], ketamine, methamphetamine, illicit use of nonopiate prescription drugs, ecstasy, erectile dysfunction medications, heroin, and injections that were not medically prescribed). Street names accompanied the formal name of each drug. For each substance used, participants indicate how many days in the past month the substance was used (Kelly et al., 2013).

Assumptions

There were two primary study assumptions. First, I assumed that the participants answered the questions thoroughly and honestly, despite the potential social stigma associated with activities included in the RBQ questions. Second, English comprehension at the fourth grade level was necessary to understand the BDI-II and RBQ, standardized at the fourth grade reading level (Balogun et al., 2009; Beck, Steer, Ball, & Ranieri, 1996).

Scope and Delimitations

The study focus on AAMSM HIV risk behavior was chosen because AAMSM are five to seven times more likely than their European American and Hispanic American counterparts to contract HIV. Depression was chosen as a focus due to the lack of research on the association between mood and HIV risk behavior. Studies on HIV risk behavior and psychological factors, such as psychosocial resilience and attachment disorder, were previously conducted (Yuen et al., 2013).

Other theoretical frameworks considered but rejected were (a) the cognitive vulnerability-transactional stress model (CV-TSM) developed by Hankin and Abramson (2001), (b) racial identity theory developed by Graham and Aronson (2011), and (c) learned helplessness theory developed by Maier and Seligman (1976). While each theory described a relationship between psychological states and self-destructive behavior, none focused specifically on the relationship between depression and self-destructive behavior. In addition, Beck's theory of depression had the advantages of a universally used and

validated scale to measure depression and more than 30 years of therapeutic results using cognitive behavioral therapy as a treatment for depression.

The study focus on AAMSM and HIV risk behavior was selected to identify a new factor associated with HIV risk behavior with the ultimate aim of identifying new interventions to mitigate the spread of HIV among AAMSM. The study was limited to a convenience sample of AAMSM with Internet access and able to complete an online survey. The AAMSM population was the focus, and the study findings might not be generalizable to other age groups, cultures, or populations with differing ethnic composition (Leedy & Ormrod, 2012).

Limitations

The present study had a number of limitations. HIV risk behavior is a complex phenomenon, and researchers have found socioeconomic status (SES), genetics, race, and a number of psychological variables to predict HIV risk behavior (Khan et al., 2012). Although participants were recruited in a diverse variety of ways, most recruitment was venue-based and may have overly represented gay-identified African American MSM. While the self-administered instruments were designed for persons with limited reading skills, it is possible that English as a second language participants may not comprehend the questions. It is possible that illicit substances, alcohol use, and HIV risk behavior was underreported due to self-denial or stigma. This study was limited to one independent variable and seven potential covariates. Finally, any correlation between BDI-II scores and RBQ scores might have been an artifact of an unmeasured covariate. The study

findings might not be generalizable to other age groups, countries, or cultures (Leedy & Ormrod, 2012).

External validity refers to the extent to which a study's results can be generalized (Leedy & Ormrod). The research design included standardized instruments to measure the dependent and independent variables and a sample size powered to generate statistically significant results to address external validity. However, the findings may not be generalizable to other U.S. ethnicities or African Americans living in other countries. Internal validity refers to how well the study findings reflect the study intent. Inclusion of age, alcohol use, HIV knowledge, and income as covariates was intended to increase internal validity and confidence that the change in the dependent variable was attributable to the independent variable.

Significance of the Study

The study aimed to further knowledge on factors that contribute to HIV transmission among AAMSM and may have offered data for use in developing strategies for designing potential interventions to mitigate HIV transmission. I attempted to identify a factor in the transmission of HIV among AAMSM that lends itself to intervention. Khan et al. (2012) conducted a meta-analysis of 106 double-blind clinical trials of the efficacy of antidepressant and psychotherapy treatments for depression and found an average symptom reduction of 53% to 66% across all studies. It may be that feelings of hopelessness associated with depression reduce the inhibition to engage in risky HIV behavior. Given the social, human, and health costs of HIV transmission, an exploration of the association between depression and risky HIV behavior is an important

contribution to understanding and reducing HIV transmission. Given the human devastation caused by transmission of the HIV, this research could inform the development of interventions to reduce HIV transmission in AAMSM, thus resulting in positive social change in their lives and the lives of their families and communities.

Summary

The HIV incidence rate among AAMSM is at epidemic levels, making that subpopulation more than 70 times more likely to contract HIV than the average American. The primary methods for HIV transmission among AAMSM are unprotected sex and intravenous drug needle sharing or HIV risk behavior. HIV risk behavior is a complex phenomenon, and researchers have found associations with weak peer norms for condom use, HIV negative status, drug use, male prostitution, poverty, unemployment, SES, and education level. There is a need to develop effective interventions to reduce the spread of HIV among AAMSM.

Both depression and HIV risk behavior are complex phenomena with many causes and potential interventions. Cognitive behavioral theorists posit that depression is caused by dysfunctional thoughts and attitudes about life events (Beck, 1976). In this quantitative study, I tested for an association between depression, using the BDI-II, and HIV risk behavior using the RBQ. A convenience sample of 106 AAMSM was recruited using the Survey Monkey online application. In Chapter 2, I will examine HIV risk behavior and depression research and theory.

Chapter 2: Literature Review

Introduction

Include a topic sentence. HIV risk behavior and associated disease transmission are at epidemic levels among AAMSM (Kelly et al., 2013). There are two major potential underlying causes for these occurrences. First, AAMSM are more likely to engage in HIV risk behavior and to contract HIV from unprotected sex than any other subpopulation (CDC, 2012). Secondly, more than 50% of AAMSM are not aware of their HIV status and engage in risky sexual behaviors anyway (Kelly et al., 2013). In fact, nearly 50% of a sample of 210 AAMSM reported having UAI with male partners in the previous 90 days, and 37% of the sample self-reported as being HIV positive (Kelly et al., 2013). Because new HIV cases are disproportionally AAMSM, new strategies and initiatives to prevent the spread of HIV should begin with AAMSM (Kelly et al., 2013). The development of interventions to reduce the spread of the HIV virus requires a deeper understanding of HIV risk behavior for AAMSM and the factors that influence their behavior.

Factors predicting HIV risk behavior include perceived peer norms for condom use, HIV negative status, illegal drug use, male prostitution, poverty, unemployment, low SES, and education level (Hart & Peterson, 2004). A better understanding of the factors that contribute to HIV transmission among AAMSM might suggest strategies for potential interventions to mitigate the spread of the HIV virus. One such factor is depression. While 40% of HIV positive individuals experience severe depressive symptoms, there is no research on the relationship between depression and risky HIV

behavior for HIV negative status AAMSM (Millett et al., 2012). The purpose of this study was to examine the relationship between depression and risky HIV behaviors for a sample of AAMSM without regard to serostatus. In Chapter 2, I review the literature on the following (a) the African American experience with HIV/AIDS, (b) depression theory and treatment, (c) the relationship between risk factors such as depression and HIV transmission, and (d) depression screening tools and their limitations.

Literature Search Strategy

The following online databases were searched: Academic Search Premier, EBSCOhost, ERIC, Google Scholar, ProQuest, ERIC, and JSTOR. HIV-related websites were searched: CDC, Center for Science in the Public Interest (CSPI), Robert Wood Johnson Foundation (RWJF), Trust for America's Health (TAH), and the United States Department of Health & Human Services (HHS). The Google search engine was used in all cases except when individual sites or databases required the use of their internal search engine.

The development of keywords and key search terms was an iterative process. Initially, databases and websites were searched using the following keywords: *risky HIV behavior*, *HIV risk factors*, *measuring risky HIV behavior*, *MSM and depression*, *HIV/AIDS and depression*, *depression diagnostic tools*, *Beck Depression Inventory*, *HIV fear and depression*, *African American men who sleep with men*, and *HIV prevalence African American males*. Additional keywords and key search terms were developed as a result of the initial searches.

The literature review included peer-reviewed journal articles, books, dissertations, state and federal statutes, policies and regulations, and related research. The period reviewed was from 1999 to 2014, and I drew on some earlier works on depression, depression theory, depression treatment, and HIV risk. One hundred nineteen separate works were reviewed, of which 67 were specifically referenced and 23 provided context. Approximately 75% of the studies were quantitative, and the remaining 25% were qualitative or summaries. The research articles chosen for reference addressed depression, depression treatment, HIV risk behavior, and strategies to address HIV transmission.

Background

HIV/AIDS

HIV is a retrovirus that affects the body's immune system by systematically destroying CD4+ T cells. HIV frequently causes AIDS, a progressive, degenerative disease with no cure. The disease path from the introduction of the HIV virus to AIDS can take from a few months to more than 15 years (Holodniy & Busch, 2003). A flu-like syndrome may develop shortly after HIV infection, although most newly infected persons have mild to moderate symptoms. Few newly HIV infected persons require hospitalization (Holodniy & Busch, 2003). Symptoms that may present with early HIV infection include fever, rash, fatigue, myalgia (muscle pains), or lymphadenopathy (swollen or enlarged lymph nodes). AIDS progression occurs as CD4+ T cells are continually destroyed, and the immune system fails to replace them (WHO, 2010). A person is said to have AIDS when he or she has fewer than 200 CD4+ T cells per

microliter (μL) of blood (healthy persons have between 800 and 1200 CD4+ T cells per μL of blood; National Institute of Allergy and Infectious Diseases [NIAID], 2008). When a person with AIDS is no longer capable of warding off diseases, due to lowered CD4+ T cell count, the body is open to opportunistic infections as well as various cancers, pulmonary diseases, and gastrointestinal disorders, which can be fatal. Opportunistic infections (OIs) continue to be one of the leading causes of death in persons with HIV/AIDS (Morbidity and Mortality Weekly Report [MMWR], 2009).

History of HIV/AIDS

Researchers have sought to answer questions regarding the origins of HIV/AIDS. There is much debate, scientific discussion, controversy, and varying theories surrounding the origins of HIV, especially that of the genesis of HIV in the United States AVERTing HIV and AIDS, (AVERT, 2009; CDC, 2012). HIV is directly derived from Simian Immunodeficiency Virus (SIV), a strain of virus found in a species of monkey indigenous to West Africa (AVERT, 2009; Batki & Selwyn, 2003). It is still unclear how exactly the strain of virus migrated from primates to humans, referred to as *zoonosis*, but several theories have become popular in explaining this phenomenon (AVERT, 2009).

Theories of HIV Origin

The most widely accepted theory on the origin of HIV is commonly referred to as the hunter theory (AVERT, 2009). Human contact with the blood and/or other bodily fluids of primates infected with SIV during hunting or butchering was the primary mechanism for the genesis of HIV (Batki & Selwyn, 2003). It is believed that SIV entered the human body when hunters attempted to capture and/or prepare African

monkeys for food (AVERT, 1990). Infected blood may have transferred from primate to human if the hunter had an open wound or cut and contacted the blood of an infected monkey. Evidence tends to support this theory, as early strains of HIV have slight variations, suggesting that multiple hunters became infected from different monkeys, each possessing a similar strain of SIV (AVERT, 2009).

The medical community and government sectors ignored the most controversial HIV origin theories, which is that the government intentionally infected the African American community with HIV (Bird & Bogart, 2005). Racial discrimination and a history involving exploitation and cruelty is well documented in the African American community, consequently there is a deep-seated suspicion developed towards European Americans and the government, especially concerning health-related matters (Bird & Bogart, 2005). One theory surrounding the origin of HIV consists of the government creating HIV in an effort to eradicate historically marginalized groups, namely the African American community. In one study, nearly 30% of African Americans believed that the government created HIV to destroy the African American community, while another study found that more than 50% endorsed this belief (Jones, 1993). Jones (1990) found that 40-70% of African Americans believe that the government is keeping information from the general public regarding AIDS, and 44% of African Americans reported that they did not trust the government (Bird & Bogart, 2005). In addition, more than half of African Americans believed that the government was withholding a cure for HIV from the poor (Fears, 2005).

AIDS Conspiracy Beliefs

One factor potentially contributing to the overrepresentation of African Americans in the HIV-infected population is the overrepresentation itself (Harrison, Ling, Song, & Hall, 2008). Those infected with HIV have been historically marginalized or a traditionally underrepresented classes, such as African Americans, lesbian gay bisexual and transgender (LGBT) members, Hispanic Americans, and people with lower SES. The overrepresentation of African Americans in the HIV positive population may have led to misconceptions that make the subpopulation resistant to government interventions. Bird and Bogart (2005) found that 17% of African Americans surveyed believed the U.S. government, to control the African American population, created AIDS, and nearly 50% believed there was a cure for HIV/AIDS that was withheld from the poor. At least part of the paranoia among African American persons stems from historical treatment including slavery, Jim Crow laws, and the Tuskegee Syphilis Experiments (Bird & Bogart, 2005; Simmons & Parsons, 2005). One manifestation of the lingering mistrust of government and health care providers is some bias against treatment and prevention that is ubiquitous in the African American community (Bird & Bogart, 2005).

Transmission of HIV

In contrast to explaining the origins of HIV in the U.S., there are much more definite answers when it comes to explaining the transmission of HIV. Researchers have been able to track the spread of the disease both in the U.S. and globally, having identified all primary routes of transmission (Donegan et al., 2003). When the disease was first discovered, researchers observed that HIV was being transmitted through sexual

contact, specifically through blood and bodily fluids (Donegan et al., 2003). In 1982, the first case of a person contracting HIV from a blood transfusion was identified (Donegan et al., 2003). In the United States, approximately 14,262 persons had been diagnosed with HIV/AIDS as a result of receiving HIV-infected blood transfusions (Donegan et al., 2003). Nearly all of these transfusions were completed prior to 1985 (CDC, 2012; Donegan et al., 2003). Public awareness of the link between HIV and blood transfusions was raised when Ryan White, a 13-year-old boy with hemophilia who was diagnosed with AIDS in 1984 as a result of a blood transfusion. Reported cases of HIV from blood transfusions and the attention that Ryan White received as he battled with AIDS, led to an effort to implement stringent guidelines for blood transfusions and donations (Donegan et al., 2003).

Despite the safeguards put into place for blood transfusions, the virus continued to spread through other means, making it one of the most deadly pandemics in the world. HIV continues to be spread when HIV-infected blood, semen, or vaginal secretions come in contact with an uninfected person‘s broken skin, blood, or mucous membranes (CDC, 2012). The CDC classifies transmission of HIV into six categories for surveillance purposes: male-to-male sexual contact, injection drug use, male-to-male sexual contact and injection drug use, high-risk heterosexual (male-female) contact, mother-to-child (perinatal) transmission, and other causes (which includes blood transfusions and unknown causes). The CDC estimated that 50,000 people were newly infected with HIV in 2010 (CDC, 2012). More than half of these new infections occurred in gay and bisexual men. African American men and women were among the highest proportion of

racial/ethnic groups newly infected, with a rate of HIV illness seven times higher than that of Caucasians/whites (CDC, 2012).

Prior to highly active antiretroviral therapy (HAART) for HIV, the prognosis of HIV/AIDS was always 100% fatal. In the 1980s the progression of HIV infection to AIDS took a predictable route and a short life span was expected (CDC, 2012). In the United States, advances in HIV treatments in the 1990s slowed the development of HIV infection into AIDS. However, in 1996, when highly active antiretroviral therapy (HAART) became available to persons with HIV, the course of the disease no longer was predictable or fatal (Prachakul & Grant, 2003).

In a study of 8,153 gay males conducted by the CDC, AAMSM were the least likely subpopulation to know their HIV status, thereby potentially exposing their sexual partners to HIV risk. Fifty-nine percent 59% of AAMSM were unaware they were HIV positive compared to 46% of Latino MSM and 26% of European American MSM. For AAMSM under the age 30, 71% percent of HIV+ participants were unaware they were HIV positive.

AIDS and MSM

Although there has been an improvement in health of MSM in the advent of antiretroviral therapy (ART), the rate of newly diagnosed HIV infection among MSM continues to rise at an alarming rate of 3.3% annually since 2000-2005 (Sullivan, 2009; Hart, 2010). In fact, MSM are the largest risk group for HIV (CDC, 2007). This disproportionality has been linked to sexual risk behaviors such as unprotected anal intercourse specifically receptive intercourse despite serostatus, the number of sexual

partners and illicit alcohol and substance use (Koblin et al, 2006). In addition psychosocial syndemics contribute to increased HIV risk behavior among MSM (Safren, 2009). Psychosocial syndemics refers to multiple psychosocial problems such as depression, childhood sexual abuse, partner violence and problematic substance use, interacting in synergy to amplify HIV risk (Stall et al., 2003). Stall et al., 2003 conducted a study comprising 2881 MSM who self-identified as gay or bi-sexual from four different US states to determine the extent of the effect of various psychosocial health problems on increased HIV risk. In addition, Stall et. al., 2003 found an association with depression and increased HIV risk behavior in a population of MSM. Beck also reported, in a study of 123 homosexual men, an association between depression and HIV risk behavior (Beck, 2003). On the other hand, Klein et. al reported no direct association between depression and HIV sexual risk behavior however depression was associated with condom use which was a predictor of HIV sexual risk behavior in a population of 332 MSM (Klein, 2014).

AIDS and AAMSM

Approximately 30 years ago, HIV/AIDS began receiving the attention of the media and the medical community. Since that time, 75 million people have been infected with the HIV virus and about 36 million AIDS-related deaths have occurred (WHO, 2012). According to the Joint United Nations Programme on HIV/AIDS (2012), the reported statistics likely understate the magnitude of the disease because many more were not aware of their HIV status and were therefore not counted. An additional 7,000 people are newly infected with HIV each day, and 5,700 people die from AIDS (WHO, 2012). The U.S. is home to approximately 1.1 million people living with HIV and about 50,000

people are infected with HIV annually in the U.S., a number that has not changed in the past 10 years (WHO, 2012).

African Americans have the most severe burden of HIV of all racial/ethnic groups in the United States. African Americans account for a higher proportion of the newly infected, those currently infected and those ever diagnosed with AIDS (WHO, 2012). In 2010, African Americans accounted for nearly 44% of all new HIV infections, despite representing only 12% of the US population; African Americans represent an incidence rate eight times that of European Americans overall (CDC, 2012). The leading cause of death among African Americans ages 25 to 44 years is HIV/AIDS infection (CDC, 2012). Within the African American community, African American men accounted for 70% of the new HIV cases in 2010, making the rate of new HIV infections for African American men seven times that of white men, twice that of Latino men, and nearly three times that of African American women (CDC, 2012). The highest risk populations in the U.S. for contracting the HIV virus are African Americans and within that population MSM are particularly affected.

Of the 50,000 new cases of HIV infection in 2010, 77% of the males diagnosed with HIV infections contracted the disease from male-to-male sexual contact (CDC, 2012). AAMSM accounted for 10,600 (36%) of all new HIV infections in the U.S. in 2010, making that subpopulation 71 times more likely to contract HIV than the overall U.S. population (CDC, 2012). Based on these facts, any policy or intervention aimed at reducing the spread of HIV infection in the U.S. must target AAMSM to be effective (CDC, 2012). The potential for psychological correlates of HIV risk behavior is relatively

unexplored. As indicated above, Beck, McNally, and Petrak (2003) studied the association between depression and HIV risk behavior; however, the study is more than a decade old and included only one African American participant. Yuen (2013) conducted a randomized controlled trial study on 132 female sex workers to examine the relationship between psychosocial resilience and HIV prevention. The following Theoretical Framework provides the foundation for examining the relationship between depression and HIV risk behavior.

Theoretical Framework

Mental health disorders affect a considerable proportion of the general population in the United States with roughly 21% of adults meeting the Diagnostic and Statistical Manual of Mental Disorders (DSM-VI), criteria for a mood or anxiety disorder over their lifetime (Mays and Cochran, 2006). General population investigations using random sampling have shown that gay and bisexual men have significantly higher prevalence of depression and anxiety disorders compared to heterosexuals. Mays and Cochran (2006) concluded that the odds of gay and bisexual men experiencing an anxiety or mood disorder over their lifetime were twice those of straight men. In a convenience sample, Mays and Cochran (2006) found a 32.6% prevalence of depression among minority MSMs. Also, in other studies African American MSM were more likely to experience feelings of anxiety and isolation but were less likely to seek professional help than African American women and European American males (Williams, 2005).

Disparities in mental and physical health status between African Americans and European Americans are substantial, pervasive and have persisted over time (CDC,

2012). Research suggests that a significant portion of the disparity to the large socioeconomic status (SES) differences between these two groups (Borrell et al., 2006). Borrell found evidence for a negative association between discrimination and multiple indicators of health status, including depression (Borrell et al., 2006).

Experiences of racial discrimination are a risk factor for depression among African American males and are negatively associated with feelings of psychological well-being. Borrell et al. (2006) examined the association between self-perceived racial discrimination and self-reported mental health. The study used data from a 15-year longitudinal follow-up on young African American men and women (n= 1,722) in the USA. Self –reported mental and physical health status, including depressive symptoms, at year 15 was assessed. To assess racial discrimination, a summary score was used for seven questions regarding participant's experience of racial discrimination: at school, getting a job, getting housing, at work, at home, getting medical care, and on the street or in a public setting. African American men reporting experiences of perceived discrimination were significantly more likely to report depressive symptoms and significantly lower levels of physical and mental health then participants reporting few incidences of perceived racial discrimination, after adjusting for age, education, and income. African American men experiencing racial discrimination at work reported relatively poor physical health, while experiences of discrimination during medical care were associated with worse mental health.

According to the Borrell et al. (2006) study, AAMSM are more likely to exhibit symptoms of a Major Depressive Disorder (MDD) and anxiety than Latino or European

American MSM. Major Depressive Disorder is defined by the DSM-VI (American Psychiatric Association. 2010):

> As a clinical course that is characterized by one or more Major Depressive Episodes and may have an onset at any age, although it is typically occurs in the mid-20s. Some symptoms of depression include a diminished interest in once-pleasurable activities, fatigue or loss of energy, an inability to concentrate, significant weight loss, decrease in appetite, feelings of inappropriate guilt, and recurrent thought of death and/or suicidal ideation. Depression is a commonly occurring mental health disorder, with a lifetime prevalence of roughly 15% in the general population (DSM-VI, pp. 396)".

Depression is associated with a shorter life span, lower reported quality of life, increased risk of heart disease and other chronic disease states. Nearly 15% of persons diagnosed with MDD are suicide victims and that figure is more than 18% for African Americans. The prognosis is worse for those with MDD and a chronic or severe medical condition. For the purposes of the proposed study, participants with a BDI-II score of 20 or more were considered depressed (Beck et al., 1996).

MDD diagnoses among African American men were caused by a combination of life stressors, including low socioeconomic status (SES) and racial discrimination (Graham et al., 2011). SES stressors facing African American men include educational attainment, occupational status, income, and poverty (Graham et al., 2011). For example, the global recession resulted in a drastic increase of Americans living below the poverty (15%) and was worse for African American men (20.5%) (Census Bureau, 2012);

therefore, it is likely that depression is more of an issue today among African American men. Studies also show longstanding trends in the high rates of violence, discrimination, and harassment perpetuated against sexual minorities. Graham et al. (2011) found a negative effect of violence and discrimination on the mental health status of AAMSM. Similarly, Hutton et al. (2004) reported negative associations between life satisfaction and anxiety for a sample of AAMSM and experiences of perceived racism. Other factors affecting mental health outcomes among AAMSM include racial identity development, internalized homo-negativity, and coping strategies.

Given the stressors faced by this subpopulation, the prevalence of depression among African American men represents a significant public health issue, accounting for growth rates in suicide more than double than of their European American counterparts (Graham et al., 2011). However, there is little research on the topic of African American men and depression.

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Becks Cognitive Theory of Depression

Aaron Beck's Cognitive Theory (Beck, 1987; Clark & Beck, 1999) suggests that dysfunctional thoughts and attitudes play a significant role in the development of depressive symptoms. Dysfunctional attitudes and thoughts are cognitive distortions that combine with stressful events, such as racism or homophobia, to create depressive symptoms. Beck hypothesized that individuals with dysfunctional cognitions, such as "I am worthless because I am black" are at greater risk for depression. For example, an African American man might believe that his self-worth is dependent on acceptance by his family and friends. Using this example, the dysfunctional thought is activated when an AAMSM is rejected by his family is the conclusion that his personal unworthiness is the cause for the rejection. Dysfunctional attitudes can be held regarding achievement, relationships, body image, intelligence, or a host of other important opinions about one's self. Dysfunctional attitudes, in the form of negative self-statements, are associated with depressive disorders (Clark & Beck, 1999).

Beck's Cognitive Theory (BCT) is widely used therapeutically to address depression and anxiety disorders with significant success. While the etiology and treatment of depression is a complex and convoluted phenomenon, BCT has shown significant promise in relieving depressive symptoms since its development at the University of Pennsylvania in the 1980s.

Depression and HIV Risk Behavior

Brawner (2009) conducted a study of 128 female African American adolescents who were receiving outpatient mental health treatment in the eastern U.S. To examine

the relationship between clinical depression and sexual behavior associated with HIV transmission. The mixed methods study included in-person interviews and/or anonymous surveys. The study suggested that feelings associated with clinical depression (i.e. low self-esteem, hopelessness, guilt, etc.) may lead to situations where clinically depressed African American adolescent females might be exposed to HIV (Brawner, 2009). The study was limited to descriptive statistics, rather than inferential statistics, thereby limiting the generalizability of the results.

Perdue, Hagan, Thiede, and Valleroy (2004) conducted a study of 429 young MSM to test for a relationship between depression, intravenous drug use, and sexual risk behavior using logistic regression analysis and the Center for Epidemiologic Studies Depression Scale (CES-D). Among MSM, those with CES-D scores greater than or equal to16, signifying clinical depressions, reported having three or more sex partners during the preceding 6 months, but not to other sexual risk behavior. Perdue et al. (2004) believed these findings suggested that depression might influence certain HIV risk behavior in young MSM. Unfortunately, the study does not define HIV risk behavior, nor does it compare the behavior to a control group, limiting the usefulness of the results.

Hutton et al. (2003) conducted a large-scale, cross-sectional study of 671 patients recruited from a sexually transmitted disease outpatient facility to examine the relationship between depression and HIV risk behaviors. A subset of the 201 participants was evaluated for a major depressive disorder using a Structured Clinical Interview for DSM-IV administered by a psychiatrist. Hutton et al. (2003) found that depressed STD patients were more likely to have unprotected sex for drugs or money, to have sex with

an intravenous drug user, and have a greater number of partners then non-depressed patients.

Key Variables and Concepts

Factors Contributing to Transmission

A large number of studies examined many factors that might explain the overrepresentation of AAMSM in the HIV infected population. Increased risk of HIV infection was linked to intravenous drug use, unprotected oral, vaginal, or anal sex, multiple sexual partners, anonymous sexual partners, lack of HIV status awareness, prostitution, and individuals already diagnosed with hepatitis, TB, or a STI (Kelly et al., 2013; Yuen et al., 2013).

HIV Knowledge. Overall, high level of HIV knowledge is associated with lower levels of HIV risk behavior. In general, adults under the age of 30 take more risks and engage more frequently in HIV risk behavior than adults over age 30 (UNFPA, 2009; Bastien et al., 2008). However, young adults exposed to appropriate AIDS and HIV education demonstrated healthier attitudes and beliefs and manifested fewer HIV risk behaviors than those without HIV education (UNFPA, 2009; Bastien et al., 2008). Nevertheless, there are few comparative studies published in the U.S. regarding the sexual behaviors young adults (Kelly et al. (2013).

Kelly et al. (2013) conducted a study of 210 African American MSM from Cleveland, Miami, and Milwaukee, that examined the association between HIV risk behavior, demographic characteristics, AIDS-specific psychosocial scales, HIV knowledge, and alcohol and substance use. Nearly 50% of participants reported receptive

unprotected anal intercourse (UAI) frequently with non-main partners, or with multiple partners, despite generally scoring high in HIV knowledge and HIV risk behavior, with a mean of score of 7.4 on a scale of nine items. Participants scored above average in risk reduction behavioral intentions, condom use attitudes, and condom use self-efficacy beliefs. High-risk sexual behavior practices were very common in this sample of Black MSM, with almost half of men reporting recent unprotected receptive anal intercourse with male partners. AAMSMs respond differently to HIV knowledge then non-AAMSMs. This study included HIV knowledge as a covariate to isolate its potential effect on the relationship between depression and HIV risk behavior (Kelly et al., 2013).

Condom attitude. Peterson et al. (2009) examined the association between perceived norms for condom use and HIV risk behaviors for a sample of 158 AAMSM located in the Southeast US. Previous studies had shown a significant association between perceived social and normative support for HIV risk reduction activities and safer sex practices for European American MSM (Hart & Peterson, 2004) but did not isolate the potential effect of condom use norms. Thirty-nine percent of study participants engaged in unprotected sex with a male in the previous three months. A substantial majority of the sample (80%) believed that their friends would approve of their abstinence from sex with a new partner if condoms were not used. Men who reported engaging in unprotected sex reported significantly lower condom peer norms than men not engaging in unprotected sex. Peterson et al. (2009) found that condom norms seem to support safer sex behavior. Peterson et al. (2009) and Hart and Peterson (2004) reported a significant association between attitudes toward condom use and HIV

risk behavior across age and education level. The proposed study will include condom attitude as a covariate to account for its contribution to HIV risk behavior and isolate the effect of depression on HIV risk behavior.

Age and income. Hampton et al. (2013) examined the relationship between HIV risk behavior and age, sexual identification, and educational attainment for 509 AAMSM living in New York City. Data was collected during 2008 and 2009 using a self-designed retrospective survey of sexual behavior and drug-use during the previous six months. The data for age was dichotomized as equal to either 18–29 years old, or 30 years and older to reflect existing literature regarding differences in sexual behavior between these groups. The most notable finding was that nearly half of all participants engaged in UAI in the previous six month, making HIV risk behavior among AAMSM pervasive. Forty-nine percent of study participants engaged in unprotected insertive anal intercourse with a man (UIAM), 36% engaged in unprotected receptive anal intercourse with a man (URAM), and 12% engaged in insertive anal intercourse with a woman (UIAW). Hampton et al. (2013) found that age and education had significant predictive value for the probability of engaging in specific unprotected sexual behaviors. Participants 30 years of age or older having less than some college education were associated with an increased likelihood of reporting URAM. Hampton et al. (2013) reported two significant limitations. The researchers suggested that participants might have under-reported HIV risk behavior due to social desirability associated with face-to-face data collection. The lack of random sampling and a control group limited the generalizability of the results.

Koblin et al. (2013) conducted a longitudinal study of 1,553 African American MSM reporting unprotected anal intercourse with a man in the preceding past six month period. The cohort was broken into two study groups, those age 30 years and older, and those age 29 and younger. Researchers followed participants for one year for a feasibility study of a multi-component intervention to reduce HIV transmission rates. While the overall annual HIV incidence was 3.0%, the HIV incidence rate for AAMSM < age 30 was nearly double, or 5.9%. Participants under age 30 reported significantly higher levels of HIV risk behavior and were twice as likely to have a sexually transmitted infection diagnosed during the study period. Koblin et al. (2013) found that for AAMSM the HIV incidence was high, particularly among young men, and stated there was an urgent need for targeted, tailored and culturally appropriate HIV prevention strategies incorporating behavioral, social, and biomedical-based interventions.

There were several limitations to the Koblin et al. (2013). The cohort did not represent African American MSM in the U.S. The eligibility criteria included only those recently engaging in unprotected sex, the SES of the men was low (71% below $30,000 annual income) and the study was conducted in six US cities with high HIV prevalence. Additionally, all variables, except occurrence of STIs and HIV status, were self-reported and may have been under-reported.

Socioeconomic status generally refers to a combination of age, income, education, occupation, and location, but sometimes refers to social standing or class. Lower SES is associated with restricted access to quality healthcare, poverty, poorer housing conditions, and limited access to HIV education and prevention programs (Niyonsenga,

Trepka, Lieb, & Maddox, 2013). The lack of socioeconomic resources has been associated with HIV risk behavior. These behaviors include earlier initiation of sexual activity and less frequent use of condoms (APA, 2014; Niyonsenga et al., 2013). Lower SES males are overrepresented in the population of homeless in the US. Homeless individuals or those that move from one unstable housing arrangement to another are significantly more likely to be infected with HIV compared to individuals in more stable housing environments (Niyonsenga et al., 2013). Up to 45% of AAMSM infected with HIV are unemployed (APA, 2014).

Hampton et al. (2013) and Koblin et al. (2013) consistently reported high annual HIV incidence rates for AAMSM relative to Latinos and European Americans. Each found that participants under age 30 were significantly more likely to engage in HIV risk behavior and to contract HIV infection. Both found an urgent need to develop interventions to reduce HIV transmission in the AAMSM population, and suggested the use of behavioral, social, and biomedical-based interventions. Neither study tested for psychological factors as potential predictors of HIV risk behavior, despite suggesting behavioral and medical interventions. This study aimed to extend the reach of Hampton et al. (2013) and Koblin et al. (2013) to include depression as a potential factor in HIV risk behavior. Based on the study findings discussed herein regarding age and income, the study included age and income as covariates.

Alcohol and substance use. Substance use in the US is an epidemic (CDC, 2012). The economic and social toll extracted by substance use creates enormous burdens on both the addict and society at-large (NIDA, 2008). The direct economic cost is

estimated to be $473 billion in the form of lost wages, crime, drug-related accidents, lost productivity in the workplace, medical treatment, and drug use related diseases (Cartwright, 2008; NIDA, 2008). These costs exclude indirect costs of substance abuse including the costs to society of long-term chronic diseases such as diabetes, cancer, and heart disease (NIDA, 2008).

Approximately 33% of all reported AIDS cases in the past decade were directly related to intravenous drug use (IDU), or sharing needles among addicts (CDC, 2012). Batki and Selwyn (2003) found that substance abuse of all kinds significantly increases the risk of contracting HIV/AIDS for two reasons. First, individuals under the influence of drugs are more likely to engage in risky HIV behaviors, including unprotected sex, multiple sex partners, or the barter of sexual encounters for drugs or money. Second, intravenous drug users may share needles with other injection drug users. As a result, intravenous drug users (IDUs) have the highest prevalence of HIV infection (CDC, 2014) and drug use in general is strongly associated with HIV risk behavior (Kelly et al., 2013).

There is a well-established link between alcohol and substance abuse and HIV infection, particularly for intravenous drug users (CDC, 2014; Kelly et al., 2013; NIDA, 2008). Based on the study findings discussed herein, the proposed study will include alcohol and substance use as a covariate to isolate the variance associated with HIV risk behavior and depression.

Substance use assessment. Study participants indicated whether they used in the last month any of a series of listed substances (alcohol, marijuana, cocaine, crack, prescription opiates, inhaled nitrites (“poppers”), ketamine, methamphetamines, and

illicit use of non-opiate prescription drugs, ecstasy, erectile dysfunction medications, heroin, and injections not medically prescribed. For each substance used, participants indicated on how many days in the past month the substance was used. "For alcohol, participants were asked the number of drinks on a typical drinking day and the greatest number of drinks in a single drinking day" (Kelly at al., 2013, p. 53).

Summary

This chapter has presented literature regarding the history, development and current trends relating to AAMSM. Existing research on causes and factors involved in HIV risk behavior are introduced and analyzed. While significant progress was made in identifying factors associated with HIV risk behavior, Kelly et al. (2013) found that 50% of AAMSM do not know their HIV status and engage in HIV risk behavior at least every 90 days (Kelly et al., 2013). The research captured some of the behavior that may explain why AAMSM account for such a disproportionate share of all new HIV cases. This behavior included weak perceived peer norms for condom use, HIV negative status, marijuana use, alcohol and substance abuse, and intravenous drug use.

Brawner (2009), Purdue et al. (2003), and Hutton et al., (2003) found a relationship between depression and HIV risk behavior on populations. This study extended the research to a population of AAMSM using the BDI, RBQ, and inferential statistics to test for a statistically significant relationship between depression and HIV risk behavior. The theories of learned helplessness might help explain the nonchalant attitude among AAMSM regarding safe sex. Learned helplessness would predict that if AAMSM felt as if the probability of becoming HIV positive (outcome) is unrelated to their action, the

theory would explain their actions. If learned helpless and attendant depressive symptoms are responsible for HIV risk behavior, cognitive therapy, or some other successful intervention of depression, might help reduce the spread of HIV by reducing the sense of helplessness. Chapter 3 describes the research design, methodology, sample, and data analysis plan this study will use to test for an association between HIV risk behavior and depression.

Chapter 3: Research Method

Introduction

The purpose of this study was to examine the relationship between risky HIV behavior and depression for a sample of AAMSM after controlling for age, alcohol and substance abuse, HIV knowledge, and income. In Chapter 3, I summarize the research design, variables, sample, instrumentation, procedures, and data analysis plan for the study. In the following sections, I discuss the rationale for the research design and the sample size is detailed as well as the ethical protections for participants.

Research Design and Rationale

The research design was quantitative because numerical data were analyzed. The research design was correlational because an attempt was made to determine whether variables were related (Jackson, 2011). Moreover, regression is an advanced correlational technique. In this quantitative study, I used HIV risk behavior as the dependent variable and BDI scores as the independent variable. Covariates were age, alcohol and substance abuse, condom attitudes, HIV

knowledge, and income. In this study, I measured the correlation between HIV risk behavior and depression after accounting for the variance associated with age, alcohol and substance use, condom attitudes, HIV knowledge, and income. The quantitative methodology is appropriate when the dependent and independent variables are well-defined and measurable (Leedy & Ormrod, 2012). The study variables were depression and HIV risk behavior, and both constructs were well defined and had available validated instruments for measurement. Both the dependent and independent variables were continuous, and study participants were available from whom data can be collected. The quantitative methodology is preferred over the qualitative method because it increases the probability of generating reliable and valid results (Leedy & Ormrod, 2012). There is no known resource or time constraints limiting the use of the quantitative research design. No attempt was made in the study to change the behaviors of any persons; therefore, the research design was non-experimental nature.

Methodology

Population

The target population was AAMSM**.** In 2012, there were approximately 2 million gay and bisexual African American males living in the United States (CDC, 2012). In 2012, 11,000 new cases of HIV/AIDS were reported for AAMSM, and 72% of those infections were attributable to male-to-male sexual contact (CDC, 2012).

Sample and Power Analysis

Only African American males who self-identified as gay or bisexual between the ages of 18 and 45 were asked to participate in this study. Sample size powering refers to the sample size necessary to produce a given Alpha for a particular statistical test (Brace, Kemp, & Snelgar, 2013). Alpha level refers to the probability of rejecting the null hypothesis when the null hypothesis is true. In social sciences, the alpha level is $p < .05$; this means that the probability of rejecting the null hypothesis is less than 5 times out of 100 (Brace et al., 2013). The appropriate sample size to power the study for $p < .05$ was 106 (Brace et al., 2013).

A power analysis was conducted with G*Power 3.1 (Mayr, Erdfelder, Buchner, & Faul, 2007). With G*Power, certain input parameters are required depending on the statistical tests that will be conducted in a study. Required input parameters for hierarchical multiple regression include effect size, alpha level, power level, number of tested predictors (number of steps), and total number of predictors. Effect sizes are categorized as small, medium, or large (Brace et al., 2013). It is a standardized, arbitrary way of quantifying relationships between variables. For the study, a medium effect size (f^2) was used. Power level refers to the degree of confidence a person can have in the results. For the study, a power level of .80-.95 was used. This provides more flexibility in obtaining the needed participants. Based on the aforementioned parameters, a sample size of 68-107 was required as illustrated in Figure 1.

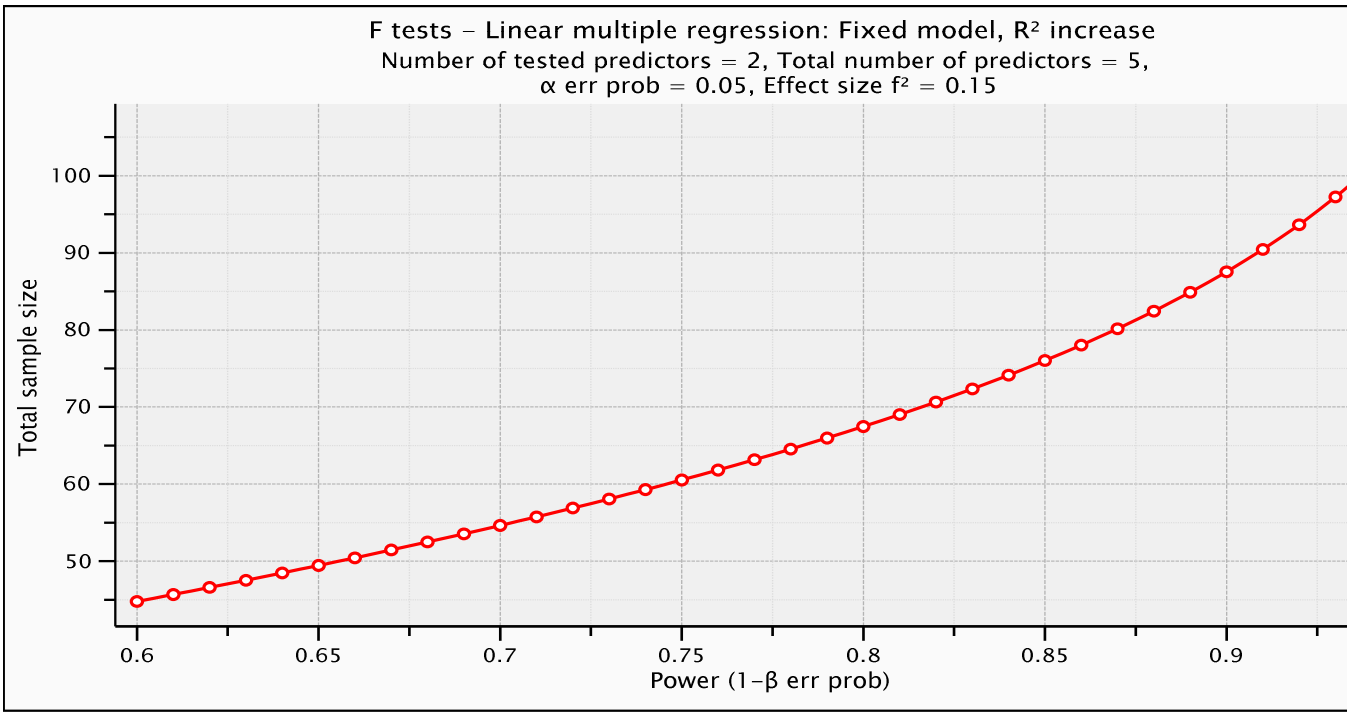


Figure 1. Power Analysis

Procedures

I received approval from the institutional review board (IRB) before recruiting any participants or collecting any data for the study. IRB policies and procedures maintain the integrity of the university and protect human subjects and students from harm (IRB, 2014). All IRB rules and policies were followed explicitly.

Study participants were recruited from (a) AIDS clinics, (b) AAMSM social organizations, (c) web blogs, and (d) the Survey Monkey participant population. Based on discussions with a SM consultant, SM agreed to deliver 50 participants with all survey instruments completed. The remaining 56 participants were recruited from a community partners using the invitation in Appendix C.

The consent process occurred electronically at the SM portal for this study. Informed consent was required before participants they began the survey process. The

purpose of the study was contained in the study consent form. Participants were notified that they can terminate their participation in this study at any time with no consequences. Participants received no remuneration from me for participation in the study. There was no participant follow up.

Participants were required to read the online consent form and Agree by checking a box. Survey participants were then asked to complete three documents: (a) demographic information form, (b) Beck Depression Inventory, and (c) HIV Risk Behavior Questionnaire. SM collected the data anonymously and provided all responses in both Excel and SPSS 13 file formats for analysis.

Instrumentation

Risky HIV Behavior Questionnaire - College. In this study, I measured risky HIV behavior using the RBQ, an instrument developed by the Chicago State University's HIV/AIDS Research and Policy Institute (Balogun & Abiona, 2009). The RBQ was validated on college students and prisoners aged 15 to 35 years. The instrument assesses HIV/AIDS knowledge, attitudes, beliefs, behaviors, and sources of HIV prevention information. Data were collected on the following subtopics: risky HIV sexual behavior, tattooing, body piercing, intravenous drug use, alcohol and substance abuse, HIV/AIDS knowledge, attitudes and beliefs about HIV/AIDS, and sources of information about HIV/AIDS. An example of an HIV risk behavior question in the RBQ is "During your life, how many males have you had sexual intercourse with?" The potential responses range from 0 to 6 or more.

The RBQ has been tested for readability, test retest reliability, and construct validity (Balogun & Abiona, 2009). RBQ internal consistency was evaluated using Cronbach's alpha for all items. The Cronbach's alpha > 0.70 was considered acceptable. The overwhelming majority (92% of the 25 HIV behavior items) showed test-retest reliability greater than 0.50. In addition, the RBQ tested at the third grade reading level using the Flesch-Kincaid score (Balogun & Abiona, 2010).

Beck Depression Inventory. The Beck Depression Inventory-II (BDI-II) is the most prevalent measure used to identify depression. Since the test construction in 1961, the test was used in numerous (more than 2,000) empirical studies (Richter, Werner, Heerlin Kraus, & Sauer, (1998). The BDI-II was updated to reflect the depression criteria in the *Diagnostic and Statistical Manual of Mental Disorders-IV-TR (DSM-IV-TR) (*Beck et al., 1997; Steer et al., 1999). The BDI-II has been validated on adult and adolescent patients, family-medicine patients, and other medical outpatients. Internal consistency was satisfactorily high (alpha>or=0.84), and retest reliability exceeded r>or=0.75 in nonclinical samples (Kühner, Bürger, Keller, & Hautzinger, 2007).

The BDI-II is a self-report measure consisting of 21 items, each corresponding to specific cognitions and physical symptomatology (Doering et al., 2007). The BDI-II effectively measures the intensity of depression symptomatology (Doering et al., 2007). The BDI Scale ranges from 0 to 63 and is categorized as minimal depression (0-13), mild depression (14-19), moderate depression (20-28), and severe depression (29-63). The sum of each response was calculated to determine the category that each participant fell under. BDI-II requires participants to select one out of four statements that most closely

describe participant's inner state. For example, the potential responses ranged from, "I do not feel sad," to "I am so sad and unhappy that I can't stand it." The BDI-II can be self-administered and takes approximately 10 minutes to complete.

Operationalization of Variables

Research questions one and two/hypotheses one and two will be answered using multiple regression statistical test. The independent (predictor) variable will be depression as measured by the Beck Depression Inventory. The dependent (outcome) variable will be risky HIV behavior as measured by the HIV Risk Behavior Questionnaire for Young Adults/University Students.

The quantitative study test for an association between risky HIV behavior and depression in a sample of 106 AAMSM. As shown in Table 1, depression is the in independent variable and will be measured using the Beck Depression Inventory (Beck, 1996). Risky HIV behavior is the dependent variable and will be measured using the HIV Risk Behavior Questionnaire (Balogun et al., 2009). Covariates are age, alcohol and substance use, condom attitude, HIV knowledge, and income and will be collected using the demographic survey. Table 1 provides the variables scales of measurement, and type of variable.

Table 1

Variables, Scales of Measurement, Variable Type, and Operationalization

Variable	Variable Type	Operationalization
Depression	Independent Variable	BDI-II score
HIV Risk Behavior	Dependent Variable	RBQ score
Age	Covariate	Demographic Survey
Alcohol and Substance Use	Covariate	Demographic Survey
Condom Attitude	Covariate	RBQ Subscores
HIV Knowledge	Covariate	RBQ Subscores
Income	Covariate	Demographic Survey

Data Analysis Plan

Data will be downloaded from the SurveyMonkey online application to an excel spreadsheet. Data was examined for i) potential removal of outliers, ii) missing data, and iii) compliance with assumptions using Excel sorts and scatter plots (Rousseeuw & Leroy, 2003). Clean data will then be transferred from the excel spreadsheet to the Statistical Package for the Social Sciences Version 13 (SPSS) application where descriptive and inferential statistical analyses will be performed.

Research Questions and Hypotheses

1. What is the relationship between depression and HIV risk behavior in a sample of AAMSM?

Ho1: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM.

Ha1: There is a significant relationship between depression and HIV risk behavior in a sample of AAMSM.

2. What is the relationship between depression and HIV risk behavior in a sample of AAMSM after taking into account covariates of age, alcohol and substance use, condom attitudes, HIV knowledge, and income?

Ho2: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

H_a2: There is a significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

Table 2

Statistical Tests for Each Hypothesis

Hypotheses	Data Elements	Statistical Approach
Hypothesis 1_o	BDI-II & RBQ	Linear Regression
Hypothesis 2_o	BDI-II, RBQ , age, alcohol and substance use, condom attitude, HIV knowledge, and income	Multiple Regression

Study participant demographics will be characterized using descriptive statistics (mean, standard deviation, frequency, proportions). Hypothesis 1will be tested using regression analysis to measure the correlation between depression and HIV risk behavior. Hypothesis 2 will be tested using multiple regression analysis to measure the correlation between depression and risky HIV behavior after controlling for age, alcohol and substance use, condom attitude, HIV knowledge, and income. Assumption for use of a regression and multiple regression analysis are 1) normality of residuals, 2) homogeneity of variances, 3) linearity of regression, and 4) independence of error terms; all assumptions will be tested prior to the regression analysis.

Threats to Validity

Depression and HIV risk behavior are well-understood constructs with validated instruments for measurement, and are not a threat to construct validity (Beck, 1976; Beck et al., 2003; Balogun & Abiona,, 2010; Balogun et al., 2009). The use of regression and

multiple regression analyses using appropriately powered sample sizes adequately addresses statistical conclusion validity but does not eliminate all threats. One threat to statistical conclusion validity is the potential for an unknown covariate with greater explanatory value than the independent variable. External validity is the generalizability of study results to other settings or populations. While no specific threats to external validity are apparent, it is possible that the findings are not be generalizable to other age groups, cultures, or populations with differing ethnic composition (Leedy & Ormrod, 2012).

Ethical Procedures

No data will be collected that can personally identify any participant. All study records, notes, files, and actual surveys ("Data") will remain anonymous and confidential and only the researcher will have the capability to access records at all times. All Data will be stored for five years, and then destroyed. Upon completion of this study all Data generated on any computer will be destroyed.

Summary

The chapter presents the proposed methodology and research design to examine the relationship between depression and risky HIV behavior. The Beck Depression Inventory (Beck, 1996) and the HIV Risk Behavior Questionnaire (Balogun et al., 2009) will be used to assess depression and risky HIV behavior, respectively. Data will be collected and participants will be recruited using SurveyMonkey. Chapter 4: Findings

will summarize the data and present the findings of the statistical tests for each of the hypotheses.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to examine the relationship between depression and high-risk sexual behaviors in African American MSM. The study's independent variable was depression as measured by the BDI- II (Beck et al., 1996). The dependent variable was high-risk sexual behavior as measured by the RBQ-US (Balogun et al., 2009). Covariates were age, alcohol and substance use, condom attitudes, and HIV knowledge and income, which historically have been predictive of HIV risk behavior (Kelly et al., 2013; Khan et al., 2012).

Given the social, human, and health costs of HIV transmission, an exploration of the association between depression and HIV risk sexual behavior could be an important contribution to understanding and reducing HIV transmission. In this study, I addressed two research questions. What is the relationship between depression and HIV risk sexual behavior in a sample of AAMSM? After taking into account covariates of age, alcohol and substance use, condom attitudes, HIV knowledge, and income, what is the relationship between depression and HIV risk behavior in a sample of AAMSM? The null hypothesis was tested for each research question. For the purposes of this study, HIV risk sexual behavior was measured by the 10-item HIV Risk Sexual Behavior subscore from the RBQ.

Data Collection

Data were collected from participants for a period of 90 days using the SM application to capture and store data. Of the 130 potential participants who completed some portion of the survey, 18 were excluded because more than 50% of the survey questions had no responses, and four were excluded because they were not AAMSM. Pairwise deletion was used for missing responses to maintain the sample size.

I examined a convenience sample of 108 AAMSM with Internet accesses and computer literacy who were willing to respond to a survey including highly personal questions. No effort was made to randomize the sample, which limits the generalizability of the findings.

Sample Demographics

There were 108 AAMSM participants ranging in age from 21- to 45-years-old with a mean age of 29.66 (SD = 7.78) with sufficient data to be included in the final analysis. Approximately one-third (32.4%, n = 35) were married and 41.7% (n = 45) had never been married. Marital status is presented in Table 3.

What is your marital status?

Table 3.

Descriptive Statistics for Marital Status

Marital Status	*n*	*%*
Never been married	45	41.7
Married	35	32.4
Separated	15	13.9
Divorced	11	10.2
Widowed	2	1.9
Total	108	100.0

Nearly 9% (*n* = 10) had never drank alcohol "other than a few sips"; however, 79.6% (*n* = 86) were 20 years or younger when they had their first drink. See Table 4.

How old were you when you had your first drink of alcohol other than a few sips?

Table 4

Descriptive Statistics for Age at First Alcohol Consumption

	Age at First Alcohol Consumption	*n*	*%*	*Valid %*
	I have never had a drink of alcohol other than a few sips	10	9.3	9.3
	12-years-old or younger	15	13.9	14.0
	13-or 14-years-old	22	20.4	20.6
	15-or 16-years-old	23	21.3	21.5
	17-or 18-years-old	18	16.7	16.8
	19-or 20-years-old	8	7.4	7.5
	21-to 24-years-old	9	8.3	8.4
	25-years-old or older	2	1.9	1.9
	Total	107	99.1	100.0
Not	Answered	1	0.9	
Total		108	100.0	

Thirteen percent (n = 14) had never tried marijuana; however, 75% (n = 81) were 20 years or younger when they tried marijuana for the first time. See Table 5.

How old were you when you tried marijuana for the first time?

Table 5

Age at First Marijuana Use	*n*	%
I have never tried marijuana	14	13.0
12-years-old or younger	15	13.9
13-or 14 years-old	27	25.0
15- or 16 years-old	24	22.2
17 -or 18 years-old	7	6.5
19 -or 20 years-old	8	7.4
21-to 24- year-old	9	8.3
20-years-old or older	4	3.7
Total	108	100.0

About 27% (n = 29) never tried any form of cocaine, including powder, crack, or freebase; however, 67.6% (n = 73) were 20 years or younger with they first tried cocaine. See Table 6.

How old were you when you tried any form of cocaine, including powder, crack, or freebase, for the first time?

Table 6

Descriptive Statistics for Age at First Cocaine Use

Age at First Cocaine Use	*n*	%
I have never tried cocaine	29	26.9
12-years-old or younger	15	13.9
13- or- 14 years-old	21	19.4
15-or-16 years-old	19	17.6
17-or-18 years-old	9	8.3
19-or-20 years-old	9	8.3
21-to 24-years-old	5	4.6
25-years-old or older	1	0.9
Total	108	100.0

Regarding sexual experiences, 3.7% (n = 4) reported never having anal intercourse; however, 63.9% (n = 69) reported having sexual intercourse for the first time at age 16 or younger. See Table 7.

How old were you when you had anal sexual intercourse for the first time?

Table 7

Descriptive Statistics for Age at First Sexual Intercourse

Age at First Sexual Intercourse	*n*	*%*
I have never had sexual intercourse	4	3.7
12-years-old or younger	16	14.8
13-or 14-years-old	28	25.9
15-or 16-years-old	25	23.1
17-or 18-years-old	19	17.6
19-or 20-years-old	6	5.6
21-to 24-years-old	8	7.4
25-years-old or older	2	1.9
Total	108	100.0

During the past 30 days, 46.3% (n = 50) of respondents reported that they or their partners rarely or never used condoms, whereas 20.4% (n = 22) reported that they or their partners always or most of the time used condoms. See Table 8.

During the past 30 days, how often did you or your partner (any gender) use a condom?

Table 8

Descriptive Statistics for Condom Attitude

Condom Attitude	*n*	%
I have not had sexual intercourse during the past 30 days	9	8.3
Never used a condom	28	25.9
Rarely used a condom	22	20.4
Sometimes used a condom	27	25.0
Most of the time used a condom	13	12.0
Always used a condom	9	8.3
Total	108	100.0

The last time AAMSM had sexual intercourse with any gender, 45.4% (n = 49) of them or their partners had used condoms, whereas 49.1% (n = 53) did not, and 5.6% (n = 6) had never had sexual intercourse. However, when asked if they drank or used drugs before the last time they had sexual intercourse, 10.2% (n = 11) reported that they had never had sexual intercourse as presented in Table 9.

Did you drink alcohol or use drugs before you had sexual intercourse the last time?

Table 9

Descriptive Statistics for Alcohol/Drug Use

	Alcohol/Drug Use	*n*	%	*Valid %*
	No intercourse in past 30 days	11	10.2	10.3
	Yes (anal)	56	51.9	52.3
	No	40	37.0	37.4
	Total	107	99.1	100.0
Not	Answered	1	0.9	
Total		108	100.0	

About 11% (*n* = 12) of respondents were HIV positive, 11.1% (*n* = 12) stated that they had no chance of contracting HIV, and 18.5% (*n* = 20) indicated that they had a good chance of catching the disease. See Table 10.

What are the chances that you might catch HIV? Would you say there is no chance, a moderate chance or a good chance?

Table 10

Descriptive Statistics for Chances of Contracting HIV

	Chances of Contracting HIV	*n*	*%*	*Valid %*
	No chance	12	11.1	11.2
	Moderate chance	33	30.6	30.8
	Good chance	20	18.5	18.7
	Don't know	30	27.8	28.0
	Already infected	12	11.1	11.2
	Total	107	99.1	100.0
Not	Answered	1	0.9	
Total		108	100.0	

When asked about the main reason for their opinions of their chances of contracting HIV, among the reasons cited, 25.9% (*n* = 28) always used condoms; 14.8% (*n* = 16) had only one partner; and 5.6% (*n* = 6) believed their partners were faithful. See *What is the main reason why?*

Table 11

Descriptive Statistics for the Main Reason Why?

Reason	*n*	*%*
Abstinent/no sex	6	5.6
Has only one partner	16	14.8
Always uses a condom	28	25.9
Uses contraceptive	11	10.2
Uses traditional medicine	7	6.5
Has sex with a virgin	1	0.9
Partner is faithful	6	5.6
No needle sharing	1	0.9
There is no such thing as AIDS	2	1.9
It can't happen to me	7	6.5
Has multiple sexual partners	9	8.3
Partner is infected	3	2.8
Has unprotected sex	6	5.6
Drug use	3	2.8
Contact sports	1	0.9
Rape	1	0.9
Total	108	100.0

Participant income range frequency data is depicted in Table 12. In 2013 forty (37.0%) participants had an annual income of less than $10,000, 49 (45.0%) had an income between $10,000 and $25,000, 15 (14.3%) had an income over $25,000, and 4 (3.7%) did not provide income data.

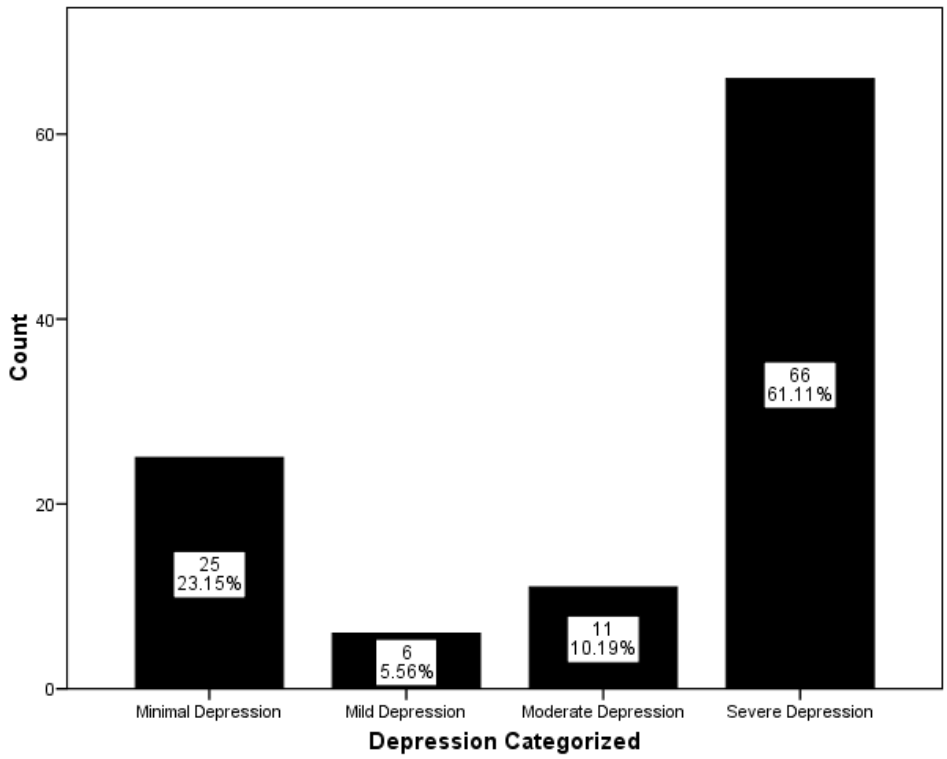
Table 12

Descriptive Statistics for Annual Income

	2013 Income	*n*	*%*
	Less than $10,000	40	37.0
	$10,000 to $25,000	49	45.0
	$25,000 +	15	14.3
Not	Answered	4	3.7
Total		108	100.0

Regarding depression, the computed scores on the BDI were classified into four categories; minimal, mild, moderate, and severe depression. The majority of AAMSM (61.1%, $n = 66$) had severe depression, whereas as 10.2% ($n = 11$) had moderate depression. This is illustrated in Figure 2. The Becks Depression Scale ranges from 0 to 63 and the recommended commended categories are: 0-13 (minimal depression), 14-19 (mild depression), 20-28 (moderate depression), and 29-63 (severe depression). The BDI scoring and categories were used to measure depression.

Figure 2. Categories of Depression



Results

Descriptive Statistics and Data Screening

Scores for the variables of interest (depression, alcohol and substance use, HIV risk behaviors, HIV knowledge, and income) were computed and the data were screened for normality with skewness and kurtosis statistics. In SPSS, data are considered to be normally distributed if the absolute values of the skewness and kurtosis coefficients are less than two times the standard error. Based on these criteria, depression and HIV risk behavior were normally distributed. However, age and alcohol and substance use were not normally distributed. Therefore, an attempt was made to normalize the affected

distributions by computing the square root of the values, which reduced the positive skews for age and alcohol and substance use as indicated in Table 13.

Table 13

Descriptive Statistics and Data Screening

	Minimum	*Maximum*	*Mean*	*SD*	*Skewness*	Std. Error	*Kurtosis*	Std. Error
Age	21.00	45.00	29.66	7.78	.573	.233	-1.03	.461
Age (Trans.)	4.58	6.71	5.40	0.70	.456	.233	-1.19	.461
Depression	0	68.00	29.75	18.17	-.109	.233	-.629	.461
Alcohol & Substance Use	12.00	86.00	40.73	18.44	.551	.233	-.220	.461
Alcohol and Substance Use (Transformed)	3.46	9.27	6.22	1.46	.077	.233	-.638	.461
Condom Attitude	1.00	6.00	2.91	1.76	.443	.233	-1.20	.461
HIV Risk Behavior	5.00	33.00	17.63	5.64	.314	.233	-.342	.461
HIV Knowledge	0	5.00	3.50	1.63	.362	.223	.354	.461
Income	$0.00	$53,000	$16,546	$8,313	-.198	.233	-582	.461

Prior to being transformed, age had a positive skew of .573 (*SE* = .233). This is illustrated by a histogram in Figure 3.

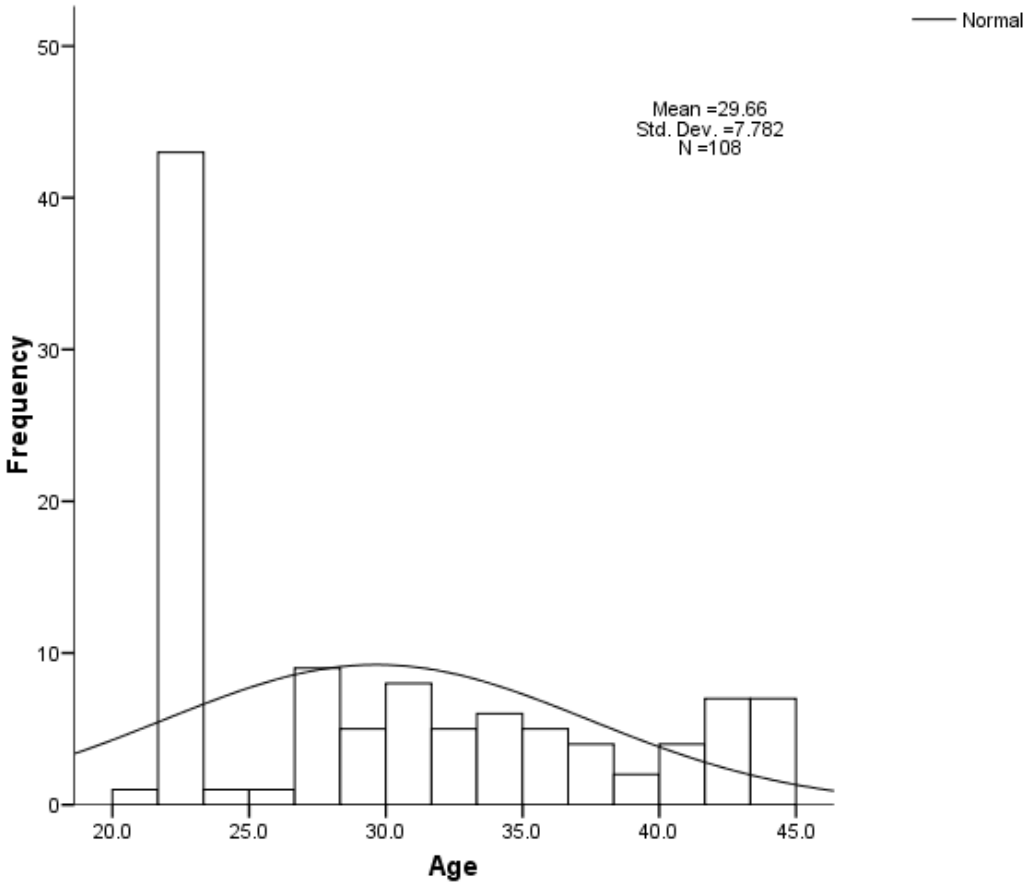


Figure 3. Histogram for Age (Transformed)

Depression, as a continuous variable, had normal distribution. The histogram for depression is presented in Figure 3.

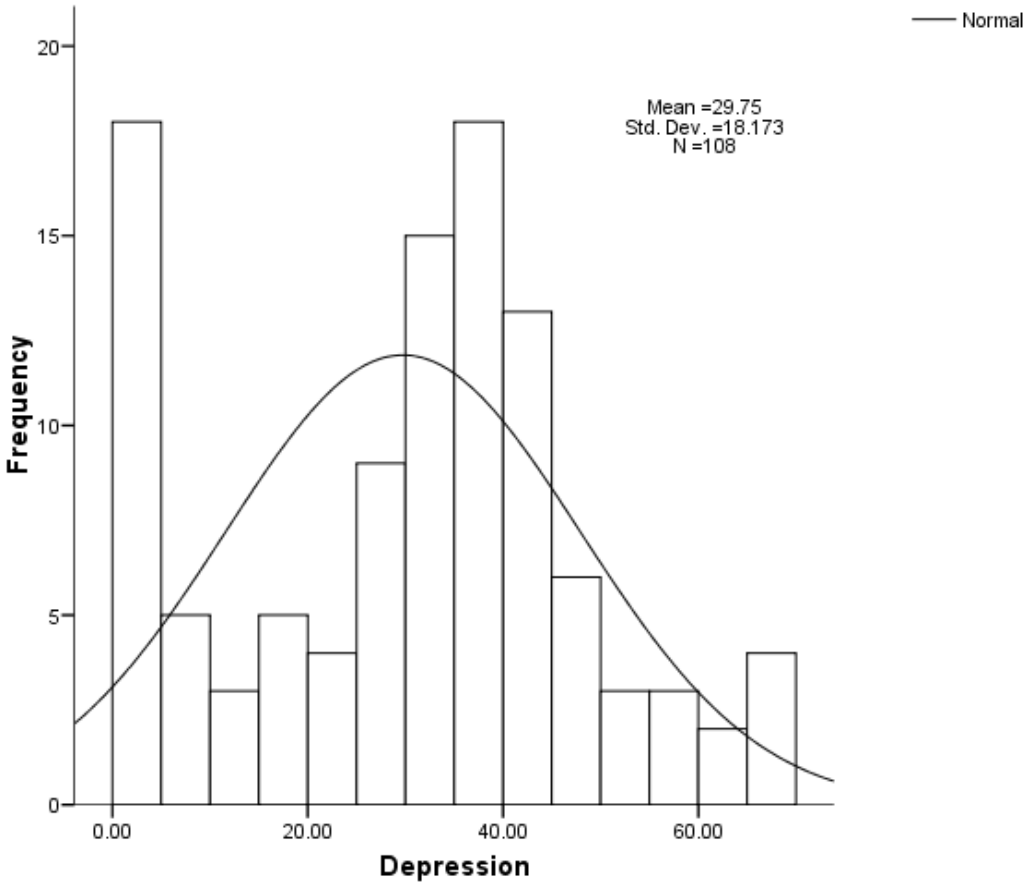


Figure 4. Histogram for Depression

Prior to transformation, distribution for alcohol and substance use had a significant positive skew (.551, *SE* = .233). The histogram for alcohol and substance use is presented in Figure 5.

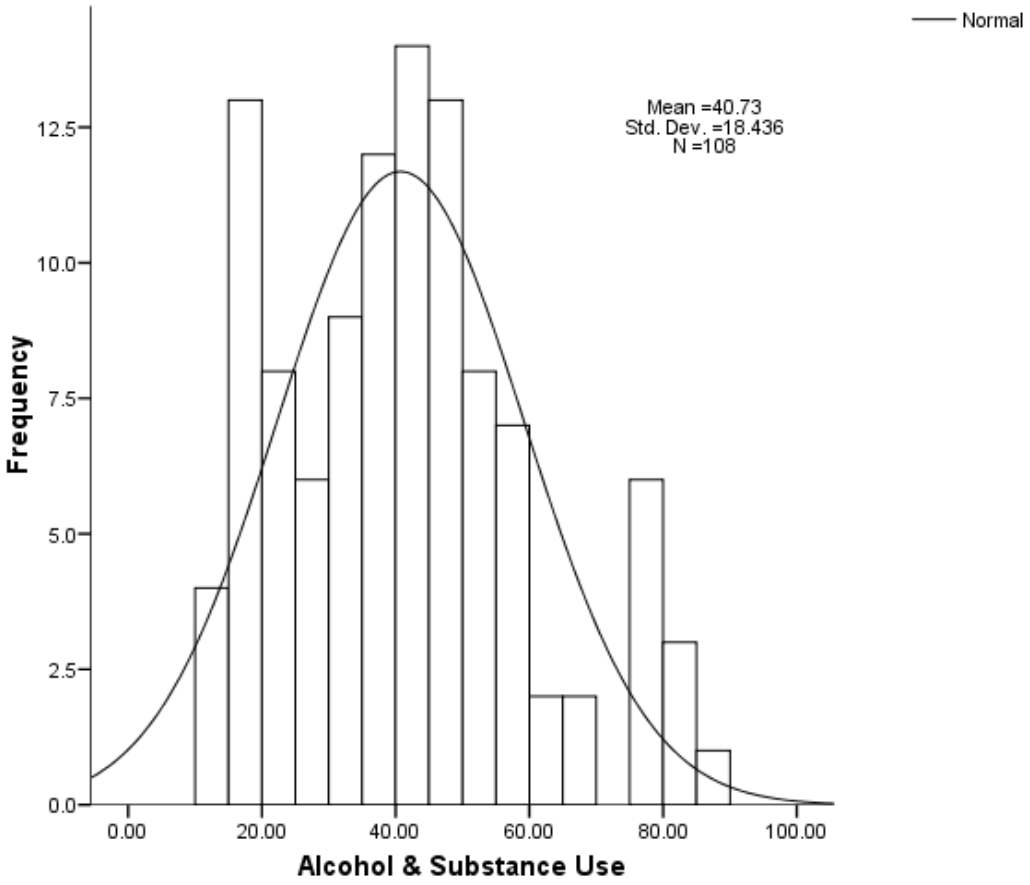


Figure 5. Histogram for Post-transformation Alcohol and Substance Use

HIV risk behavior was normally distributed. The histogram for HIV risk behavior is illustrated in Figure 6.

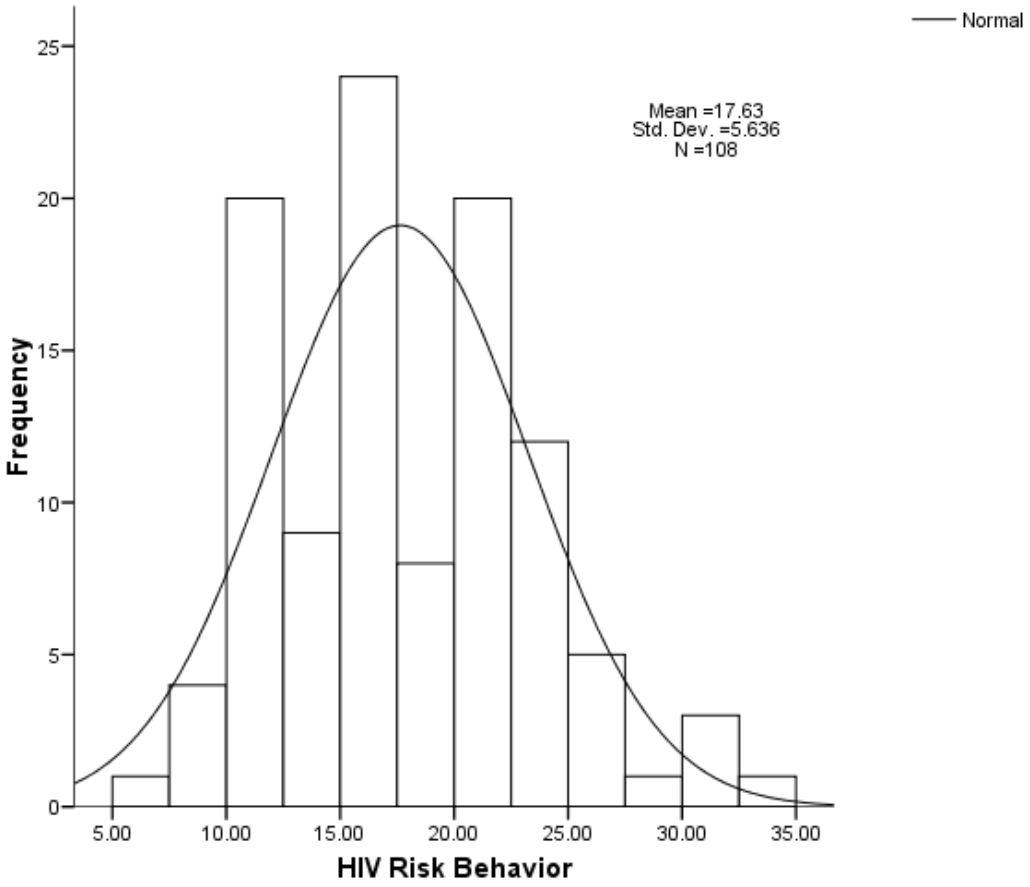


Figure 6. Histogram for HIV Risk Behavior

Research Questions and Hypotheses

Two research questions and related hypotheses were formulated for investigation. They are as follows:

1. What is the relationship between depression and HIV risk behavior in a sample of AAMSM?

H_{01}: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM.

H_1: There is a significant relationship between depression and HIV risk behavior in a sample of AAMSM.

2. What is the relationship between depression and HIV risk behavior in a sample of AAMSM after taking into account covariates of age, alcohol and substance use, condom attitudes, HIV knowledge, and income?

Ho2: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

Ha2: There is a significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

Research Question One/Hypothesis One

What is the relationship between depression and HIV risk behavior in a sample of AAMSM? Research question one/hypothesis one was investigated with simple linear regression. The independent variable was depression. The dependent variable was HIV risk behavior. Prior to the analysis, assumptions of linear regression were tested. Linear regression assumes that variables are normally distributed (Leedy & Ormrod, 2012). Linear regression assumes a linear relationship between the independent and dependent variables (Leedy & Ormrod, 2012). Linear regression assumes that the residuals are normally distributed (Leedy & Ormrod, 2012). A residual is the difference between the observed and the model- predicted values of the dependent variable (Leedy & Ormrod, 2012). Residuals that exceeded three standard deviations were excluded from the analysis. Linear regression assumes that the variance of the error term is constant across cases and independent of the variables in the model (Leedy & Ormrod, 2012). Variables were previously screened and tested for normality as aforementioned. Standardized residuals were -2.04 to 2.70, which indicate that they were in the normal range as indicated in Figure 7.

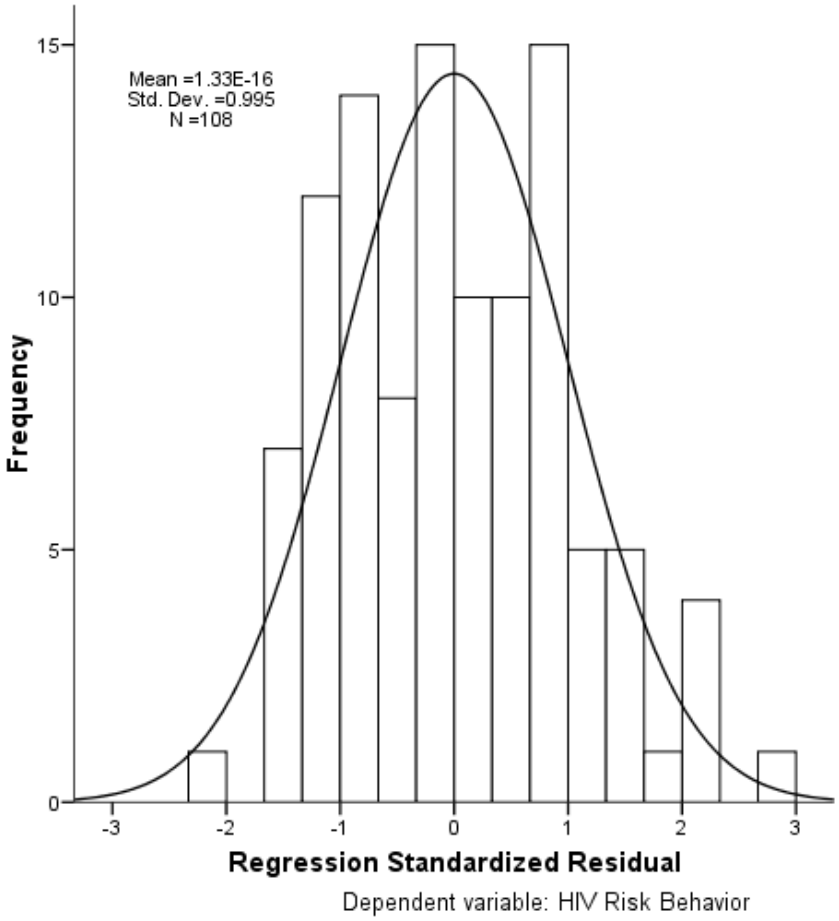


Figure 7. Histogram for Standardized Residuals for HIV Risk Behavior

The plot of residuals by the predicted values shows that the variance of the errors is constant across cases and independent of the variable in the model. This is illustrated in Figure 8.

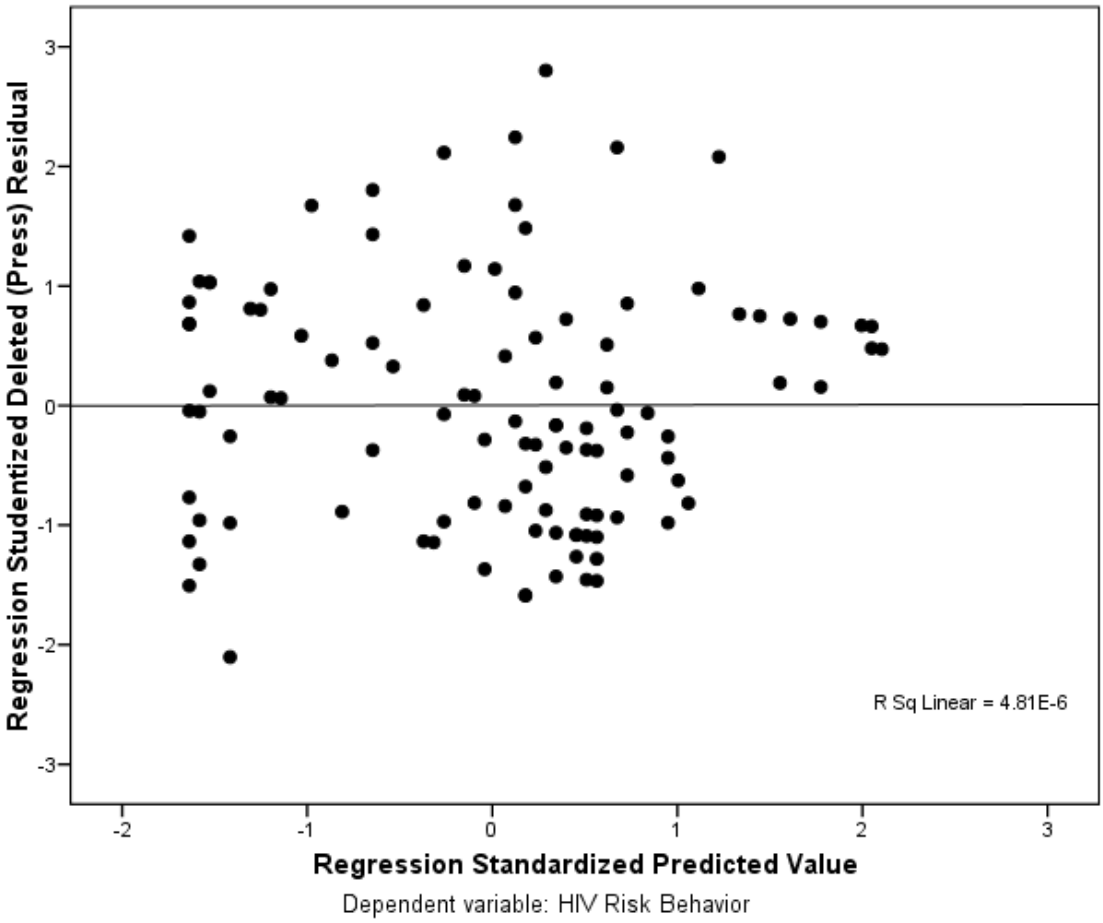


Figure 8. Scatterplot of Standardized Residuals by the Model-Predicted Values

Since the data met the assumptions of regression, the analysis proceeded as planned. The ANOVA for the model was not statistically significant, $F(1, 106) = 2.48$, $p = .119$; $R^2 = .02$. Therefore, depression was not significantly related to HIV risk behavior. Regression coefficients are presented in Table 14.

Table 14

Regression Coefficients for Depression on HIV Risk Behavior

Predictor Variable	*R*	R^2	Adj. R^2	*B*	SE *B*	β	*t*
	.151	.023	.014				
Depression				.047	.030	.151	1.57

Note. Dependent variable = HIV Risk Behavior

H_{01} stated that there is no significant relationship between depression and HIV risk behavior in a sample of AAMSM. Depression was not significantly related to HIV risk behavior, $F(1, 106) = 2.48$, $p = .119$; $R^2 = .02$. Therefore, the null hypothesis was not rejected.

Research Question Two/Hypothesis Two

What is the relationship between depression and HIV risk behavior in a sample of AAMSM after taking into account covariates of age, alcohol and substance use, condom attitudes, HIV knowledge, and income? Research question two was investigated with multiple linear regressions. Standardized residuals initially ranged from -2.83 to 3.15. One case was excluded from the analysis because it was outside the range of normality for standardized residuals. After the case was excluded, standardized residuals ranged from -2.92 to 2.75. A histogram of standardized residuals is presented in Figure 9.

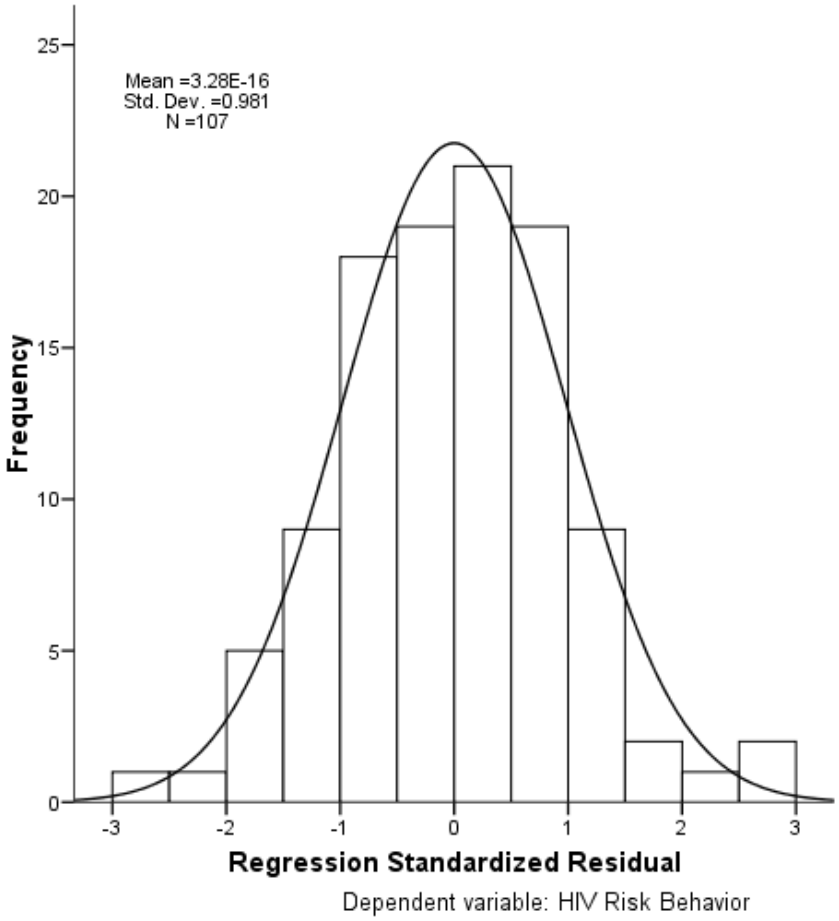

Mean =3.28E-16
Std. Dev. =0.981
N =107
Frequency
25
20
15
10
5
0
-3
-2
-1
0
1
2
3
Regression Standardized Residual
Dependent variable: HIV Risk Behavior

Figure 9. Histogram of Standardized Residuals for HIV Risk Behavior

The plot of residuals by the predicted values shows that the variance of the errors is constant across cases and independent of the variable in the model. This is illustrated in Figure 10.

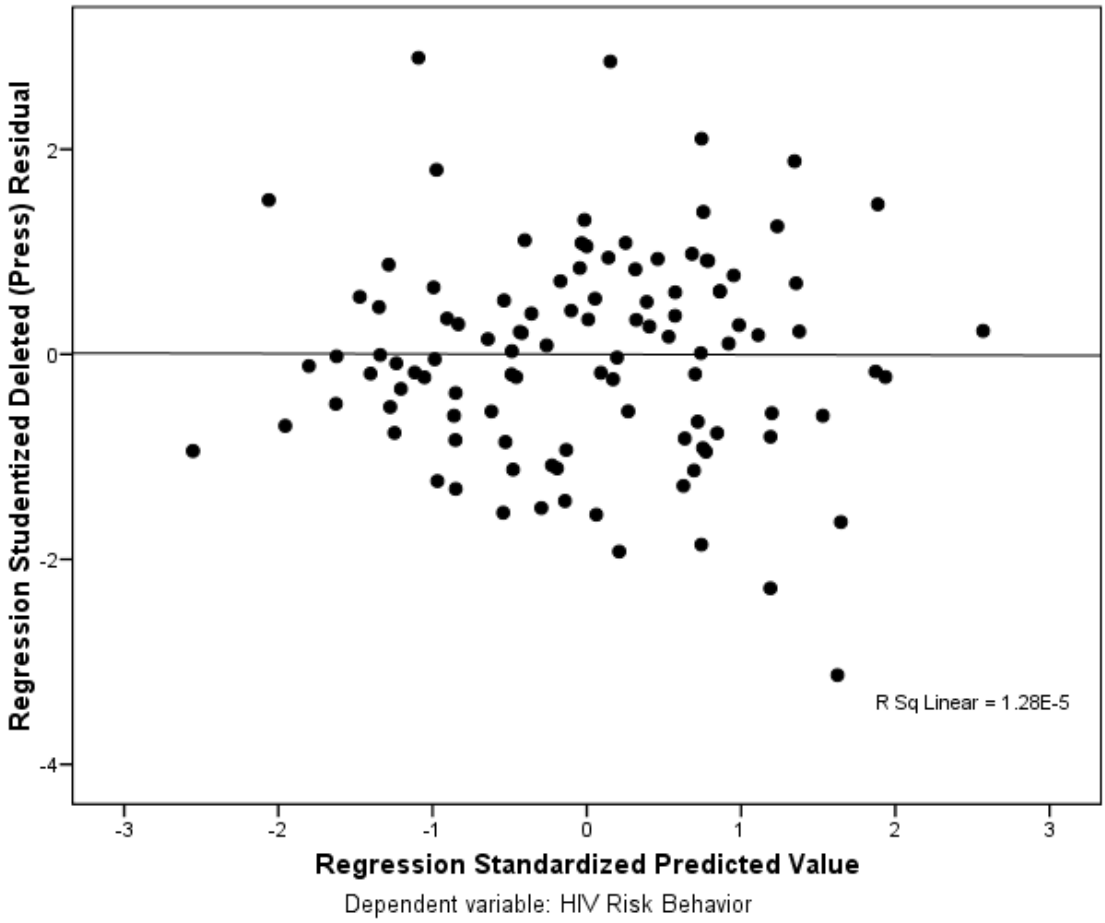


Figure 10. Scatterplot of Studentized Residuals by the Model-Predicted Values

Since the data met the assumptions of multiple linear regressions, the analyses proceeded. The ANOVA for the model was statistically significant, $F(4, 102) = 15.07$, $p < .001$; Adjusted $R^2 = .347$, which means that 34.7% of the variance in HIV risk behavior can be explained by one or more of the variables in the model. Examination of the univariate statistics revealed no significant relationship between depression and HIV risk behavior, $\beta = -.02$, $t = -.149$, $p = .882$. However, three of five covariates were significantly related to HIV risk behavior. Specifically, age was significantly and positively related to HIV risk behavior, $\beta = .50$, $t = 6.24$, $p < .001$. As age increased, there

was a corresponding increase in HIV risk behavior. Alcohol and drug use was significantly and positively related to HIV risk behavior, $\beta = .34$, $t = 2.43$, $p = .017$. As alcohol and drug use increased, there was a corresponding increase in HIV risk behavior. Condom attitudes was significantly and positively related to HIV risk behavior, $\beta = .311$, $t = 3.93$, $p < .001$. As condom attitudes scores improved, there was a corresponding increase in HIV risk behavior. Regression coefficients are presented in Table 15. There were no significant relationships between HIV knowledge and HIV risk behavior, or income and HIV risk behavior.

Table 15

Regression Coefficients for Depression, Age, Alcohol/Drug Use, Condom Attitude, HIV Knowledge, and Income on HIV Risk Behavior

Predictor Variable	*R*	R^2	Adj. R^2	*B*	SE *B*	β	*t*
	.609***	.371	.347				
Depression				-.066	.042	-.021	-.149
Age				3.89	.623	.500	6.24***
Alcohol and Drug Use				1.27	.522	.339	2.43*
Condom Attitude				1.20	.305	.311	3.93***
HIV Knowledge				-.140	.114	-.174	-.683
Income				.434	.089	.056	.434

Note. Dependent variable = HIV risk behavior; scores for age and alcohol and drug use were transformed by computing the square root; ***$p < .001$, *$p < .05$.

$H_0$2 stated that there is no significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance

associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income. Examination of the univariate statistics revealed no significant relationship between depression and HIV risk behavior (β = -.02, t = -.149, p = .882) after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income. Therefore, the null hypothesis was rejected.

Summary

Two research questions and two related hypotheses were formulated for investigation. It was determined that depression was not significantly related to HIV risk behavior. It was also determined that depression was not significantly related to HIV risk behavior after controlling for age, alcohol and substance use, condom attitudes, HIV knowledge, and income. Therefore, the null hypothesis was rejected It was determined that age was significantly and positively related to HIV risk behavior. As age increased, there was a corresponding increase in HIV risk behavior. Alcohol and drug use was significantly and positively related to HIV risk behavior. As alcohol and drug use increased, there was a corresponding increase in HIV risk behavior. Condom attitude was significant and positively related to HIV risk behavior. As condom attitudes became more positive, there was a corresponding increase in HIV risk behavior. Implications of the results will be discussed in Chapter Five.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative study was to examine the relationship between depression and HIV sexual risk behaviors in AAMSM. Most AAMSM are unaware of their HIV status and engage in risky sexual behaviors despite knowledge of the consequences (Kelly et al., 2013). In prior studies, AAMSM were 3.7 times more likely than European Americans or Hispanic American MSM to become HIV positive (CDC, 2012; Malebranche, 2003). This study aimed to further knowledge on factors contributing to HIV transmission among AAMSM and for use in developing strategies to mitigate HIV transmission.

In this quantitative study, I examined the relationships between depression and HIV sexual risk behavior before and after controlling for age, alcohol and substance abuse, condom attitude, HIV knowledge, and income. A convenience sample of 108 AAMSM completed the BDI and portions of the RBQ. The study sample exhibited a high risk tolerance; only 18% of the study sample always used a condom during sex, and 46.3% rarely or never used a condom. There was no statistically significant relationship between HIV sexual risk behavior and depression either before or after controlling for covariates.

While no significant relationship was found between HIV sexual risk behavior and depression, the following three covariates had significant explanatory value for predicting HIV sexual risk behavior: age, alcohol and drug use, and condom attitudes. Age and condom attitudes were significantly positively predictive of HIV sexual risk behavior at $p < .001$, and alcohol and drug use was significantly positively predictive at p

< .05. The finding that an improvement in healthy condom attitudes was associated with increased HIV sexual risk behavior is counterintuitive and inconsistent with prior research (Kelly et al., 2013). The finding that age, and alcohol and drug use were predictive of HIV sexual risk behavior is consistent with prior studies (Hall et al., 2013; Hampton et al., 2012; Kelly et al., 2013).

Interpretation of Findings

In this study, I sought to examine and analyze HIV sexual risk behaviors of AAMSM recruited online from Washington, DC. According to study results, AAMSM engaged in HIV sexual risk behaviors with partners of both genders that frequently place those individuals at-risk for HIV acquisition and transmission. High-risk sexual practices were common in the study sample of AAMSM; more than 50% reported engaging in anal intercourse with male partners in the past 3 months. Nearly 50% of the participants reported rarely or never wearing a condom, and most reported sex while using drugs and alcohol. These findings were consistent with Kelly et al. (2013), Hampton et al. (2012), and Hall et al. (2013). Each set of researchers reported that 50% or more of participating MSM had recently engaged in a wide variety of HIV sexual risk behaviors. Kelly et al. reported that 45% of the 210 AAMSM surveyed had "engaged in unprotected anal intercourse (UAI) in the preceding three months" (p. 56), and 16% reported having UAI with multiple men in the preceding 3 months. Kelly et al. added that these sexual high-risk behaviors were common despite the fact that nearly 40% of men in the study sample reported being HIV positive. Kelly et al. stated that while some variation in demographic and behavioral characteristics across the cities was observed, AAMSM's HIV risk

behavior patterns were similar in different cities.

Age, alcohol and drug use, and condom attitude were significantly related to HIV risk behavior. These findings were consistent with Kelly et al. (2013) and Hall et al. (2013), both of whom studied AAMSM. Hampton et al. (2013) reported that age, education, and sexual identity were significantly correlated with unprotected sexual behaviors. Hampton et al. found that weaker perceived peer norms for condom use, lower intent for condom use, and use of illicit drugs and alcohol were significantly and consistently associated with the frequency of UAI and the number of male partners whom UAI occurred with. Kelly et al. added that recent use of marijuana, cocaine/crack, or poppers was correlated with frequency of UAI acts, and the use of prescription opiates predicted UAI with a greater number of men.

Hypothesis 1

H_{01}: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM.

The first research question and hypothesis were designed to examine whether depressive symptoms were associated with HIV risk behaviors as a means of testing whether or not AAMSM used HIV sexual risk behaviors as a maladaptive coping strategy. According to study findings, there was no statistically significant relationship between depressive symptoms and HIV sexual risk behaviors. These findings are consistent with a study of Asian MSM (Yoshikawa et al., 2004) and inconsistent with another study of an AAMSM and HIV risk behavior (Reisner et al., 2009).

Hypothesis 2

H_o2: There is no significant relationship between depression and HIV risk behavior in a sample of AAMSM after accounting for the variance associated with covariates: age, alcohol and substance use, condom attitudes, HIV knowledge, and income.

The second research question and hypothesis were designed to examine whether depressive symptoms were associated with HIV risk behaviors, after controlling for age, alcohol and substance use, condom attitudes, HIV knowledge, and income. There was no significant relationship between depressive symptoms and HIV risk behaviors after controlling for covariates. These findings are consistent with a study of Asian MSM (Yoshikawa et al., 2004) and inconsistent with another study of an AAMSM and HIV risk behavior (Reisner et al., 2009).

While depressive symptoms were not associated with HIV sexual risk behavior, three of five covariates were significantly related to HIV sexual risk behaviors. First, age had a significant positive correlation to HIV sexual risk behavior; as age increased, HIV sexual risk behavior increased. Second, alcohol and drug use was significantly and positively related to HIV sexual risk behavior; as alcohol and drug use increased, HIV sexual risk behavior increased. Third, condom attitudes were significantly and positively related to HIV risk behavior; as condom attitudes scores increased, there was a corresponding increase in HIV sexual risk behavior. Finally, there were no significant relationships between HIV knowledge and income with HIV sexual risk behavior.

The findings that age, and alcohol and drug use were significantly related to HIV risk behavior were consistent with Kelly et al. (2013) and Hall et al. (2013), both of

whom studied AAMSM. Hampton et al. (2013) reported that age, education, and sexual identity were significantly correlated with unprotected sexual behaviors, specifically UAI. Kelly et al. found that recent use of marijuana, cocaine/crack, or poppers was correlated with frequency of UAI acts, and use of prescription opiates predicted UAI with a greater number of men. The finding that condom attitude was significantly positively associated with HIV sexual risk behavior was inconsistent with previous research and counterintuitive. Kelly et al. and Hampton et al. found that weaker perceived peer norms for condom attitude and lower intent for condom use were significantly positively associated with UAI frequency and the number of male partners with whom UAI occurred.

The counterintuitive finding that condom attitudes were significantly and positively related to HIV risk behavior may be an artifact of the survey question wording. Kelly et al. (2013) used an 8- item survey with a 3-point Leikert scale to measure attitudes toward safer sex and condoms with Cronbach's alpha = .75. The survey was tested for construct reliability and had been used in previous studies. An example of a survey question was "Condoms destroy the pleasure of sex" (Kelly et al., 2013, p. 54). In this study, I relied on two questions drawn from the RBQ based on their relevance to the construct of condom attitudes (Appendix D). While the questions were relevant, they did not constitute a previously validated RBQ subcategory. The counterintuitive finding implies that the two question survey used in the present study did not reliably capture participant's condom attitudes. To eliminate this possibility in future research on HIV sexual risk behavior, researchers should rely on a previously validated survey instrument

for measuring condom attitudes.

The theoretical frame for the study would have supported the outcome that depressed AAMSM would engage in HIV sexual risk behavior at a higher frequency due to a sense of hopelessness, or associated learned helplessness, and this was not confirmed. The theory was based on the work of Beck on the cognitive theory of depression that suggested a potential link between depression and HIV sexual risk behavior (Beck, 1976; Clark & Beck, 1999). Beck suggested that self-destructive behaviors, such as HIV sexual risk behavior, are derived from dysfunctional attitudes and thoughts associated with depression. The pervasiveness of the self-destructive HIV sexual risk behavior among AAMSM suggests an as yet poorly understood psychological mechanism that needs further study. I stopped reviewing here due to time constraints. Please go through the rest of your chapter and look for the patterns I pointed out to you. I will now look at your references.

Limitations of the Study

This study had a number of limitations. The study sample size was relatively small and may have been insufficient to detect small effects. The modest sample size and the convenience composition means that the findings may not be representative of all AAMSM, or even in Washington, D.C., where the study sample was drawn. HIV sexual risk behavior is a complex phenomenon and researchers previously identified a significant number of risk factors that were not controlled for in this study including socio-economic status, genetics, race, and a number of psychological variables that have, in other studies, predicted HIV risk behavior (Khan et al., 2012; Kelly et al., 2013;

Hampton et al., 2012; Newcomb & Mustanski, 2013; Niyonsenga et al., 2013). Second, the study was limited to males that self-identified as engaging in sexual contact with other males. Continuing social stigma associated with homosexuality may have biased the sample by excluding bi-sexual males, or males secretly in homosexual relationships. Third, the use of an online survey limited the sample to individuals with a computer and Internet access, which may have biased the sample by excluding lower income or less educated individuals. Finally, any correlation between BDI scores and RBQ scores might be an artifact of an unmeasured covariate.

External validity refers to the extent to which a study's results can be generalized (Leedy & Ormrod). The research design includes standardized instruments to measure the dependent and independent variables and a sample size powered to generate statistically significant results to address external validity. The non-random convenience sample of 108 AAMSM participants was limited to Washington, DC. While the self-administered RBQ and BDI were designed for persons reading at the 8th grade level, it is possible that English as a Second Language participants did not fully understand the questions. It is also possible that illicit substance, alcohol use, and HIV sexual risk behavior was underreported due to self-denial or stigma. The study findings might not generalize to other age groups, countries, or cultures (Leedy & Ormrod, 2012).

Recommendations

Despite these limitations, the study findings can be used to advise the development of future research to advance knowledge on HIV transmission in the AAMSM community. Studies are needed to further factors related to the persistent disproportionate HIV

incidence among AAMSM. Through this study I have identified several factors that deserve attention from community members and policy makers involved with HIV prevention interventions for AAMSM. Among them, prevention interventions should target condom attitudes, and alcohol and substance use as factors to mitigate HIV transmission in the AAMSM community. Each factor has been predicted by various behavioral science theories and can therefore be modified using a variety of psychological interventions. I also support Kelly et al (2013) recommendation that interventions are needed to strengthen peer norms concerning condom attitudes are needed in the field, and that interventions need to address substance use as it relates to HIV sexual risk behavior.

In this study I evaluated African Americans' HIV sexual risk behavior alone, rather than in comparison to other subpopulations such as Whites and Latinos. Existing literature on racial differences is relatively dated, and the majority of those older studies found AAMSM to be no more likely than Whites or Latinos to engage in HIV sexual risk behaviors, primarily UAI (Denning & Campsmith, 2005). The findings were confirmed across age groups, U.S. geographies, and among HIV-positive subsamples. Future research is needed to identify factors associated with the elevated HIV prevalence in order to devise specific interventions for AAMSM. A large controlled study with participants drawn from African American, White and Latino populations would serve to identify differences that lend themselves to use in strategies to reduce the epidemic level of HIV incidence in the African American MSM population. That in its own is social change at its best.

A larger scale study on the relationship between depression and HIV sexual risk behavior is needed to control for socio-economic status, ethnicity, and a number of psychological variables, which were not measured. Future study participants should also include individuals without Internet access, and those whose reading level is below 8th grade, the standard for the BDI. A larger sample would be necessary to power a study that includes all the previously identified covariates and isolates the BDI scores.

Implications

Persistent racial disparities in HIV prevalence in the United States represent an enormous social and public health problem. While African Americans represent 12.3% of the population (Census Bureau, 2012), they accounted for more than half of new HIV cases reported in 2013, an infection rate seven times higher than that for Whites, and 2.2 times greater than that for Latinos (CDC, 2012), and the ratios for African American males is even higher. As a result, HIV infection was the second leading cause of death for AAMSM (CDC, 2012). As has been the case for more than a decade, at the close of 2014, AAMSM accounted for the largest number of existing HIV+ cases and new HIV infections in 2014, despite a decline in the number of new HIV case in 2014 (CDC, 2014).

This study's findings indicate that a majority of AAMSM engage in HIV sexual risk behaviors with partners of both genders. The incidence and severity of these patterns of HIV sexual risk behaviors serve to explain the persistent elevated HIV positive rates for African American men and women, as previously suggested in research on populations of AAMSM (Hall et al., 2013; Kelly et al., 2013; Millett et al., 2006). HIV sexual risk

behavior among AAMSM was found in this study and others to be associated with age, alcohol and drug use, condom attitudes, HIV knowledge, and income. Prevention and intervention initiatives for mitigating the spread of HIV among AAMSM need to reflect the increased risk associated with age, alcohol and drug use, condom attitudes, HIV knowledge and income. This study included men of different generations, and varied incomes, condom attitudes, and relationship status. Condom attitudes was of particular importance due to its power to significantly reduce the spread of HIV with a single act without changing other, more difficult to change, behaviors. Counterintuitively, condom attitudes were significantly and positively associated with HIV sexual risk behavior, an outcome that was inconsistent with prior research and needs further investigation. As condom attitudes increased, HIV sexual risk behavior increased. As alcohol and drug use increased, HIV sexual risk behavior increased. Age also had a significant positive association with HIV sexual risk behavior. It could be that the highest risk population was older AAMSM who were also alcohol and drug users more likely to participate in HIV sexual risk behaviors. Hence, initiatives and intervention efforts and goals targeting older AAMSM to alter behaviors associated with alcohol and drug use could most efficiently mitigate HIV risk behavior.

Conclusion

The study findings did not reveal a significant association between depression and HIV sexual risk behavior for a sample of AAMSM. However, a crisis remains. AAMSM remain 71 times more likely to contract an HIV infection than the general U.S. population, and too few studies have been conducted to understand the causes and

contexts for this fact. HIV sexual risk behavior rates above 50% recorded in this study were consistent with earlier research on AAMSM. Although depression was not associated with HIV sexual risk behavior, risk factors such as age, and alcohol and drug use were positively significantly associated with HIV sexual risk behavior. Targeting older AAMSM and implementing programs that are focused on reducing alcohol and drug use could be beneficial in reducing HIV sexual risk behaviors. Developing strategies to reduce alcohol and drug use could reduce HIV sexual risk behavior and reduce the burden on the healthcare system resulting in social change and an overall improved quality of life for the AAMSM community.

The study population may have been skewed due to the absence of those without access to a computer and internet connection. Younger participants between 20 to 25 years of age were also underrepresented relative to their proportion in the gay population. These sampling issues might be responsible for not finding a significant association between depression and HIV sexual risk behavior in the 108 members of this cohort of AAMSM.

Society's sense of urgency for reducing HIV transmission among AAMSM seems to have dissipated. It may be that improvements in HIV treatments that extend patients' lives, or the decade's long search for a cure; have reduced the perception that a crisis exists (Ilina et al 2012). HIV transmission among the AAMSM population remains a nationwide health crisis that deserves ongoing resources and research. While this study adds to the body of knowledge, much more needs to be done to mitigate the spread of HIV.

Perhaps the most important finding was the confirmation of previous researchers finding that HIV sexual risk behavior is pervasive in the AAMSM community. Prior research into HIV sexual risk behavior was descriptive rather than potentially prescriptive, describing correlations rather than attempting to identify causality (Hall et al., 2013; Kelly et al., 2013; Millett et al., 2006). It is clear from the literature that poverty, alcohol and drug use/abuse, and poor attitudes are correlated with HIV risk behavior, but this does little to explain the magnitude of the HIV sexual risk behavior in the AAMSM community, or causality.

The present study was an attempt to identify underlying causality in the hope that an effective intervention might be developed. A certain amount of concern was expressed when depression, a psychological disorder, was chosen as the main study variable due to the fear that an associated mental disorder with gay sex might be viewed as a stereotype. While the study did not yield an association between depression and HIV sexual risk behavior, it may inspire others to conduct research using the study variable depression. Stereotypical views should not be a primary concern while too many members of the AAMSM community are still dying from a preventable disease.

With that said, I am hopeful that this study will lead to further research into HIV sexual risk behaviors among AAMSM, and in turn, give rise to effective strategies and programs that will address age, alcohol and drug use and condom attitudes that will decrease the prevalence of HIV sexual risk behaviors.

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Appendix A: HIV Risk Behavior Questionnaire

Instructions:
For this set of questions, please circle your response.

Q1. How old are you? (Age last birthday)
_____ (years)

Q2. What is your sex?
1. Female
2. Male

Q3. What is your class standing?
1. Freshman
2. Sophomore
3. Junior
4. Senior
5. Graduate Student
6. Other

Q4. What is your current year in college?
1. 1st year
2. 2nd year
3. 3rd year
4. 4th year
5. 5th year
6. 6th year
7. Other

Q5. Are you a full-time student?
1. Yes
2. No

Q6. How do you describe yourself?
1. White–not Hispanic
2. Black–not Hispanic
3. Hispanic or Latino
4. Asian or Pacific Islander
5. American Indian or Alaskan Native
6. Other

Q7. What is your marital status?
1. Never been married
2. Married
3. Separated
4. Divorced
5. Widowed

Q8. Where do you currently live?
1. College dormitory or residence hall
2. Fraternity or sorority house
3. Other university/ college housing
4. Off-campus house or apartment
5. Parent/guardian's home
6. Other

Q9. Are you a member of a social fraternity or sorority?
1. Yes
2. No

Q10. How old were you when you had your first drink of alcohol other than a few sips?
1. I have never had a drink of alcohol other than a few sips
2. 12 years old or younger
3. 13 or 14 years old
4. 15 or 16 years old
5. 17 or 18 years old
6. 19 or 20 years old
7. 21 to 24 years old
8. 25 years old or older

Q11. During the past 30 days, on how many days did you have at least one drink of alcohol?
1. 0 days
2. 1 or 2 days
3. 3 to 5 days
4. 6 to 9 days
5. 10 to 19 days
6. 20 to 29 days
7. All 30 days

Q12. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?
1. 0 days
2. 1 day
3. 2 days
4. 3 to 5 days
5. 6 to 9 days
6. 10 to 19 days
7. 20 or more days

Q13. During your life, how many times have you used marijuana?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 to 99 times
7. 100 or more times

Q14. How old were you when you tried marijuana for the first time?
1. I have never tried marijuana
2. 12 years old or younger
3. 13 or 14 years old
4. 15 or 16 years old
5. 17 or 18 years old
6. 19 or 20 years old
7. 21 to 24 years old
8. 25 years old or older

Q15. During the past 30 days, how many times did you use marijuana?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 or more times

Q16. During your life, how many times have you used any form of cocaine, including powder, crack, or freebase?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 to 99 times
7. 100 or more times

Q17. How old were you when you tried any form of cocaine, including powder, crack, or freebase, for the first time?
1. I have never tried cocaine
2. 12 years old or younger
3. 13 or 14 years old
4. 15 or 16 years old
5. 17 or 18 years old
6. 19 or 20 years old
7. 21 to 24 years old
8. 25 years old or older

Q18. During the past 30 days, how many times did you use any form of cocaine, including powder, crack, or freebase?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 or more times

Q19. During your life, how many times have you used the crack or free-base forms of cocaine?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 to 99 times
7. 100 or more times

Q20. During your life, how many times have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 to 99 times
7. 100 or more times

Q21. During your life, how many times have you taken steroid pills or shots without a doctor's prescription?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 to 99 times
7. 100 or more times

Q22. During your life, how many times have you used any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 to 99 times
7. 100 or more times

Q23. During the past 30 days, how many times have you used any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 or more times

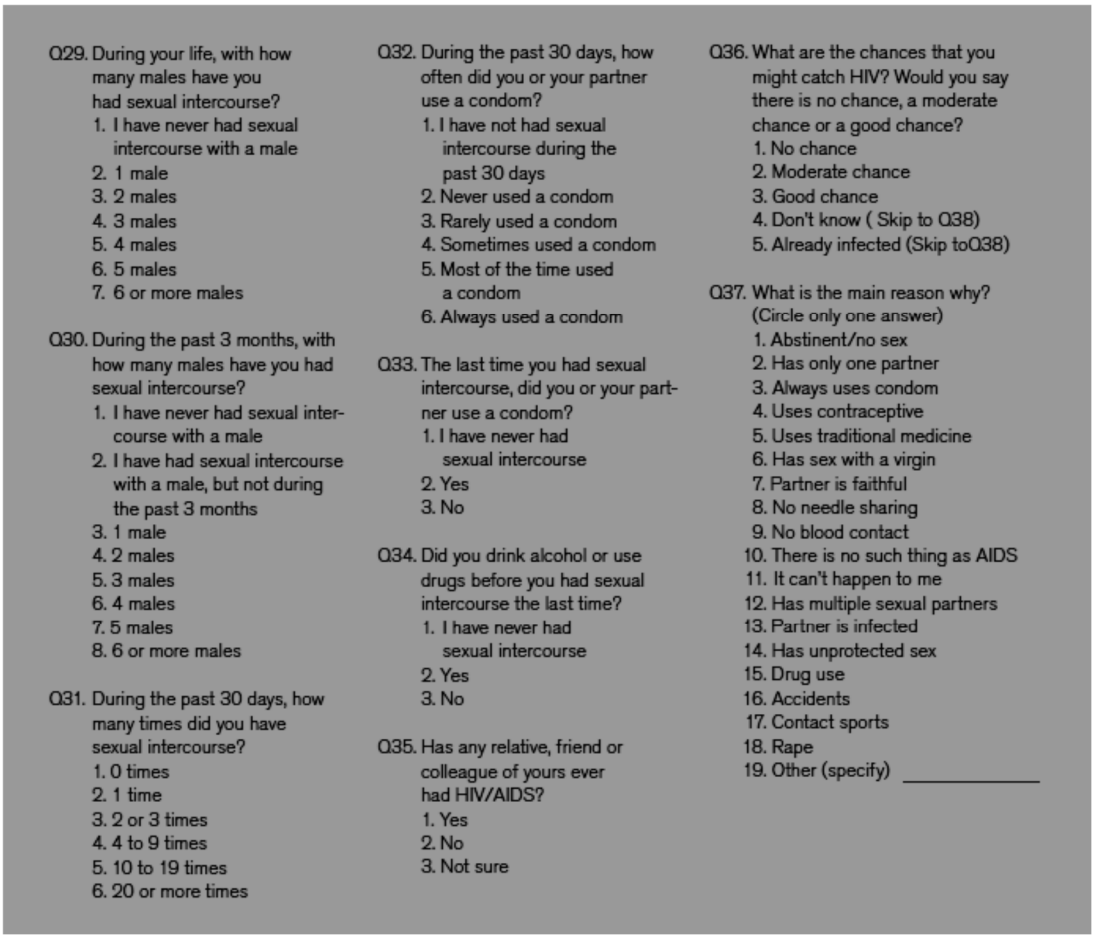
Q24. During the past 30 days, how many times have you used any illegal drug in combination with drinking alcohol?
1. 0 times
2. 1 or 2 times
3. 3 to 9 times
4. 10 to 19 times
5. 20 to 39 times
6. 40 or more times

Q25. During your life, how many times have you used a needle to inject any illegal drug into your body?
1. 0 times
2. 1 time
3. 2 or more times

Q26. How old were you when you had sexual intercourse for the first time?
1. I have never had sexual intercourse
2. 12 years old or younger
3. 13 or 14 years old
4. 15 or 16 years old
5. 17 or 18 years old
6. 19 or 20 years old
7. 21 to 24 years old
8. 25 years old or older

Q27. During your life, with how many females have you had sexual intercourse?
1. I have never had sexual intercourse with a female
2. 1 female
3. 2 females
4. 3 females
5. 4 females
6. 5 females
7. 6 or more females

Q28. During the past 3 months, with how many females have you had sexual intercourse?
1. I have never had sexual inter course with a female
2. I have had sexual intercourse with a female, but not during the past 3 months
3. 1 female
4. 2 females
5. 3 females
6. 4 females
7. 5 females
8. 6 or more females



Q29. During your life, with how many males have you had sexual intercourse?
1. I have never had sexual intercourse with a male
2. 1 male
3. 2 males
4. 3 males
5. 4 males
6. 5 males
7. 6 or more males

Q30. During the past 3 months, with how many males have you had sexual intercourse?
1. I have never had sexual intercourse with a male
2. I have had sexual intercourse with a male, but not during the past 3 months
3. 1 male
4. 2 males
5. 3 males
6. 4 males
7. 5 males
8. 6 or more males

Q31. During the past 30 days, how many times did you have sexual intercourse?
1. 0 times
2. 1 time
3. 2 or 3 times
4. 4 to 9 times
5. 10 to 19 times
6. 20 or more times

Q32. During the past 30 days, how often did you or your partner use a condom?
1. I have not had sexual intercourse during the past 30 days
2. Never used a condom
3. Rarely used a condom
4. Sometimes used a condom
5. Most of the time used a condom
6. Always used a condom

Q33. The last time you had sexual intercourse, did you or your partner use a condom?
1. I have never had sexual intercourse
2. Yes
3. No

Q34. Did you drink alcohol or use drugs before you had sexual intercourse the last time?
1. I have never had sexual intercourse
2. Yes
3. No

Q35. Has any relative, friend or colleague of yours ever had HIV/AIDS?
1. Yes
2. No
3. Not sure

Q36. What are the chances that you might catch HIV? Would you say there is no chance, a moderate chance or a good chance?
1. No chance
2. Moderate chance
3. Good chance
4. Don't know (Skip to Q38)
5. Already infected (Skip toQ38)

Q37. What is the main reason why? (Circle only one answer)
1. Abstinent/no sex
2. Has only one partner
3. Always uses condom
4. Uses contraceptive
5. Uses traditional medicine
6. Has sex with a virgin
7. Partner is faithful
8. No needle sharing
9. No blood contact
10. There is no such thing as AIDS
11. It can't happen to me
12. Has multiple sexual partners
13. Partner is infected
14. Has unprotected sex
15. Drug use
16. Accidents
17. Contact sports
18. Rape
19. Other (specify) _____

Source: (Balogun & Abiona, 2010).

Appendix B: Beck Depression Inventory-II

Beck's Depression Inventory

This depression inventory can be self-scored. The scoring scale is at the end of the questionnaire.

1.
- 0 I do not feel sad.
- 1 I feel sad
- 2 I am sad all the time and I can't snap out of it.
- 3 I am so sad and unhappy that I can't stand it.

2.
- 0 I am not particularly discouraged about the future.
- 1 I feel discouraged about the future.
- 2 I feel I have nothing to look forward to.
- 3 I feel the future is hopeless and that things cannot improve.

3.
- 0 I do not feel like a failure.
- 1 I feel I have failed more than the average person.
- 2 As I look back on my life, all I can see is a lot of failures.
- 3 I feel I am a complete failure as a person.

4.
- 0 I get as much satisfaction out of things as I used to.
- 1 I don't enjoy things the way I used to.
- 2 I don't get real satisfaction out of anything anymore.
- 3 I am dissatisfied or bored with everything.

5.
- 0 I don't feel particularly guilty
- 1 I feel guilty a good part of the time.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6.
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7.
- 0 I don't feel disappointed in myself.
- 1 I am disappointed in myself.
- 2 I am disgusted with myself.
- 3 I hate myself.

8.
- 0 I don't feel I am any worse than anybody else.
- 1 I am critical of myself for my weaknesses or mistakes.
- 2 I blame myself all the time for my faults.
- 3 I blame myself for everything bad that happens.

9.
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10.
- 0 I don't cry any more than usual.
- 1 I cry more now than I used to.
- 2 I cry all the time now.
- 3 I used to be able to cry, but now I can't cry even though I want to.

Source: Becket al., 1996.

Appendix C: Study Recruitment Letter

I am a PhD student at Walden University and am currently seeking African American men who sleep with men to participate in a research study on AIDS transmission and depression. Participants will be asked about their current mood and HIV risk behavior using anonymous online surveys that can be completed in approximately 20 minutes. There will be no treatment involved; if one chooses to participate, the only requirement is to complete the online surveys.

The purpose of the study is to examine the relationship between depression and HIV risk behaviors for African American men who sleep with men. The study aims to identify new interventions to help prevent the spread of AIDS. No compensation is available; however, participants often comment that they enjoy being a part of research studies because their input will help reduce the risk of AIDS transmission in the community.

Interested candidates can logon to a portal at _____ to participate in the study. Simply follow the instructions and complete the survey. Participation will be anonymous; no personally identifiable information is required.

Appendix D: Condom Attitude Questions

1. During the past 30 days, how often did you or your partner use a condom?

   - I have not had sexual intercourse during the past 30 days
   - Never used a condom
   - Rarely used a condom
   - Sometimes used a condom
   - Most of the time used a condom
   - Always used a condom

2. The last time you had sexual intercourse, did you or your partner use a condom?

   - I have never has sexual intercourse
   - Yes
   - no