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Associations Between Depression, Social Support, and Sexual Risk-Taking Behaviors Among HIV-Infected Adult Black Women in the Southeastern United States

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Abstract

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by

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BA, University of North Carolina, Wilmington, 1996

MEd, East Carolina University, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

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Abstract

African Americans continue to carry the burden of new HIV cases and sexually transmitted infections and other comorbidity health problems more than any other social group in the United States. Except for New York; Washington, DC; and Maryland, 65% of all new HIV cases are in the Southern states. The U.S. Southern states make up 38% of the U.S. population, yet approximately 51% of annual HIV diagnoses are from the Southern U.S. states. In the Southern states, AIDS is among the leading cause of death for African American women. A gap exists in the associations of depression, social support, and sexual risk-taking behaviors of adult Black women in the South. The purpose of this study was to examine associations between depression, social support, and sexual risk behaviors among adult HIV-infected African American women in the Southeastern United States. The social ecological model was the framework. Secondary data were retrieved from Women Interagency HIV Study (WIHS) public data sets. A total of 123 cases from HIV-seropositive African American women enrolled in WIHS Florida, Georgia, and North Carolina sites were used in the study. Binary logistic regression results showed statical significance between depression and lack of condom use during anal sex ($p = 0.05$, Fisher's exact test) and poor social support and no barrier method during oral sex ($p = 0.043$). There was no statistical significance between depression and vaginal sex without a condom or number of sexual partners. Findings could support positive social change for public health research and intervention strategies in HIV reduction among Black women on an individual, community, and societal level.

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Dedication

I dedicate this dissertation to my two lovely daughters, Amanda Matthews and Bridget Wells; my two incredibly amazing, funny, and tenacious granddaughters, Olivia Joy and Grace Makena; my dear mother, Julia Ireri; my late father, John Ireri; my God mother, Annie Brown; and my two poochies, Mimi and Laci. Lastly, to my love, Chris, who has been by my side through all the ups and downs. Thank you for your perpetual support, inspiration, and unconditional love.

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First and foremost, I would like to thank God for keeping me alive and healthy during this dissertation process. I acknowledge the dedication and support of my dissertation chair and committee member, Dr. Peter Anderson and Dr. Chinaro Kennedy, who continued to believe in me even when I had no faith left.

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Chapter 1: Introduction to the Study

Despite the increased awareness of HIV prevalence among African Americans, there is limited research on factors associated with HIV risk-taking behaviors, depression, and social support among adult African American women in the Southeastern United States. Nearly 57% of reported new HIV diagnoses among African Americans in the South are of those between 13 and 34 years old and living at 50% below the poverty index (North Carolina Department of Health and Human Services [NCDHHS], 2021; Watkins et al., 2022). In 2020, 51% of newly reported HIV diagnoses occurred in the Southern United States, with Florida and Georgia reporting rates twice as high as the national average (Centers for Disease Control and Prevention [CDC], 2021).

The positive social change implication for this study is that it could provide additional insight into high rates of HIV infection among adult African American women in the Southern states. This could lead to expanded research and professional applications triggering a reduction in HIV infections and benefiting individuals, families, and the community.

Using data from HIV-seropositive African American women in Georgia, North Carolina, and Florida cohorts of the Women's Interagency HIV Study (WIHS), this quantitative study examined the associations between depression, social support, and sexual risk-taking behaviors of HIV-infected adult Black women in the Southeastern United States. Also included in the chapter are the background of the study, the purpose of the study, research questions and theoretical framework, the nature of the study, as well as definitions of terms, assumptions, limitations, and the significance of the study.

Background of the Study

Black women comprise about 13% of the U.S. population, yet over 63% of AIDS cases in American women are among Black women (CDC, 2021; National Minority AIDS Council, 2021; UNAIDS, 2021). Approximately 40–50% of newly diagnosed HIV cases among African American women were among adult women living within the 40–50% poverty index (NCDHHS, 2021). The continued healthcare disparity affecting Black women is a social problem that demands public health attention and further research.

The exact reason for healthcare disparities among Black women is unclear, but researchers have suggested that Black women are less likely to seek and/or receive healthcare than White women (Chinn et al., 2021). Reasons include distrust in the healthcare system, which stems from past racial injustices such as the Tuskegee experiment (Mattocks et al., 2017), fear of stigma (Okumo et al., 2017), structural and gendered racism (Cressman et al., 2020) and lack of health healthcare coverage (CDC, 2019; Chinn et al., 2021; Dale & Safren, 2020; Fletcher et al., 2019; Sophus & Mitchell, 2021; UNAIDS, 2021). Other researchers have cited trauma and lifetime stressful invents as mediators between depression and HIV-related health outcomes (Campbell, et al, 2019; Dale & Safren, 2018). According to the CDC, the highest mode of HIV transmission among Black women is via heterosexual contact followed by IV drug use (CDC, 2021).

The Southern states make up 38% of the U.S. population, yet approximately 51% of annual HIV diagnoses are from the Southern U.S. states. According to the North

Carolina AIDS Action Network (NCAA), since the pandemic, there has been a 97% decrease in HIV testing and fewer HIV diagnoses in 2020, and a 72% decrease in people taking pre-exposure prophylaxis (PrEP; NCAA, 2022). Nearly 57% of reported new HIV diagnoses among African Americans in the South are of those between 13 and 34 years old and living at 50% below the poverty index (NCDHHS, 2021; Watkins et al., 2022).

According to the Georgia Department of Health (GDH, 2022), 71% of HIV diagnoses in Georgia in 2019 were among Blacks 13 years and older. In the state of Florida, the number of people diagnosed with HIV was 116,698 in 2019, of which 38% were Blacks (Florida Health, 2021). The majority of literature on depression and HIV among African American women in the South appears to be clustered around adolescents. Some researchers argue that Black women experience depression more than White women and are less likely to acknowledge it due to experienced trauma and structural socioeconomic inequalities and gendered racism (De Olivera et al., 2020). Literature on HIV-infected African Americans in the Southern United States is concentrated on men who have sex with men (MSM). Social-support-related literature on Black women living with HIV in the South has either been qualitative (Koch et al., 2022), mentioned social support but focused on other related variables (Relf et al., 2019), or used a small sample size (Cressman et al., 2022; Koch et al., 2022).

A gap in the literature exists on the associations between depression, social support, and sexual risk-taking behaviors of HIV-infected adult Black women in the South (Ogburn, Schoenbach,& Edmonds, 2018; Hill, Huff & Chumbler, 2018; Fletcher

et al., 2019; Thames et al., 2018). A thorough literature search on associations between depression, social status, and sexual risk behaviors of adult Black women yielded few results. The majority of studies on depression and HIV among African Americans in the South have been clustered around adolescents, despite nearly 51% of new HIV diagnoses occurring in individuals between 13 and 24 years old in 2019 (NCDHHS, 2021; Watkins et al., 2022). Because there is a gap in the literature on depression, social support, and sexual risk-taking behaviors (vaginal or anal intercourse without a condom) of adult HIV-infected Black women, the purpose of this study was to fill this gap and examine associations between depression, social support, and sexual risk behavior of adult HIV-infected Black women in the Southeastern United States.

Problem Statement

Over half of the people living with HIV (PLWH) in the United States are over 50 years of age, and the numbers continue to climb due to age and HIV-related comorbidities (D'Souza et al., 2019). Black women, more than any other minority social group in the United States, have been negatively affected by HIV/AIDS, sexually transmitted infections, and mortality rates 15 times higher than that of White women (CDC, 2021; Nydegger et al., 2020). The Southern states make up 38% of the U.S. population, yet approximately 51% of annual HIV diagnoses are from the Southern U.S. states (CDC, 2019). HIV-infected Black women in the Southeastern United States are more likely to miss HIV treatment visits and tend to have worse antiretroviral therapy (ART) adherence (Chapman Lambert et al., 2022). There is limited literature on HIV care

and support among adult/older Black women, particularly in the Southeastern United States.

Purpose of the Study

The purpose of this study was to examine associations between depression, social status, and sexual risk behavior of adult HIV-infected Black women in the Southeastern United States. This descriptive cross-sectional quantitative study could generate positive social change from study results and help close the gap in the literature on continued HIV infection and mortality rates among adult Black women in the Southeastern United States. Depression, social support, and sexual risk behaviors were addressed through three different surveys and questionnaires from public data assessed through the Multicenter AIDS Cohort Study (MACS) Women's Interagency HIV Study (WIHS) Combined Cohort Study. The research questions were addressed through logistic regression data analysis.

Research Questions and Hypotheses

This study was guided by two research questions (RQs), which yielded two hypotheses indicated in the form of null and alternative hypotheses:

RQ1: Is there an association between depression (as measured by the Center for Epidemiologic Studies Depression Scale [CES-D; Andersen et al., 1994]) and sexual risk-taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected adult Black women in the Southeastern United States after controlling for socioeconomic and marital

status? $H_0$1: There is no association between depression and sexual risk-taking behaviors among HIV-infected adult Black women in the Southeastern United States after controlling for socioeconomic and marital status.

H_a1: There is an association between depression and sexual risk behaviors among adult Black women in the Southeastern United States after controlling for socioeconomic and marital status.

RQ2: Is there an association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status?

$H_0$2: There is no association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status.

H_a2: There is an association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the

Southeastern United States after controlling for socioeconomic and marital status.

Conceptual Framework

According to Babbie (2019), theories in research studies serve as firm foundations for health research and practice. Theories attempt to answer the "what" (descriptive) and the "why" (explanatory) of the research question. Theoretical frameworks are broad concepts that are used by researchers to help explain study results (Gaudet & Robert, 2018; Ravitch & Carl, 2021). The present study utilized the social ecological model (SEM) as a framework to examine contextual factors associated with depression, social support, and sexual risk-taking behaviors of HIV-infected Black women in the Southeastern United States. The SEM developed by Bronfenbrenner in 1979 is a conceptual framework based on individuals' regular interactions with sets of similar and complex environmental systems that shape behavior or character (Bronfenbrenner & Morris, 1998).

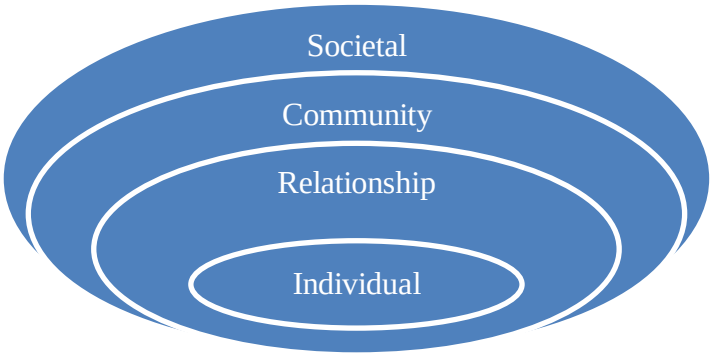
According to the SEM, individual dynamic relationships and sets of environmental systems interact to shape individuals' beliefs and knowledge about the environment on an interpersonal, intrapersonal, and societal level. Other researchers adopted the SEM, such as McLeroy et al. (1988), who studied the influence of intrapersonal, interpersonal, organizational, environmental and policy factors on health behavior. The SEM developed by the CDC was a better fitting model for this study as it relates to health behavior. The four levels included in the CDC (2021) SEM are individual, relationship, community, and societal factors. The individual factors relate to

a person's attitudes, beliefs and knowledge. Relationship factors allude to the relationship between an individual and their social network, such as family and friends. Community-level factors are those factors such as residential settings that may influence an individual's ability to make necessary changes. Last, policy-level factors include state, national and local laws and ordinances that affect individual behavior.

In this study, SEM helped highlight the association between depression, social support, and various sexual-risk taking behaviors of adult Black women in Southeastern United States. Individual factors that aligned with SEM for this study were depression and social demographic variables. Relationship factors aligned with social support and community and societal factors aligned with sexual risk-taking behaviors.

Figure 1

The Social Ecological Model



Note: Adapted from CDC (2018). *The Socio-Ecological Model: A Framework For Prevention.*

Researchers have begun using the SEM as a framework for studying minority groups' sexual risk-taking behaviors. Studies have included sexual attitudes, HIV-related knowledge and beliefs of heterosexual Black women (Aidoo-Frimpong et al.,2021;

Walter & Morocho, 2021), and HIV stigma and lack of social support among HIV-infected individuals (Kent et.al, 2019). Depression as a mental health illness is influenced by interactions between individual, social, and societal factors (Eriksson et al., 2018; Liao, Wei & Yin, 2020). Perceived HIV-related stigma and lack of social support increase depressive symptoms among HIV-infected Black women due to social isolation. These societal influences prevent Black women from utilizing available healthcare resources such as follow-up after HIV diagnosis (Banks et al., , 2020).

In this study, I explain how HIV infection rates among adult Black women may be driven by community factors such as sexual risk-taking behaviors, which sequentially influence individual factors (depression) and relationship factors (social support) and vice versa as these factors overlap/intersect, creating a cause–effect relationship.

According to De Olivera et al. (2020), Black women experience depression more than White women and are less likely to acknowledge it due to experienced trauma, structural socioeconomic inequalities, and gendered racism. High-risk sexual behaviors such as having multiple partners, unprotected sexual intercourse with infected persons, lack of condom use, and drug use have been cited as contributing factors to HIV prevalence among Black women in the South (Banks et al., Hensel & Zapolski, 2020; Boart et al., 2019; Kimmel et al., 2018; Sophus & Mitchell, 2021).

The objectification theory (Fredrick & Roberts, 1997) would have been the ideal framework to help understand the link between depression, social status, and sexual risk-taking behaviors (vaginal and anal intercourse without a condom) if the target population had been adolescent girls and other variables had been included in this study. The theory

posits that health problems such as eating disorders, depression, and sexual dysfunctions in women are caused by societal pressures on a woman's physical appearance. Self-objectification, which is greatly influenced by societal views on outward physical beauty, may promote sexual objectification in some women (Moradi & Tebbe, 2022). In general, Black women are socioeconomically disadvantaged, are less likely to seek healthcare, are more likely to be involved in multiple relationships, and are more likely to experience discrimination than White women (Moradi & Tebbe, 2022). Although older Black women may not be preoccupied with insecurities of physical appearance as much as younger Black women, their lived experiences of gendered racial microaggression experiences generate waves of emotional upheaval (Dunn et al., 2019). Depressive episodes, self-isolation due to such body image insecurities, and lack of social support may lead to sexual risk-taking behaviors and marked HIV infection rates among older Black women.

Nature of the Study

I employed a nonexperimental cross-sectional quantitative design to identify any associations between depression, social support, and sexual risk-taking behaviors (vaginal or anal intercourse without a condom) among African American women in the Southeastern United States. Cross-sectional designs are ideal for identifying associations between several variables and generating hypotheses at one time. Cross-sectional designs are also less expensive, and a large amount of data can be collected at one time (Creswell, 2019). Sociodemographic variables including socioeconomic status and education level were included as moderators between depression, social support, and sexual risk-taking

behaviors. To address the research questions, the specific research design included descriptive, logistic regression data analysis strategies. Logistic regressions are ideal for assessing the effect of independent or predictor variable(s) on a dependent or outcome variable (Creswell, 2019). The independent variables were depression (as measured by the CES-D) and social support (as measured by the MACS/WIHS three-item social support scale). The dependent variable was sexual risk-taking behaviors (vaginal or anal sex without a condom), measured by a seven-item Life Time Male Partners sexual behavior questionnaire (D'Souza et al., 2019). Public data sets from the MACS/WIHS Combined Cohort Study (MWCCS) were accessed with permission, but only data from the WIHS cohort study were used (the MACS/WIHS combined study included both men and women) to test the associations between depression, social support, and sexual risk-taking behaviors of adult Black women in the Southeastern United States. The target population was HIV-infected African American women enrolled in the WIHS in Florida, Georgia, and North Carolina clinical research sites. The sampling age frame from the current MACS/WIHS cohort study was adult women 18 years old and older, with only 4% being under 35 years of age (D'Souza et al., 2021).

For data analysis, I used a descriptive statistical analysis in SPSS (version 27.0) to conduct a multiple linear logistic regression, to test the relationship between dependent variable sexual-risk taking behaviors (as measured by a seven-item Life Time Male Partners sexual behavior questionnaire) and the independent variables depression (as measured by the CES-D) and social support (as measured by the 18-item Social Support

questionnaire). Multiple regressions help determine the degree of a relationship and statistical significance between variables (Frankfort-Nachmias & Leon-Guerrero, 2020).

Definitions

AIDS: The acquired immune deficiency syndrome (AIDS) caused by HIV. Markedly destroys CD4 T lymphocytes, reduces T cells, and causes the body's immune system to turn on itself. Infected persons become susceptible to opportunistic infections. Once the T-cell count drops below 200, an individual is said to have AIDS (WHO, 2021).

Antiretroviral (ARV): HIV drugs for the prevention of HIV replication (National Institutes of Health [NIH], 2022).

Depression: Common mental disorder that can cause mood swings, irritability, anxiety, loss of energy, fatigue, sadness, and lack of concentration and motivation (Paykel, 2022).

Gendered racism: Combined discrimination against a race and gender (e.g., discrimination against Black women; Jones et al., 2022; Wright et al., 2022).

Heterosexual contact: Sexual interactions, engagement, and intercourse with persons of the opposite gender (Walter & Morocco, 2021).

Highly active antiretroviral therapy (HAART): The combination of antiretroviral drugs to inhibit the spread of HIV and delay the weakening of the immune system caused by the virus (Ludema et al., 2018).

Human immunodeficiency virus (HIV): The virus that causes AIDS. HIV interferes with the body's ability to fight off disease-causing agents or pathogens (AIDS.Org, 2021).

I*ntravenous drug user (IVDU)*: A person who injects drugs into their system with a hypodermic needle for recreational use (D'Souza et al., 2021).

Sexually transmitted infection (STI): Infectious disease spread from person to person via sexual contact. STIs include chlamydia, gonorrhea, syphilis trichomoniasis, and HIV (CDC, 2022).

Sexual risk-taking behaviors: Sexual intercourse (vaginal, anal, or oral) without a condom with one or multiple partners, and/or sexual activities coinciding with abuse of alcohol or other drugs (Zhang, et al., 2021).

Socioeconomic status (SES): An individual's position or rank on the socioeconomic scale based on income, education, and occupation. There is a correlation between SES and health behavior (Kivimaki et al., 2020).

Social support: Assistance or help provided by family, friends, and community members through various social interactions. Perceived social support is the most common social support index measurement (Li et al., 2021).

Assumptions

Because I used deidentified data from the WIHS, which included completed patient-reported outcomes (PRO) surveys that participants in the WIHS cohort study completed, I assumed that the data were reliable and contained strong internal validity. I also assumed that participants answered all questions honestly.

Scope and Delimitations

This study was geared towards adult HIV-infected Black women from the MACS/WIHS cohort studies in Florida, Georgia, and North Carolina. Participants in the

study were enrolled in a longitudinal cohort study and received HIV treatment and care. I chose to study the associations between depression, social support, and sexual risk-taking behaviors of adult Black women in the Southeastern United States because of the high HIV prevalence in the South (Okomu, et al., 2017; Rao et al., 2019). Additionally, literature on HIV-related depression and social support studies among older Black women is limited (Liao, 2020; Jones, et al., , 2022). Only data from HIV-infected Black women enrolled in the WIH cohort study were included. Results from this study may not be transferable to other MACS/WIH cohort study sites in the country. However, results can be used for comparative studies on Black women in other parts of the country. The SEM was used to provide insight into how individual factors (depression) and community and societal factors (social support) intersect to influence behavior (sexual risk-taking behavior).

Limitations

This study was not without limitations. I used secondary data from the MAC/WIHS cohort study, and as such the instruments and variables were fixed. I chose a cross-sectional design to increase external validity. However, because the variables were measured at the same time, establishing a causal relationship between the variables was not possible (Wang & Cheng, 2020). Only participants who identified themselves as African American or Black (non-Hispanic Black) women enrolled in the MAC/WIHS sites in Florida, Georgia, and North Carolina were included in the study. Study bias might have occurred as a result of the selective data sampling method.

Significance of the Study

People living with HIV tend to suffer from depression and anxiety, in part due to fear of stigmatization; as such, a tendency to isolate themselves is quite common among people living with HIV. Black women living with HIV continue to carry the burden of HIV care and treatment to a greater extent than their white counterparts (De Olivera et al., 2020). The significance of this study is that it could provide new scientific evidence that depression or poor mental health can influence personal sexual behavior choices of adult African American women in the Southeastern United States. Through risk reduction education and intervention strategies, the research may be instrumental in helping reduce unhealthy sexual behaviors such as unprotected sexual intercourse (condomless) with multiple partners among adult African American women in the Southeastern United States.

Although intervention programs and policies have been implemented to assist Black women in reducing HIV infection risk by addressing behavior changes such as condom use negotiation skills, assertiveness, and proper communication, Black women continue to engage in high-risk heterosexual behaviors (Adimora et al., 2018). The spread of HIV may be reduced significantly among Black women if they change certain behaviors that put them at risk for HIV infection (Avert, 2011). This study is important in that it could add insight to existing public health research by identifying other barriers to healthcare delivery in the African American community. Results from the study may help identify specific cultural interpersonal factors that contribute to HIV spread among adult Black women in Southeastern parts of the United States.

According to Walden University (2020), positive social change is "a deliberate process of creating and applying ideas, strategies, and actions to promote the worth, dignity, and development of individuals, communities, organizations, institutions, cultures, and societies." The positive social change implication for this study is that it could lead to expanded to public health research and intervention strategies in HIV reduction among Black women on an individual, community, and societal level.

Summary and Transition

In this chapter, I discussed HIV prevalence among Black women and contributing factors, which included sexual risk-taking behaviors. I discussed depression as a health implication for HIV-infected Black women due to lack of social support. I discussed the conceptual framework, the SEM, and stated the research questions and hypotheses. I discussed the nature of the study and included the study methodology, sampling methods, target population, and data analysis. Subsequently, I included terminology and discussed assumptions, scope and delimitations, limitations, and the significance of the study.

In chapter 2, I compile a review of the literature on HIV prevalence in Black women, depression, social support, and sexual risk-taking behaviors of Black women.

Chapter 2: Literature Review

Introduction

African American (Black) women continue to carry the burden of new HIV cases and STIs more than any other social group in the United States. Black women, more than any other minority social group in the United States, have been negatively affected by HIV/AIDS, STIs, and mortality rates 15 times higher than that of White women (CDC, 2021; Nydegger et al., 2020). Additionally, social-economic and environmental factors have been identified as contributors to increased HIV infection due to limited access to healthcare resources (Avert, 2021; Sophus & Mitchell, 2021). In 2019, 40% of new HIV diagnoses were among African American/Black individuals, a rate 8 times higher than that of Whites (non-Hispanic), even though Black individuals represent 13% of the U.S. population (Kaiser Family Foundation [KFF], 2022; Rao et al., 2019). Except for New York; Washington, DC; and Maryland, 65% of all new HIV cases are in the Southern states (CDC, 2019).

The majority of studies on sexual risk-taking behaviors among Black/African Americans in the South have been clustered around adolescents, even though new HIV diagnoses in North Carolina and the highest percentage of Black women living with HIV are among adults 25–39 years within the 40–50% poverty index. According to the NC HIV surveillance report, this population group also had the highest number HIV diagnosis in 2019 (NCDHHS, 2021). Black women make up 22.1% of North Carolina's population, yet 57% of new HIV diagnoses are among African Americans between 13 and 34 years old. Nearly 50% of the newly diagnosed HIV cases among African

American women in North Carolina are in individuals living below the poverty level (NCDHHS, 2021). Cultural beliefs and knowledge about HIV and safe sex, gender expectations and gender roles, HIV risk perceptions, and stigma are some of the barriers to HIV prevention and treatment among adult African Americans in North Carolina. The existing intervention programs have not been effective in reducing the number of new HIV diagnoses.

The purpose of this quantitative study was to investigate any associations between depression, social support, and sexual risk-taking behaviors of HIV-infected adult Black (non-Hispanic) women in the Southeastern United States. This study is significant in that it could provide new scientific evidence that depression or poor mental health can influence the sexual behavior choices of adult African American women in the Southeastern United States.

This review of literature is a summary of relevant research studies on depression, social support, and sexual risk behavior—specifically, lack of condom use during sexual (vaginal or anal) intercourse of adult Black women. In this chapter, I first provide an overview of HIV/AIDS and its prevalence among Black women. I also review relevant literature on depression, social support, the relationship between depression and social support, Black women and depression, and sexual risk-taking behaviors among Black women. I further provide the theoretical basis of the study and the methodology used in some of the literature as it relates to this research. I conclude the chapter with a summary and transition.

Literature Search Strategy

Several medical search engines were used to conduct the literature search. Ebsco, CINAHL, PsycINFO, Academic Search, MEDLINE, ERIC, and 360 LINK search engines provided most of the information on body image perceptions and self-esteem. Literature was searched from December 2021 to May 2022. Key words included *African American women, Black women, depression, HIV status, social support, HIV/AIDS, HIV/AIDS prevalence, Black women and depression, condom use, sexual risk-taking, sexual risk behaviors of Black women,* and *social ecological model.* A total of 1,254 relevant articles were found but were reduced to 620. After narrowing the search to *African American women, Black women, depression, HIV and Black women in the South, social support,* and *sexual risk behavior,* the end result was 52 articles. Searches on HIV/AIDS and Black women in the south yielded more results through the North Carolina State University library and the University of North Carolina health sciences library. *AIDS and Behavior, BMC Public Health*, *Sex Roles*, and *Journal of Black Studies* yielded more results on sexual risk behaviors. Depression literature came from the *Journal of Personality and Social Psychology*, *International Psychology*, *Journal of Adolescent Health,* and *Social Behavior and Personality*. ELSEVIER, SAGE, SPRINGER, and WILEY publications published the majority of these articles. The Walden University health sciences and nursing databases provided literature on HIV, depression, and sexual risk-taking behaviors, mostly among adolescent Black women. Most of the literature on sexual risk-taking behaviors targeted adolescent girls and young adult women and yielded more results on adolescent sexual deviance. The *Journal of*

Counseling Psychology, *Counseling Psychologist*, *Sexuality Research*, *Psychology of Women Quarterly*, and *Sex Roles* provided the bulk of peer-reviewed journal articles on the SEM. Direct literature was found on the relationship between depression, social support, and risky sexual behaviors among HIV-infected adult Black women 18 to 49 years of age. This review of literature is therefore a compilation of literature that provides a basis for researching a possible link between depression, social support, and sexual risk-taking behaviors of adult Black women.

Conceptual Framework

According to Ravitch and Carl (2021), conceptual frameworks provide structure and logic and are the umbrella under which all concepts of a study such as a problem statement, research questions, data collection, and data analysis nest. The conceptual framework justifies the significance and importance of the study and the study design. The SEM developed by Bronfenbrenner in 1979 is a grounding conceptual framework based on the individual regular interactions with sets of similar and complex environmental systems that shape behavior or character (Bronfenbrenner & Morris, 1998). The SEM framework helps explain individual dynamic relationships with sets of environmental systems and how these interactions shape individuals' beliefs and knowledge about the environment on interpersonal, intrapersonal, and societal levels.

Other researchers who studied the influence of intrapersonal, interpersonal, organizational, environmental, and policy factors on health behavior include McLeroy et al. (1988) and Sallis et al, (2008). The SEM developed by the CDC was a better fitting model for this study because it was a study of public health behavior. The four levels

included in the CDC (2021) SEM are individual, relationship, community, and societal factors. The individual factors relate to a person's attitudes, beliefs, and knowledge. Relationship factors allude to the relationship between an individual and their social networks, such as family and friends. Community-level factors are those factors such as residential settings that may influence an individual's ability to make necessary changes. Last, policy-level factors include the influence of state, national, and local laws and ordinances on individual behavior (Glanz et al., 2005; McClaren & Hawe, 2005; Sallis et al., 2006). In this study, the SEM served as the conceptual framework to help interpret how interpersonal, environmental, and psychological factors may intersect to directly impact depression, social support, and sexual risk-taking behaviors of HIV-infected Black women in the Southeastern United States.

In their study of the social determinants of depression among older Black women living with HIV, De Olivera et al. (2020) used the SEM to explore how intrapersonal, interpersonal, and community factors dictate the mental well-being or coping capabilities of HIV-positive Black women. The researchers argued that Black women have historically experienced more trauma and are more socioeconomically disadvantaged than White women. Black women experience depression more than White women and are less likely to acknowledge it. The researchers used a cross-sectional descriptive quantitative study design after selecting participants from a pool of larger studies from the Jackson HIV clinic in Florida and the University of Miami and Jackson Health System Office of Research on HIV-related needs for older Black women living with HIV. The sample size consisted of HIV-positive Black women 50 to 70 years old from the

Miami, Florida area. To be eligible for the study, participants needed to be able to speak and write in English or Spanish. To find out whether any significant differences existed between depression and income, education, health status, health insurance, exercise, living with a partner, social support, violence, community support, and volunteering, De Olivera et al. performed independent *t* tests and compared results between the two groups (Group 1 and Group 2). Older Black women who answered "no" to the "yes" or "no" questions and who had higher levels of depression, low income, and high school or below high school education were categorized as Group 1. De Olivera et al.'s study was the first to analyze SEM factors as determinants of depression among older Black women living with HIV. The authors concluded that interpersonal, intrapersonal, and community-level factors are significant in the onset and management of depression among older Black women living with HIV (OBLWH).

In another study, Walter and Morocho (2021) used the SEM to explain how interpersonal factors such as alcohol use/abuse negatively influence individuals' behaviors and attitudes that put them at risk for HIV infection. Although participants in this study had ample knowledge of HIV/AIDS, their attitudes were greatly influenced by others in the community or what participants had heard about HIV transmission. Banks et al. (2020) used the SEM to explain the disparities in HIV/STIT rates among heterosexual African American youth. Historical contexts and gender roles, availability of resources, and racial injustice or oppression played a role in how participants utilized available healthcare resources, how frequently HIV testing was sought, and participants' relationships with the healthcare providers. Zapolski (2020) provided theoretical evidence

on the association between individual, interpersonal, and psychological factors and HIV infections among Black women. The present study examined the impact of individual, interpersonal, psychological, and environmental factors as explained in the SEM (Bronfenbrenner & Morris, 1998) on depression, social support, and sexual risk-taking behaviors of HIV-infected Black women.

Literature Review

African American (Black) women continue to carry the burden of new HIV cases and STIs more than any other social group in the United States. Black women, more than any other minority social group in the United States, have been negatively affected by HIV/AIDS, STIs, and mortality rates 15 times higher than that of White women (CDC, 2021; Nydegger et al,, 2020). The purpose of this study was to examine associations between depression, social support (marital), and sexual risk-taking behaviors of HIV-infected adult Black women in North Carolina. A gap in the literature exists on the associations between depression, HIV status, social support (marital status), and sexual risk-taking behaviors of adult Black women. This study is significant in that it could provide new scientific evidence that depression or poor mental health can influence the sexual behavior choices of adult African American women in North Carolina. The relationship between depression and sexual risk-taking behaviors may be explained by aspects of the SEM (Bronfenbrenner, 1979).

This review of literature is a summary of relevant research studies on depression, HIV, and sexual risk behavior of adult Black (non-Hispanic Black) women. Literature to

be summarized will include depression, social support, and sexual risk behavior—specifically, lack of condom use during sexual (vaginal or anal) intercourse.

Overview of HIV/AIDS

In 2003, President George W. Bush signed the U.S. Leadership Against HIV/AIDS, Tuberculosis, and Malaria Act of 2003, a $15-billion, 5-year initiative to prevent 7 million new infections. That same year, the President's Emergency Plan for AIDS Relief (PEPFAR) was created. The money was specifically allotted to 15 countries that were most impacted by AIDS. The bill did not receive complete support from Congress, as many felt that the funds should be spent domestically to fight and treat HIV/AIDS in the United States (Avert, 2022; KFF, 2018). In 2013, Congress modified and updated the program through the PEPFAR Stewardship Act, which was followed by the 2018 PEPFAR Extension Act, which remains in effect until the 2023 fiscal year (KFF, 2018).

AIDS was first reported in the United States in 1981 among homosexual males in Los Angeles, but researchers believe that AIDS existed long before 1981 (KFF, 2021). AIDS is a chronic illness that has claimed nearly 594,500 lives since the epidemic began (KFF, 2021). In 1987, the first ART drug, zidovudine (AZT), was approved by the Food and Drug Administration (FDA), followed by Congressional approval of $30 million in funding for AZT (KFF, 2021). According to Bingham et al. (2021), the estimated lifetime HIV-related medical cost for people living with HIV in the United States is approximately $490,045, and only 63% achieve viral suppression (Dunlap et al., 2021). Even with this treatment funding, health care costs for HIV/AIDS treatments and

research continued to increase (Fauci & Lane, 2020). Most Medicaid programs did not offer risk-adjusted rates for people living with AIDS (Figueroa et al., 2022), which left the poor and underserved without treatment and care (Avert, 2021).

AIDS diagnosis is usually made after the viral load of HIV, the virus that causes AIDS, increases and the body begins to self-attack, destroying the lymphocytes and vital organs (AIDS.org, 2021; Lin & Shuai, 2009). Some researchers postulate that the reason some people are affected by the virus more than others is because of their HIV subtype infection (Avert, 2021; Lin et al., 2021). HIV is a retrovirus in that it replicates backward (Vahlne, 2009). Because the virus replicates slowly, scientists have placed it in the lentivirus subcategory. A lentivirus is a retrovirus that continues to replicate and slowly destroys the body, causing chronic illnesses and death. Epidemiological studies on the spread of HIV have shown that disease progression depends on the type of strain that has invaded the immune system (Davtyan et al., 2019). In that case, the spread of the virus can be rapid, slow, or nonprogressive (Showa et al., 2019). Some strains have shown resistance to treatment, and that accounts for a 20% increase in HIV infection, disease progression, and death (Bibosa et al., 2019). When a person develops HIV, their immune system can weaken due to the body's attack launch on CD4 T cells. The virus copies the CD4 T-cells DNA makeup, replicates it, and reverses the role of the cells, and the body begins to attack itself (Mirnezami et al., 2020). The primary role of CD4 T cells is to fight off any foreign invaders in the body, and when the body attacks the T cells, individuals lose the ability to fight off a variety of infections.

A weakened immune system becomes prey to opportunistic infections such as pneumonia, the common cold, and other forms of bacteria, viruses, and microorganisms (Office on Women's Health, 2021). Persons living with HIV (PLWH) may undergo four distinct stages before HIV progresses to AIDS:

1. Primary HIV stage lasts for several weeks and is characterized by flu-like symptoms and may go undetected.
2. The clinical asymptomatic stage can last up to 10 years with little or no symptoms. If symptoms appear, they are normally in the form of swollen lymph nodes. The diagnostic test for HIV is usually positive.
3. The third stage is often referred to as the symptomatic stage in that the T-cell count drops to abnormal lows. The lymph node activity deteriorates, T-helper cells are destroyed, and the body becomes incapable of replacing new T cells. As HIV progresses, the viral load increases.
4. The final stage is the progression from HIV to AIDS. Persons living with HIV develop a susceptibility to opportunistic infections such as pneumocystis carinii pneumonia (PCP) and Kaposi sarcoma, a form of cancer common in AIDS patients. Once the CD4 count of a person with an opportunistic infection drops below 200, the individual is believed to have AIDS (AIDS.Org, 2021; Avert, 2021).

HIV/AIDS Symptoms in Women

General symptoms of HIV/AIDS vary from individual to individual, but common symptoms include nausea, diarrhea, fatigue, headaches, muscle soreness, and night

sweats (Zhu, Zhao & Hu, 2019) which can minimize or diminish the quality of life. Women who are HIV positive often report recurrent yeast infections, Pelvic Inflammatory Disease (PID), abnormal menstrual cycle, and the Human Papilloma Virus (HPV). Some of these symptoms are difficult to treat and tend to complicate HIV infection (Zhu, Zhao & Hu, 2019). Other symptoms, which are not physically noticeable, tend to produce psychological effects. When Fletcher, Ingram, and Fisher (2019) conducted in-depth interviews with 42 African American women living with HIV in Los Angeles, 98% of the women reported fatigue as the most frequent and worst symptom. Women are more vulnerable to the virus due to the genetic makeup of the female genitals and the mucosal membranes that embody the female anatomy (Sophus & Mitchell, 2021). These studies did not compare the male and female genitalia and as such findings are based on existing biological studies on human sexuality.

HIV/AIDS Prevalence Among Black Women

The increasing rates of HIV infections among women are mainly due to a lack of condom use, a history of sexually transmitted infections (STIs), multiple partners, and injection drug use (Davidson, 2010). In 2018, 85% of women who contracted HIV did so via heterosexual contact. Reported cases of women infected through intravenous drug use accounted for 15% of the population (CDC, 2021). Of the new HIV diagnosis among women, 58% were from Black women, 25% from White women, and 17% among Latino women (Avert, 2020; CDC, 2021; KFF, 2020). Presently, approximately 160,000 women are living with HIV and some of them are unaware that they are infected (CDC, 2021). Black women only make up 13% of the United States population, but their HIV infection

rates are 15 times higher than that of White women (Avert, 2021). AIDS is the leading cause of death for Black women between 25 to 34 years of age (CDC, 2021). Black women in the United States are affected by HIV/AIDS more than any other population group (CDC, 2010), and engage in high-risk heterosexual contact more than White women. (Adimora et al., 2019; CDC, 2021;). Black women also have higher HIV incidences than Black and White heterosexual men (Ojikutu & Mayer, 2020).

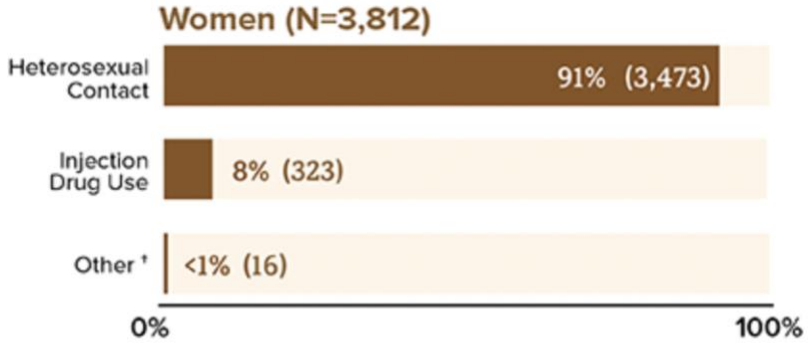
In the southern US states, 77% of reported new HIV cases among Black women were via heterosexual contact and 23% were through drug injection AIDSVu, 2018). Ojikutu et al., (2020) attested that southern states account for seven out of 10 states with the highest rates of HIV. Some reasons for this disparity could stem from lower self-esteem among southern women than women in the northern states. The researchers argued that socioeconomic status plays a significant role in an individual's self-perceptions and that individuals living in poverty may not process health information effectively, and as such perceived health risks of certain behaviors may not be effectively internalized. This study is relevant to my study because it explains how psychological (depression) and interpersonal factors (social support) are linked to risky health behaviors (sexual risk behaviors) of HIV-infected Black women.

In 2004, the CDC and the North Carolina Department of Health implemented a collaborative investigation program on HIV infections among Black women in North Carolina (NCHHS, 2020). Participants included sexually active non-drug-using Black women between 18 to 40 years of age, residing in Raleigh, Durham, and Charlotte areas. Most of the women, whether HIV- positive or not, had a history of sexually transmitted

infections, engaged in unprotected sexual intercourse, and had more than 20 sex partners in their lifetime. Many of the women were also either unemployed or living below the poverty level (CDC, 2021). Participants cited reasons for their risky sexual behaviors as financial, feeling invincible, low self-esteem, and a need to feel loved. These findings are consistent with Adimora (2021) because they support the findings that the sexual risk-taking behaviors of Black women are influenced by socio-economic hardships. Follow-up longitudinal studies conducted in 2021 were halted due to widespread Covid-19 infection rates in the state.

Figure 2

Diagnoses of HIV Infection in the United States and Dependent Areas



Note. From *HIV Surveillance Report: Diagnoses of HIV Infection in the United States and Dependent Areas, 2019* (Vol. 32, p. 27) by Centers for Disease Control and Prevention, 2021. In the public domain.

Depression

Depression is a common mental disorder that manifests feelings of prolonged intense sadness and lack of normal functionality. Depression can alter and distort an individual's self-perceptions and how they perceive those around them. There are many

forms of depression which include bipolar depression, clinical depression, and chronic depression or dysthymia, among many others. In this study, depression will be discussed in general terms and not broken down into different types of depression. The most widely used instrument for measuring depression is the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). The CES-D is a 20-item scale that as questions about the frequency of depressive symptoms within a week. Scores for each response range from 0 (none) to 3 (five or more days per week). A sample question includes "I thought my life had been a failure".

Globally, depression affects 3.8% of the population, along with 5% of adults and 5.7% of adults over 60 years (WHO, 2021). Depression is the most prevalent mental disorder in the United States (NAMI, 2021, and is higher among women than men and among socially and economically disadvantaged women (Walton & Boone, 2019). According to the 2014 National Institute of Mental Health statistics, women had nearly double the rate of experiencing major depressive episodes within 12 months than men (8.2% of women compared to 4.8% of men). Depression among older adults.

Depression Among HIV-Infected Black Women

According to De Olivera et al. (2020); and Bailey, Mokonogho, and Kumar (2019), Black women experience depression more than White women and are less likely to acknowledge it. Depression has also been reported higher among Black women who do not exercise and those with no social support. When comparing relationships between anxiety, depression, and loneliness between African American men and women, Chang (2018) found that African American women experience the negative psychological

effects of loneliness more than African American men. The authors' ontological assumption is that the burden of being Black and female along with other interpersonal factors are directly associated with isolation, loneliness, and depression, especially among adult Black women. Although the study found significant levels of depression among adult Black women, the sample size was small (168) and participants were college students between 18 to 35 years. As such, the study cannot be generalized to the larger African American population. The authors recommended future studies with larger sample sizes and older populations.

In a study conducted by Liao et al. (2020), the researchers examined direct associations between the Strong Black Woman (SW) schema and depression, anxiety, and loneliness. The SBW schema is rooted in cultural perceptions that African American women possess perpetual strength and resiliency and take on multiple roles without succumbing to emotional or physical fatigue. African American women are expected to embrace and accept the caregiver roles, and self-sacrifice while exhibiting physical and mental strength (Ward & Avery, 2017). The SBW schema birthed slavery ideological hegemony which demoralized and stereotyped Black women as either hypersexual or asexual and weak, yet it is a representation of strength and dignity for Black women. Liao et al. asserted that the SBW schema pressure is linked to depression, anxiety, loneliness, and low self-esteem among certain groups of women in the US who identify as Black/African-American or Caribbean. The SBW schema is also believed to be directly related to maladaptive perfectionism (MP) which has been described as the adoption of unrealistic expectations of oneself and attempts to outperform oneself. Negative mental

health and other negative health implications have been associated with MP, which is a façade which according to Abrams & Maxwell (2018) is a façade that is put on by Black women. As such, depression symptoms among most Black women are undetected and may not be linked to other health conditions

Liao et al. study recruited 222 Black women ranging from 18 to 67 years from various socio-economic and backgrounds and further examined MP, self-compassion, collective and spiritual coping as mediators between SCW schema and psychological outcomes. Participants completed six separate survey instruments that measured SBW schema (Stereotypical Roles for Black Women Scale), MP (Almost Perfect Scale-Revised 12-item Discrepancy subscale), self-compassion (12-item Self-Compassion Scale-Short Form), collective and spiritual coping (Agricultural Coping Systems Inventory) and depression and anxiety symptoms (21-item Depression, Anxiety, and Stress Scale-short version). This group of Black women was also more likely to internalize their emotions and not reach for help from family or friends and associated negatively with collective coping. Participants who utilized spiritual coping such as attending church and reading the bible associated MP with a poor relationship with God and compromised spirituality.

From the results, the researchers hypothesized that SBW schema was positively associated with MP beliefs and adverse mental health. Because of slavery history, Black women have adopted the “mammy” and “superwoman” roles, which portray them as strong independent women, but for some Black women, this is merely a façade geared towards survival. Expressing feelings of fear, or dependence may be viewed as a sign of

weakness, and as such some Black women continue to exist under these roles while intrinsically, they struggle with issues of low self-esteem and frequent depressive episodes (Jones et al., , 2021). Findings from this qualitative study on the meaning of strong Black women among Black college women in the United States were quite similar to Lao et.al (2020). Although the college Black women recognized and accepted the SBW schema as a coping mechanism for Black women, this group of young Black women expressed the younger generation of Black women's redefinition of strength. Jones, et al., (2021) pointed out that the younger generation of Black women has become more present when it comes to mental health and wellness and has distanced themselves from the traditional definition of strong Black women.

Depression and other mental disorders are more prevalent among HIV-infected people, or people living with AIDS/HIV (PLHA) than among HIV-negative persons (Klene et al.,2018; Wang, 2018). Globally, depression plays a significant role in negative health outcomes among PLHA. Damtie et al., (2021) assessed HIV-positive patients in Ethiopia to determine depression prevalence and relations-related factors among HIV-positive patients in Ethiopia, the researchers concluded that depressive symptoms were higher among PLHA 40 -49 years old and those over 50 years. As reported in other studies, depressive symptoms were higher among women and higher among those who lived with families (78%) compared to those who lived alone (22%) as in similar studies (Abadiga, 2018). These latter findings are contradictory to Damtie et al., (2021) which leads to the assumption that factors associated with depressive symptoms among PLHA in Africa vary from region to region and as such cannot be generalized. These studies are

relevant to my study because although my research study will control for demographic characteristics, they will provide some comparisons between findings from my research study variables, depression, and social support.

Depression and Social Support

Women living with HIV who experience discrimination and social stigma and lack social support are more likely to experience high levels of depressive episodes (Seffren et al., 2018). Social support from family and friends and the community positively contribute to individuals' quality of life and stable mental health. These findings are contradicting Damtie et al., (2021) reviewing clear differences between studies conducted in Ethiopia and the United States. When Jones, Leath, Settles, Doty and Conner (2021) sought to examine the association between gendered racism, depression, and social support, the researchers found that social support was a mediator for the association between gendered racism and depression. From the sample size of 237 Black college women (mean age 22.04), those who reported having experienced gendered racism also reported less social support and increased depressive episodes. The authors further asserted that Black women tend to isolate and disengage from society when they experience gendered racism, which in turn leads to depression, even for those women who identify as strong Black women as noted by Abrams et al. (2019), Jones et al. (2021), Williams & Lewis (2019). Messer et al.(2020) conducted a study on associations between depression and social support among HIV-infected women of color (WOC) in North Carolina and found out that Black women who utilized social networks for HIV emotional support experienced fewer depressive episodes than those who did

not. From the results, the researchers concluded that it is important to understand how existing women's social support networks influence behavior to help them make informed healthcare decisions and improve their quality of life. This study relates to my study because it adds to the literature on the association between social support and sexual risk-taking behaviors of HIV-infected women.

Sexual Risk-Taking Behaviors

Sexual risk-taking behaviors have been described as a series of actions that put an individual at risk for sexually transmitted infections (STIs) and HIV/AIDS (Chawla & Sarkar, 2019). Factors that have been associations with sexual risk-taking behaviors include multiple sex partners, unprotected sexual intercourse, reckless sexual intercourse under the influence of alcohol or other drugs, as well as casual sex, such as one-night stands or sex with an unknown partner (Hovarth et al., 2020; Opara, 2018). Sexually transmitted infection (STI) rates have been reported to be highest among African Americans, with an estimated 20 million infections annually (CDC, 2021). Over half of HIV infections are among those 25 years old or younger. The main mode of STIs and HIV transmission is via heterosexual contact. Research also indicates that Blacks are at risk for HIV/AIDS due to high-risk sexual behaviors such as multiple partners, lack of condom use, and IV drug use (Wyatt & Davis, 2020). The sexual risk-taking behaviors to be assessed in this study will be anal or vaginal sex with or without a condom among adult Black HIV-infected African American women in North Carolina.

Certain cultural beliefs and behaviors have thwarted efforts in reducing HIV/AIDS and other sexually transmitted infections, particularly among African

Americans (Alcaron et al., 2018; Ojikutu et al., 2020). These beliefs and behaviors increase the risks of contracting HIV and other infectious diseases. When Ojikutu et. al (2020) analyzed data from the National Survey on HIV in the Black Community (NSHBC) from 522 women, they found that there was a connection between HIV-related mistrust or conspiracy theories and the wiliness to use PrEP. Over 50% of the women reported having more than one sex partner in the last 3 months and had engaged in anal and vaginal sex without a condom. The average age was 33.8 and 52.8% lived in the Southern US states. The majority of the women reported that mistrust of the medical system and conspiracies such as the government being out to get them prevented participants from using PrEP. Others believed that an HIV cure exists, but the government is withholding the cure. Almost 50% of the participants believed that HIV is a man-made virus. A large proportion of women (70.6%) perceived themselves as low-risk and did not see the need to use PrEP. Only 30% of the participants were willing to use PrEP for preventive purposes. Women with expanded PrEP indications were reluctant to use PrEP and indicated being at low risk for HIV infection.

Mistrust of the healthcare system, for instance, has prevented some Blacks from seeking healthcare, along with the belief that AIDS is a man-made disease that targets minority groups (Bogart et.al, 2019). Such beliefs stem from the Tuskegee experiment conducted on Black men with syphilis from 1932 to 1972. Treatment was withheld from 399 illiterate and poor Black sharecroppers during clinical trials to collect data on those who died from syphilis (Mattocks et al., 2017; Bogart et.al, 2019). Mattocks et al., (2017) study on mistrust of the government by HIV-infected African American veterans

reviewed that African American men were less likely to use a condom or seek HIV care due to HIV conspiracy theories.

A total of 32 HIV-infected African American veterans participated in this Veterans Aging Cohort Study (VACS) which was conducted in Baltimore, New York, and Washington DC. The majority of the participants (90%) were male and most of them reported that they had engaged in sexual risk-taking behaviors such as sex without a condom and had abused drugs before their HIV diagnoses. Some delayed treatment due to mistrust of the healthcare system and the government, while others believed that HIV treatment was being withheld from them due to their race. The findings from this study are consistent with Bogart et.al (2019) national HIV survey study of African Americans aged 18 to 50 years. Over 40% of the participants in the study believed that HIV treatment was being withheld from African Americans. Although both of these studies differed in settings, sample size gender representation, conspiracy theories, and beliefs were central. Mistrust of the healthcare system by minority groups particularly African Americans continues to have negative health consequences and HIV healthcare burden.

According to CDC (2021) and NASTAD (2021), 92% of Black women who contracted HIV in 2018, did so via heterosexual contact. In the South, 24.6% of HIV infections among females were among African American women. Although this research is not a comparative study, Black women in the south have twice higher rates of HIV/AIDS infections than Black men. The southern U.S. states account for seven out of 10 states with the highest rates of HIV. Some reasons for this disparity could stem from

lower self-esteem among southern women than among women in the northern states Essuon et al., (2020). The researchers argued that socioeconomic status plays a significant role in how an individual views him or herself. This report was based on CDC data from HIV testing programs and as such is not a true representation of all HIV testing programs in the U.S.

In previous studies (Okomu, et al., 2017; Kuehn, 2018; Rao et al., 2019), the authors explained that individuals living in poverty may not process health information effectively, and as such perceived health risks of certain behaviors may not be effectively internalized. Okomu et al (2017) reviewed that participants whose source of HIV information came from media were more likely to test for HIV in the future than those who cited health professionals, schools, or churches as a source of HIV/AIDS information. Over 99 % of participants scored low on HIV-related stigma and 77% scored high on HIV knowledge. These findings are relevant to my study because they address the gaps in health resources and the complexity of comorbidities among poor minority groups living with HIV. In the problem statement, I include several contributing factors to high HIV rates among Black women in the South.

Sexual Risk-Taking Behaviors Among Black Women

Although proper condom use provides 99% effectiveness against sexually transmitted infections including HIV, most Black women in stable relationships with one partner have reported having unprotected sexual intercourse (Sewell & Blankenship, 2019). Researchers have cited lack of condom use, multiple sex partners, and intravenous drug use among the top risk factors for contracting HIV, and other sexually transmitted

infections (Haider, Lutfullah, Rehman & Khattak, 2019). Sexual risk behaviors, such as lack of and inconsistency in condom use, put both men and women at risk, regardless of race, and sexual orientation. While risks for contracting HIV are higher in women, partly due to the complex biological makeup of the female genitalia (CDC, 2021), Black women are more likely than White women to be infected with Gonorrhea and Syphilis. Lesions caused by sexually transmitted infections (STIs) provide a portal of entry for HIV (CDC, 2021). High-risk sexual behaviors of young Black women put them at risk for unwanted pregnancies and sexually transmitted infections (STIs) such as Chlamydia, gonorrhea, and HIV (Medina-Perucha, Family, Scott & Dack, 2019). Lack of condom negotiation skills was addressed as a risk factor for sexually transmitted infections (STIs) and other blood-borne infections among Black women who use heroin and other drugs. Black women who consumed alcohol and used other drugs were more likely to have sex without a condom, and more likely to have multiple sex partners.

Heterosexual contact is the most widespread mode of transmission of HIV, and approximately 81 percent of African American women who contract HIV do so via heterosexual contact (CDC, 2021). Although HIV prevalence is high among adult women (CDC, 2021), studies on the sexual behaviors of older adults are scarce. When Nydegger and Claborn (2020) explored patterns of substance abuse among Black women at risk for HIV infection through the syndemics framework, the researchers found out that women who abused alcohol, marijuana, and other drugs experienced low self-esteem, possessed few coping strategies, and self-medicated with alcohol, marijuana, and other drugs. Conversely, these women were also more likely to exchange sex for money. This

study is an addition to the body of literature that risky sexual behaviors are influenced by socioeconomic, as well as cultural factors. The researchers attested that alcohol and other drug use including marijuana by Black women subject them to comorbidity health issues and increased HIV infection. In a study conducted by Zhao et al (2018) on 210 sexually active HIV-positive individuals 45 years and older, only 20% of the participants reported consistent condom use and 33% had multiple partners. Results from this study indicated that older adults engage in high-risk sexual behaviors as much as adolescents and younger adults. In another study of 535 HIV serodiscordant couples, the researchers found that risk factors for adult Black women differ slightly from those of adolescent Black women and that socio-economic status and education level appear to influence the frequency of condom use (Opara et al., , 2021; Gause, Brown & DiClemente, 2019). In other words, Black women who are socio-economically disadvantaged and those with little education, are more likely to engage in high-risk sexual behaviors, and less likely to be assertive in condom use negotiations. These findings are consistent with those of Yeshaneh et al (2021) from a study of antiretroviral participants in Ethiopia. The authors established that marital status, education, and place of residence were directly associated with consistent condom use. Regardless of their age, participants who were educated possessed ample knowledge regarding condom use.

Changes in the transfer or sharing of power in sexual decisions such as condom use might be difficult in the Black culture. Women who are bound by the tradition of gender roles believe that decisions such as condom use should be the man's responsibility and as such were not assertive enough to insist on condom use during sex (Bailey,

Mokonogho & Kumar, 2019). Some Black women do not feel that they possess power over how, when, and if the male condom should be used (Medina-Perusha, Family, Scott & Dack, 2019). In their systemic review of factors associated with risky sexual behaviors of Black women who use heroin and other drugs, the reviewers addressed cultural differences as risk factors for HIV due to a lack of condom negotiation skills. The reviewers identified six outcomes from various papers that related to sexually transmitted infections (STIs) and other blood-borne infections; 1) condom use; 2) transactional sex; 3) experiencing sexual violence; 4) sexual activity; 5) type and characteristic of sexual partner; and 6) drug use with sex partners.

Compared to their White counterparts, Black women are twice as likely than White women to engage in unsafe sex and to be involved in relationships with men who have multiple partners (CDC, 2021). Reasons for the disparity as reported by Medina-Perusha, Family, Scott & Dack, (2019) appear to be socially driven. The authors added that poverty and financial burdens are potential avenues for sex among poor Black women who find themselves with multiple sex partners. Because of these sexual behavior patterns, risks for contracting HIV and other STIs are greater among Blacks than Whites even among married couples. Black married couples are more likely to have multiple and concurrent sexual partners than their White counterparts, but others have found Black couples to be more likely to use condoms than White couples, despite their high-risk sexual behaviors in comparison to Whites (Muwonge et al., 2019). These studies indicate that sexual behaviors are influenced by socioeconomic, as well as cultural factors. When Nydegger & Clayborn (2020) conducted their study on substance abuse patterns of Black

women in Milwaukee, they found that structural factors such as homelessness, unemployment, and discrimination put them at risk for HIV infection due to risky sexual behaviors. The researchers also found out that Black women who had experienced childhood trauma were also likely to abuse drugs due to depression which led to self-medication.

Summary and Conclusions

In this chapter, I have included a review of the literature on the association between depression, social support status, and sexual risk behaviors. Individuals who lack social support from the community are also more likely to experience high levels of depressive episodes (Jones et al., 2022; Nakkasujja, Opoka, & Bass, 2018). The majority of studies on depression and HIV among African American women have been clustered around adolescents despite nearly 57% of new HIV diagnoses being among persons between 13 to 34 years old and at 50% below the poverty index (NCDHHS, 2021). A thorough literature search on associations between depression, social support status, and sexual risk-taking behaviors of adult HIV-infected Black women was conducted and the search yielded a significant number of studies on adolescents and not as many adult women. Some researchers argue that Black women experience depression more than Black men and White women and are less likely to acknowledge it due to experienced trauma and socioeconomic inequalities (Travaglini et al., 2018; De Olivera et al., 2020), even those who identify as strong Black women (Jones et al., 2021). A gap in the literature exists on the associations between depression, social support status, and sexual risk-taking behaviors of adult HIV-infected Black women in North Carolina.

Researchers have studied self-esteem and eating disorders among adolescent girls and college women, but not among adult women. Most of the literature review on sexual risk-taking behaviors implicated inconstancy in condom use (Zhao et al., 2018; Zhang, et al., 2021), multiple sex partners (Aidoo-Frimpong, Agbemenu & Orom, 2021), and alcohol abuse (Nydegger & Claborn, 2020) as the primary risk factors for the transmission of HIV. Results from these findings are suggestive that depression and social support status could play a role in human sexual behavior patterns and attitudes, and that there is a need for more studies on the sexual behaviors of older couples. Furthermore, studies on the sexual behaviors of adult African Americans need to be culture-specific. Because of the lack of research on depression, social support status, and sexual risk behaviors, I was limited in the amount of research I could provide that relates to the purpose of this study. The research design and methodology were addressed in chapter 3, as well as data analysis on the associations between depression, social support status, and sexual risk-taking behaviors of adult HIV-infected Black women in the Southeastern US.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to find out if associations exist between depression, social support (as defined by marital status), and sexual risk-taking behaviors of HIV-infected adult Black (non-Hispanic) women in the Southeastern United States. This study is significant in that it could provide new scientific evidence that depression or poor mental health can influence sexual behavior choices of adult African American women in the South. Through risk-reduction education and intervention strategies, this research may be instrumental in helping reduce unhealthy sexual behaviors such as unprotected sexual intercourse (condomless) with multiple partners among low-income adult African Americans in the South. The relationship between depression and sexual risk behaviors may be driven by the SEM (Bronfenbrenner, 1979).

This chapter describes the research design, approach, and methods for a study of the relationship between depression, social support, and sexual risk-taking behaviors of adult Black women in the Southeastern United States. I begin the chapter with the research design and rationale, followed by methodology, and then I introduce the research question and hypotheses, followed by the population sample and setting. The chapter continues with instrumentation material from MACS/WIHS public data. The chapter concludes with ethical considerations of human subjects and a summary.

Research Design and Rationale

I chose a descriptive quantitative, nonexperimental, cross-sectional study because I sought to examine associations between the independent variables (depression and

social support), and the dependent variable (sexual risk-taking behaviors) using multiple regression coefficient analysis. An advantage of cross-sectional studies is that data can be collected all at once and no follow-up is required (Creswell, 2019). Cross-sectional studies are also ideal for identifying associations between variables and generating hypotheses when there is a lack of research on a topic. A disadvantage of cross-sectional designs is that they do not address the relationship between theoretical and causal models, and they do not provide accurate findings on which variable impacted the other (Burkholder & Cox, 2020; Creswell, 2019). Data were used with permission from MWCCS PDS.

Methodology

In this quantitative study, the relationship between theoretical and causal models was not applicable. Logistic regressions are ideal for assessing the effect of independent or predictor variable(s) on a dependent or outcome variable (Creswell, 2019). For data analysis, a descriptive statistical analysis in IBM SPSS software (version 27.0) was used to conduct a multivariate logistic regression analysis on the dependent variable sexual risk behavior and the independent variables depression and social support while controlling for socioeconomic and marital status, to determine the degree of the relationship and statistical significance between the variables (Wagner, 2020). The SPSS software is a reliable quantitative tool that is widely utilized by scholars and researchers at Walden University. Multivariable logistic regression was used to examine the possible mediation of social support on the association between depression and sexual risk-taking behavior. Multiple regressions are ideal because they provide clarity and strength to

relationship between variables. Additional demographic variables included age, and SES and geographic location (city/state). The study methodology and design was driven by the research questions. The covariates I examined included certain social ecological factors that influenced the dependent variable (sexual risk-taking behaviors). The covariates included in the analysis were current employment status, marital status, and current average monthly income (as shown in the models in Chapter 4).

Population

The target population for this study was HIV-infected Black women in the Southeastern United States. Data were drawn from the MWCCS PDS. Before the merger of the two cohort studies in 2019, WIHS was the largest multisite cohort study of women with HIV in the United States and MACS was the longest running observational study of men living with HIV in the United States (D'Souza et al., 2021). To be eligible for the cohort study, participants undergo initial screening, and upon signing the informed consent and willingness to participate in the study, participants complete in-depth interviews, physical exams, and specimen collection. A plethora of data is collected at each site, but because my study variables were depression, social support, and sexual risk-taking behaviors, the data I requested for my study included psychosocial factors, sexual behavior, and sociodemographic variables. Data that were used were from the 2013–2015 enrollment period (Wave 4) from Florida, Georgia, and North Carolina study sites. Participants from this wave ranged in age between 25 and 60 years.

Sampling and Sampling Procedures

Selecting a sample size is critical in research as it allows the researcher to determine the parameters of the population and the generalization of the study to the population (Creswell, 2019). To calculate the sample size for a multiple regression analysis study, four constructs should be factored in: (a) statistical power level, (b) effect size, (c) number of predictors, and (d) alpha level. To determine sample size, a power analysis such as G*Power 3.1 is appropriate. Behavioral researchers commonly use G*Power to estimate sample size (Burkholder & Cox, 2020; Frankfort-Nachmias, 2020). The sample size selected must be able to produce a significant difference in both tests. Based on these assumptions, a medium effect size was selected. A G*Power 3.1 power analysis indicated that a total of 95 participants were needed to achieve .80 power and a = .05 significance level (Frankfort-Nachmias, 2020). The sampling size frame was drawn from WIHS Wave 4 (2013-2015) within Florida, Georgia and North Carolina. Only HIV infected Black women (non-Hispanic) between the ages of 25 to 60 years were included.

Archival Data

Data were requested from MWCCS PDS sites in North Carolina, Georgia, and Florida. As of November 2013, WIHS data collected from participants are cleaned and stored. Data are not available to the public and have to be requested. The available data include baseline and follow-up interviews, medical exams, specimen collection and lab results, and active and expired substudies. From these four categories, specific variables can be found on variable index files on Excel spreadsheet data collection forms. Datasets are available in different formats and can be requested by completing a data request form.

Instrumentation and Operationalization of Constructs

This quantitative descriptive study used secondary data to measure depression, social support, and sexual risk behaviors. The WIHS psychosocial measures at baseline visit included depression, social support, and sexual behavior. Both depression and social support were included in the psychosocial measures form and were labeled Section C and Section D, respectively. The independent variable was depression, and the dependent variables were social support and sexual risk behaviors. To measure depression, data were used from the WIHS CES-D (Daubert et al., 2022). The CES-D is a 20-item self-rating instrument used to measure the frequency of depression. Each item on the instrument is rated on a 4-point scale from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). All scores summed up and ranged from 0 to 60 with scores >16 indicating depressive symptoms. The WIHS depression studies indicated that the CES-D is a reliable measurement for depressive symptoms. Social support data were collected using an 18-item social support survey instrument (Section D: Social Support, Social Isolation, Anxiety). The first three questions addressed perceived available social support. The rest of the questions related to physical and emotional support received from family and friends or partners. One of the questions was as follows: “At times people may need help with caring for children, getting a ride somewhere or we may need to borrow something. Within the past month did you get this kind of help from family, friends, and/or your partner?” Sexual risk behavior data were collected at baseline visits using Alcohol, Drug, and Sexual Behavior forms (seven-item number of lifetime partners health behavior questionnaire). The sexual behavior questionnaire was labeled Section D: Lifetime Male

Partners. Sample questions included the following: “During the past six months, how often did your partner(s) wear a rubber or condom when you had vaginal sex?” Responses for this particular item required participants to enter the number of times (either 1 [per week], 2 [per month], or 3 [total during the past 6 months]). Scores for each response were either labeled 1 for “yes” and 2 for “no,” or 1 for *always*, 2 for *sometimes*, and 3 for *never*.

Data Analysis Plan

Descriptive statistical analysis in SPSS (version 28.0) was used to conduct a multivariate logistic regression analysis on the dependent variables sexual risk-taking behaviors and social support and the independent variable depression to determine the degree of the relationship and statistical significance between the variables. Multivariable logistic regression was used to examine the possible mediation of social support on the association between depression and sexual risk-taking behavior. Multiple regression analysis was conducted to test for significant differences between depression scores and marital status. The statistical difference was defined as a probability of less than 0.05. The complete data analysis process is discussed in Chapter 4.

Threats to Validity

The validity of research results depends on the execution and analysis of the research questions. The validity of a research study is not an outcome but a concept that can lead to the truth being tested. Internal and external validity are concepts in experimental research studies that help solidify results (Burkholder et al., 2020).

Threats to External Validity

External validity rationalizes whether the results of the study can be generalized to the larger population or the real world (ecological validity). Threats to external validity or external invalidity (Babbie, 2017) occur when results cannot be generalized to other populations, environments, or times (Creswell, 2018). In quantitative studies, threats to external validity can be due to treatment variations if the researchers choose a different treatment than what they originally intended to use. Threats to external validity can also occur when one instrument yields the intended results and the other instrument fails to measure what it was intended to measure. The treatment variation, therefore, and not the effect of the treatment becomes the measure, and it cannot be generalized (Burkholder, 2020). Some mitigating strategies to counter threats to external validity include increasing sample size, aggregation of data from other groups, replication of the study, probability sampling, and comparison of new findings with existing findings. An extensive review of the literature with a comparison of findings from other studies can expose gaps in the literature and pinpoint the framework of existing studies (Burkholder, 2020).

Threats to Internal Validity

In experimental research, internal validity is improved or strengthened when there is an honorable cause and effect between the control and outcome variables. According to Burkholder et al. (2020), threats to internal validity occur when the study results fail to align with the treatment. Choosing research designs that reject the alternative hypothesis will improve internal validity. Strategies to mitigate threats to internal validity include

but are not limited to (a) random selection of participants that are representative of the population, (b) random assignment to control and experimental groups, (c) use of the same testing procedure for all groups, (d) experimental manipulation of the independent variable, (e) increase in sample size, and (f) removal of extraneous variables that might affect the dependent variable (Creswell, 2018). In this study, threats to internal validity such as maturation, history, and overall mortality attrition were highly unlikely because this was a one-time study and I was using secondary data.

Threats to Construct Validity

Construct validity suggests that an instrument measures what it is intended to measure based on a theory measurement (Cox, 2020). In this study, the independent variables were sexual risk-taking behaviors and social support, and the dependent variable was depression. The depression construct was operationalized with social support and sexual risk-taking behaviors using existing data from MACS/WIHS. Because this study used secondary data, no threats to construct validity were expected or predicted.

Ethical Procedures

Components of a research study that would be considered for ethical issues would be the instrumentation, data collection, participant selection, and demographics (Burkholder, 2020). The Institutional Review Board (IRB) is set in place to protect vulnerable populations such as pregnant women, children, participants with mental illnesses, those with learning disabilities, and prisoners (Babbie, 2017). Federal law codes of ethics such as the Belmont Report (1978) were put in place to protect human subjects

in research scientific studies in the United States and to ensure that researchers follow ethical federal guidelines (Babbie, 2017).

My study adhered to Belmont Report guidelines and followed Walden University's ethical standards in the participants' recruitment procedures to protect their confidentiality (Walden University, n.d.). Upon completion of Chapters 1, 2, and 3, I completed Walden University IRB documentation and sent it for permission to collect data. I then completed the required steps to acquire data from MACS/WIHS public datasets.

Summary

In this chapter, I have included a thorough description of the methodology of the study, research design, setting and sample, instrumentation and materials, data collection, analysis, and ethical considerations. The data analysis provided some significant difference in the associations between depression, social support, and sexual risk-taking behaviors of adult Black women in the Southeastern United States. Study results, interpretations, and outcomes will be included in Chapter 4. The conclusions of the study, implications for social change, and recommendations for future actions and studies will be summarized in Chapter 5.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to investigate whether any associations exist between depression, social support (as measured by an 18-item social support survey), and sexual risk-taking behaviors, defined as vaginal or anal sex without a condom and number of partners (as measured by sexual behavior questionnaire) of HIV-infected adult Black (non-Hispanic) women in the Southeastern United States. I used a descriptive quantitative, nonexperimental, cross-sectional study to examine associations between the independent variables (depression and social support) and the dependent variable (sexual risk-taking behaviors) using multiple regression coefficient analysis. Using IBM SPSS 28.0, I conducted data analyses to answer the following research questions and hypotheses:

RQ1: Is there an association between depression (as measured by the CES-D; Andersen et al., 1994) and sexual risk-taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected adult Black women in the Southeastern United States after controlling for socioeconomic and marital status?

$H_0$1: There is no association between depression and sexual risk-taking behaviors among HIV-infected adult Black women in the Southeastern United States after controlling for socioeconomic and marital status.

H_a1: There is an association between depression and sexual risk behaviors among adult Black women in the Southeastern United States after controlling for socioeconomic and marital status.

RQ2: Is there an association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status?

$H_0$2: There is no association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status.

H_a2: There is an association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status.

Data Collection

Upon Walden University IRB approval, I began to extract and clean data. My IRB approval number for this study is 03-29-23-0046325. The data for this study were obtained from the MWCCS PDS, covering the period from 2013 to 2015. The data included baseline and follow-up interviews, medical exams, specimen collection and lab results, and various substudies. Specific variables (depression, social support, and sexual behaviors) were identified from the variable index files on Excel spreadsheet data collection forms, focusing only on data from follow-up interviews. The subset of data used in this study consisted of responses from HIV-positive Black women in North Carolina, Georgia, and Florida. However, the city of birth data were not available for these participants.

While merging data sets, I discovered that different years' data sets contained different patients. For instance, the social support data did not include patients in the other data sets from 2013. Likewise, in 2015, the sexual behavior dataset contained only four rows of data. Therefore, baseline data were excluded to maintain consistency in the CASEIDs, and only the CSV document files containing follow-up sociodemographic (marital status, employment status, and income), psychosocial (depression and social support), and sexual behavior variables (F21, F24, and F26) were included in the study. The files/forms contained questions from the instruments mentioned in Chapter 3.

After the data cleaning and regrouping process, 123 participants were included in the analysis. The data files included information from the CES-D depression questionnaire, with a depression variable indicating whether the score was higher than 16

(> 16). The sexual risk behavior file contained data from Questions D1 to D7 of the Sexual Behavior questionnaire. The social support file included data from Questions D1 to D18 of the Social Support questionnaire. The social support variable was derived from the sum of all social support questions and was categorized into good or poor social support using the median value as a reference.

The independent variables in this study were depression and social support. The control variables included various sociodemographic factors including marital status, employment status, and average monthly income. The sexual risk-taking behaviors dependent variable contained multiple variables. These were considered separately in the analysis. They included (a) frequency of use of barrier method when receiving oral sex, (b) frequency of use of barrier method when giving oral sex, (c) frequency of condom use during vaginal sex, (d) frequency of condom use during anal sex, and (e) number of male partners since the last visit. I categorized the frequency of use variables based on risk: no sex partner/always used and sometimes/never used. Similarly, I classified the number of male partners since the last visit based on risk: no sex partner/one sex partner and two or more sex partners.

Descriptive Statistics

I utilized descriptive statistics to summarize the characteristics of the study population. The data analysis and calculations, including percentage and frequency distributions, were performed using SPSS Version 28.0. I analyzed data from 123 HIV-positive Black women from North Carolina, Georgia, and Florida. The mean age of these women was 45.1 years. Study results showed that 48.0% of the participants reported

experiencing depressive symptoms, while 52.0% did not show signs of depression. Regarding social support, 52.8% reported having good social support, while 41.5% indicated poor social support. Regarding the use of barrier methods during oral sex, 56.1% stated sometimes or never using them when receiving, and 32.5% reported sometimes or never using them when giving.

In comparison, 43.9% and 67.5% always or had no sexual activity, respectively. For condom use during vaginal sex, 60.2% reported sometimes or never using condoms, while 39.8% always or had no sexual activity. Regarding anal sex, the majority (96.7%) either did not engage in it or always used condoms, with only 3.3% reporting sometimes or never using condoms. In terms of the number of male partners since their last visit, 32.5% reported having two or more partners, while 67.5% reported having one or no sex partner. Employment-wise, 21.1% were employed, and 75.6% were not employed. Marital status varied, with 24.4% married or cohabitating; 26.8% widowed, divorced, or separated; and 47.2% never married. Lastly, 71.5% had an average monthly income of $24,000 or less, and 21.1% had an income greater than $24,000. Table 1 provides detailed information on the baseline characteristics of the study respondents.

Table 1

Baseline Characteristics of the Study Respondents

Variables	*N* (123)	Percentage (%)
Age [a] in months mean (*SD*)	45.1(10.6)	
Depression		
Not depressed	64	52.0
Depressed	59	48.0
Social support		
Good social support	65	52.8
Poor social support	51	41.5
Missing	7	5.7
Frequency of use of barrier method when receiving oral sex		
No sex/always used	54	43.9
Sometimes/never used	69	56.1
Frequency of use of barrier method when giving oral sex		
No sex/always used	83	67.5
Sometimes/never used	40	32.5
Frequency of condom use during vaginal sex		
No sex/always used	49	39.8
Sometimes/never used	74	60.2
Frequency of condom use during anal sex		
No sex/always used	119	96.7
Sometimes/never used	4	3.3
Number of male partners since the last visit		
No sex partner	83	67.5
Two or more sex partners	40	32.5
Current employment status		
Employed	23	21.1
Not employed	93	75.6
Missing	4	3.3
Marital status		
Married/cohabitating	30	24.4
Widowed/divorced/separated	33	26.8
Never married	58	47.2
Missing	2	1.6
Current average monthly income		
<= $24,000	88	71.5
> $24,000	26	21.1
Missing	9	7.3

[a] Age was included in the descriptive table but was not part of the variables used for any of the models.

Bivariate Analysis

The bivariate analysis of the dependent and independent variables is shown in Tables 2 and 3. There was no significant difference in the frequency of using barrier methods when receiving oral sex between individuals who were not depressed (55.6%) and those who were depressed (44.4%; $p = 0.489$). Similarly, there was no significant difference in the frequency of using barrier methods when giving oral sex between individuals who were not depressed (54.2%) and those who were depressed (45.8%; $p = 0.485$). The frequency of condom use during vaginal sex differed slightly between individuals who were not depressed (61.2%) and those who were depressed (38.8%), but the difference was not statistically significant ($p = 0.097$). When it came to condom use during anal sex, there was a marginally significant difference between individuals who were not depressed (53.8%) and those who were depressed (46.2% ; $p = 0.05$, Fischer's exact test). Furthermore, none of the individuals who were depressed reported sometimes or never using condoms during anal sex (100%). The number of male partners since the last visit showed no statistically significant difference between individuals who were not depressed (56.6%) and those who were depressed (43.4% ; $p = 0.142$).

Table 2

Bivariate Analysis of Associations Between Sexual Risk-Taking Behaviors and Depression

Variables [a]	Not depressed (%)	Depressed (%)	*P* value (chi-square)
Frequency of use of barrier method when receiving oral sex			
No sex/always used	55.6	44.4	0.489
Sometimes/never used	49.3	50.7	
Frequency of use of barrier method when giving oral sex			
No sex/always used	54.2	45.8	0.485
Sometimes/never used	47.5	52.5	
Frequency of condom use during vaginal sex			
No sex/always used	61.2	38.8	0.097
Sometimes/never used	45.9	54.1	
Frequency of condom use during anal sex			
No sex/always used	53.8	46.2	0.05[1]
Sometimes/never used	0.0	100.0	
Number of male partners since the last visit			
No sex partner	56.6	43.4	0.142
Two or more sex partners	42.5	57.5	

[a] Multiple sexual risk-taking behaviors variables were considered separately in the analysis.

With respect to social support (Table 3), there was no statistically significant difference in the frequency of using barrier methods when receiving oral sex between individuals with good social support (64.2%) and those with poor social support (35.8%) ($p = 0.11$). Similarly, there was no statistically significant difference in the frequency of using barrier methods when giving oral sex between individuals with good social support (60.8%) and those with poor social support (39.2%; $p = 0.13$). Furthermore, the frequency of condom use during vaginal sex did not differ significantly between individuals with good social support (60.4%) and those with poor social support (39.6%; $p = 0.42$). Regarding condom use during anal sex, there was no statistically significant

difference between individuals with good social support (57.1%) and those with poor social support (42.9% ; $p = 0.32$, Fisher's exact test). However, it is worth noting that only a small percentage of individuals with poor social support (25.0%) reported sometimes or never using condoms during anal sex, compared to those with good social support (75.0%). Finally, the number of male partners since the last visit did not show a statistically significant difference between individuals with good social support (53.8%) and those with poor social support (46.2% ; $p = 0.46$).

Table 3

Bivariate Analysis of Associations Between Sexual Risk-Taking Behaviors and Social Support

Variables	Good social support (%)	Poor social support (%)	*P* value (chi-square)
Frequency of use of barrier method when receiving oral sex			
No sex/always used	64.2	35.8	0.11
Sometimes/never used	49.2	50.8	
Frequency of use of barrier method when giving oral sex			
No sex/always used	60.8	39.2	0.13
Sometimes/never used	45.9	54.1	
Frequency of condom use during vaginal sex			
No sex/always used	60.4	39.6	0.42
Sometimes/never used	52.9	47.1	
Frequency of condom use when during anal sex			
No sex/always used	57.1	42.9	0.32[1]
Sometimes/never used	25.0	75.0	
Number of male partners since the last visit			
No sex partner	53.8	46.2	0.46
Two or more sex partners	61.1	38.9	

Binary Logistic Regression

Frequency of Use of Barrier Method When Receiving Oral Sex

Table 4 shows the unadjusted and adjusted odds ratio of the binary logistic regression of the frequency of barrier method use when receiving oral sex risk behavior, the independent and control variables. When regressed against the frequency of use of the barrier method when receiving oral sex individually, none of the variables showed a statistically significant relationship. However, after adjusting for depression, employment, income, and marital status, the odds of not using a barrier when receiving oral sex among those with poor social support was 2.34 times that of those with good social support (p = 0.043). This was statistically significant. In addition, after adjusting for social support, employment, income, and marital status, the odds of not using a barrier when receiving oral sex among those with depression was 1.76 times that of those without depression. This was not statistically significant (p = 0.18). This model had a Hosmer Lemeshow test result (chi-square 12.20; P = 0.94), Cox and Snell R square of 0.07, and Nagelkerke R square of 0.09.

These values suggest that the model explains a relatively small variance in the frequency of barrier method use when receiving oral sex risk behavior. From the foregoing, the logistic regression model has a relatively low goodness of fit, indicating that the independent variables included in the model may not be strong predictors of the frequency of barrier method use when receiving oral sex risk behavior.

Table 4

Unadjusted and Adjusted Odds Ratio of the Binary Logistic Regression of Associations Between the Frequency of Use of Barrier Method When Receiving Oral Sex and the Independent Variables

Variable	Unadjusted *OR* (95% CI)	*P* value	Adjusted *OR* (95% CI)	*P* value
Depression				
Not depressed	Reference		Reference	
Depressed	1.29 (0.63–2.63)	0.49	1.76 (0.77–4.01)	0.18
Social support				
Good social support	Reference		Reference	
Poor social support	1.85(0.88–3.90)	0.11	2.34 (1.03–5.35)	0.04*
Current employment status				
Employed	Reference		Reference	
Not employed	0.93 (0.39–2.24)	0.87	1.19 (0.439–3.21)	0.74
Marital status				
Married/cohabitating	Reference		Reference	
Widowed/divorced/separated	1.03 (0.37–2.82)	0.96	0.68 (0.22–2.11)	0.51
Never married	0.77 (0.31–1.87)	0.56	0.62 (0.22–1.73)	0.36
Current average monthly income				
<= $24,000	Reference		Reference	
> $24,000	1.37 (0.55–3.41)	0.50	1.67 (0.61–4.60)	0.32

Note. After adjusting for depression, employment, income, and marital status, the odds of not using a barrier when receiving oral sex among those with poor social support was 2.34 times that of those with good social support ($p = 0.043$).

Frequency of Use of Barrier Method When Giving Oral Sex

Table 5 shows the unadjusted and adjusted odds ratio of the binary logistic regression of the frequency of barrier method use when giving oral sex risk behavior, the independent and control variables. When regressed against the frequency of use of the barrier method when giving oral sex risk behavior individually, none of the variables showed a statistically significant relationship. In addition, after adjusting for depression, employment, income, and marital status, the odds of not using a barrier when giving oral

sex among those with poor social support was 2.10 times that of those with good social support (p = 0.10). This was, however, not statistically significant. Similarly, after adjusting for social support, employment, income, and marital status, the odds of not using a barrier when giving oral sex among those with depression was 1.16 times that of those without depression. This was also not statistically significant (p = 0.75). This model had a Hosmer Lemeshow Test result (Chi-square 15.55; P=0.05; Hosmer Lemeshow Test result was used due to small sample size), Cox & Snell R Square of 0.09, and Nagelkerke R Square of 0.12.

These values suggest that the model explains a moderate amount of the variance in the frequency of barrier method use when giving oral sex risk behavior. From the foregoing, the logistic regression model has a relatively good goodness of fit, indicating that the independent variables included in the model are moderately predictive of the frequency of barrier method use when giving oral sex risk behavior.

Table 5

Unadjusted and Adjusted Odds Ratio of the Binary Logistic Regression of Associations Between Depression, Social Support, and the Frequency of Use of Barrier Method When Giving Oral Sex

Variable [a]	Unadjusted *OR* (95% CI)	*P* value	Adjusted *OR* (95% CI)	*P* value
Depression				
Not depressed	Reference		Reference	
Depressed	1.31 (0.62–2.79)	0.49	1.16 (0.47–2.84)	0.75
Social support				
Good social support	Reference		Reference	
Poor social support	1.82 (0.83–4.01)	0.14	2.10 (0.87–5.06)	0.10
Current employment status				
Employed	Reference		Reference	
Not employed	0.45 (0.19–1.11)	0.08	0.53 (0.19–1.45)	0.22
Marital status				
Married/cohabitating	Reference		Reference	
Widowed/divorced/separated	0.42 (0.14–1.23)	0.11	0.42 (0.12–1.46)	0.17
Never married	0.64 (0.26–1.58)	0.33	0.74 (0.25–2.15)	0.58
Current average monthly income				
<= $24,000	Reference		Reference	
> $24,000	2.16 (0.88–5.31)	0.09	1.96 (0.71–5.42)	0.19

[a] When regressed against the frequency of use of the barrier method when giving oral sex risk behavior individually, while controlling for current employment status, marital status, and current monthly income, none of the variables showed a statistically significant relationship.

Frequency of Condom Use During Vaginal Sex

Table 6 below shows the unadjusted and adjusted odds ratio of the binary logistic regression of the frequency of condom use during vaginal sex risk behavior, the independent and control variables. When regressed against the frequency of condom use during vaginal sex risk behavior individually, none of the variables showed a statistically significant relationship. For example, after adjusting for depression, employment,

income, and marital status, the odds of not using a condom during vaginal sex among those with poor social support was 1.39 times that of those with good social support (p = 0.43). This was, however, not statistically significant. Similarly, after adjusting for social support, employment, income, and marital status, the odds of not using a condom during vaginal sex among those with depression was 1.99 times that of those without depression. However, this was also not statistically significant (p = 0.10).

This model had a Hosmer Lemeshow Test result (Chi-square 5.25; P=0.73), Cox & Snell R Square of 0.04, and Nagelkerke R Square of 0.05. These values suggest that the model explains a small amount of the variance in the frequency of condom use during vaginal sex risk behavior. From the foregoing, the logistic regression model has a relatively poor goodness of fit, indicating that the independent variables included in the model have limited predictive power of the frequency of condom use during vaginal sex risk behavior.

Table 6

Unadjusted and Adjusted Odds Ratio of the Binary Logistic Regression of Associations Between Depression, Social Support, and the Frequency of Condom Use During Vaginal Sex

Variable [a]	Unadjusted *OR* (95% CI)	*P* value	Adjusted *OR* (95% CI)	*P* value
Depression				
Not depressed	Reference		Reference	
Depressed	1.86 (0.89–3.87)	0.10	1.99 (0.88–4.50)	0.10
Social support				
Good social support	Reference		Reference	
Poor social support	1.36 (0.64–2.87)	0.43	1.39 (0.62–3.10)	0.43
Current employment status				
Employed	Reference		Reference	
Not employed	1.16 (0.48–2.81)	0.74	1.07 (0.40–2.87)	0.89
Marital status				
Married/cohabitating	Reference		Reference	
Widowed/divorced/separated	0.79 (0.29–2.17)	0.64	0.75 (0.25–2.29)	0.62
Never married	0.95 (0.38–2.36)	0.91	0.71 (0.25–1.95)	0.50
Current average monthly income				
<= $24,000	Reference		Reference	
> $24,000	0.86 (0.35–2.09)	0.74	0.93 (0.35–2.46)	0.89

[a] Covariates included in the analysis: current employment status, marital status, and current average monthly income.

Number of Male Partners Since the Last Visit

Table 7 shows the unadjusted and adjusted odds ratio of the binary logistic regression of the number of male partners since the last visit risk behavior, the independent and control variables. When regressed against the number of male partners individually since the last visit risk behavior, none of the variables showed a statistically significant relationship.

Furthermore, after adjusting for depression, employment, income, and marital status, the odds of having multiple sexual partners among those with poor social support was 0.8 times that of those with good social support ($p = 0.61$). This was, however, not statistically significant. Similarly, after adjusting for social support, employment, income, and marital status, the odds of having multiple sexual partners among those with depression was 2.18 times that of those without depression. This was also not statistically significant ($p = 0.08$). This model had a Hosmer Lemeshow Test result (Chi-square 6.00; $p = 0.54$), Cox & Snell R Square of 0.05, and Nagelkerke R Square of 0.07. These values suggest that the model explains a small variance in the number of male partners since the last visit risk behavior. From the foregoing, the logistic regression model has a relatively modest goodness of fit, indicating that the independent variables included in the model have limited predictive power of the number of male partners since the last visit risk behavior.

Table 7

Unadjusted and Adjusted Odds Ratio of the Binary Logistic Regression of Associations Between Depression, Social Support, and the Number of Male Partners Since the Last Visit

Variable [a]	Unadjusted *OR* (95% CI)	*P* value	Adjusted *OR* (95% CI)	*P* value
Depression				
Not depressed	Reference		Reference	
Depressed	1.77 (0.82–3.79)	0.14	2.18 (0.91–5.23)	0.08
Social support				
Good social support	Reference		Reference	
Poor social support	0.74 (0.33–1.65)	0.46	0.80 (0.33–1.90)	0.61
Current employment status				
Employed	Reference		Reference	
Not employed	1.07 (0.42–2.74)	0.89	0.77 (0.26–2.24)	0.63
Marital status				
Married/cohabitating	Reference		Reference	
Widowed/divorced/separated	1.00 (0.35–2.85)	1.00	1.06 (0.31–3.59)	0.92
Never married	0.97 (0.38–2.49)	0.96	0.83 (0.28–2.46)	0.74
Current average monthly income				
<= $24,000	Reference		Reference	
> $24,000	0.42 (0.14–1.21)	0.11	0.49 (0.15–1.53)	0.22

Note. Due to the small sample size and the lack of responses in some cells from the bivariate analysis, I did not run a binary logistic regression for the frequency of condom use during anal sex.

[a] Covariates included in the analysis: current employment status, marital status, and current average monthly income.

Summary

In this chapter, I presented baseline characteristics of the study population, which included age, employment status, monthly income of household and marital status. I also presented descriptive analysis for categorical variables which expressed in percentages/numbers and continuous variables expressed in means, standard deviation, minimum, maximum using SPSS Version 28.0. I reported the results by conducting

bivariate analysis and binary logistic regression on the relationship between depression and sexual risk-taking behaviors (RQ1), and relationship between social support and sexual-risk taking behaviors (RQ2). Since there were several categorical variables for sexual risk behavior, I analyzed each category against social support and depression, while controlling for employment, income and marital status. I reported binary logistic regression using fitting models (Hosmer Lemeshow Test result, Cox & Snell R Square and Nagelkerke R Square) for sexual risk-taking behaviors against depression and social support. The odds of not using a barrier when receiving oral sex among those with poor social support was 2.34 times that of those with good social support. This was statistically significant ($p = 0.043$). Therefore based upon a 5% level of significance, I rejected the null hypothesis for RQ2.

In chapter 5 I discuss interpretations of findings in the context of the review of literature, theoretical framework and implications for social change. I also provide recommendations for future studies and end the chapter with conclusion.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This quantitative research was steered by the exigency to investigate associations between depression, social support, and high-risk sexual behaviors among HIV-infected adult Black women in the Southeastern United States. The assumption was that the descriptive analysis would generate positive social change from study results and help close the gap in literature on continued HIV infection and mortality rates among adult Black women in the Southeastern United States. I conducted an analysis on 123 HIV-seropositive African American women, using WIHS public data sets between 2013 and 2015, from three sites: Atlanta, Chapel Hill, and Miami. I conducted data analysis of the hypotheses and answered the research questions using IBM SPSS 28.0 software. I aimed to answer the following research questions and hypotheses:

RQ1: Is there an association between depression (as measured by the CES-D; Andersen et al., 1994) and sexual risk-taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected adult Black women in the Southeastern United States after controlling for socioeconomic and marital status?

$H_0$1: There is no association between depression and sexual risk-taking behaviors among HIV-infected adult Black women in the Southeastern United States after controlling for socioeconomic and marital status.

H_a1: There is an association between depression and sexual risk behaviors among adult Black women in the Southeastern United States after controlling for socioeconomic and marital status.

RQ2: Is there an association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status?

$H_0$2: There is no association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status.

H_a2: There is an association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual-risk taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status.

Participants in the study were adult HIV-seropositive African American women between 28 and 60 years old. Of these, 48% reported that they were depressed, which

means they scored 16 or higher on the CES-D scale, and over 41% said they had poor social support. Over 71% earned an annual income of less than $24,000. The models showed that the strongest association was between poor social support and sexual risk-taking behaviors (no barrier methods during oral sex). This chapter is broken down into five sections. The first is the interpretation based on the review of the literature and the conceptual framework, the SEM. Following that are the limitations of the study, recommendations, and conclusion.

Interpretation of the Findings

A gap in the literature exists on the associations between depression, social support, and sexual risk-taking behaviors of HIV-infected adult Black women in the South (Fletcher et al., 2019; Hill et al., 2018; Thames et al., 2018 & Ogburn et al., 2018). I conducted this study to fill the gap in the literature. In this study, the SEM was used as a framework to examine contextual factors associated with depression, social support, and sexual risk-taking behaviors of HIV-infected Black women in the Southeastern United States. The SEM is a grounding conceptual framework based on individual daily interactions with sets of similar and complex environmental systems that shape behavior (Bronfenbrenner & Morris, 1998). Results from this study are from data analysis conducted on 123 cases of HIV-seropositive Black women from WIHS cohort sites in Atlanta, Chapel Hill, and Miami. Multiple regression analysis on depression and social support as independent variables and sexual risk-taking behaviors as the dependent variable showed no correlation between the predictor variables and the outcome variable (*p* values were greater than .05).

Although there were no significant associations between depression and social support, some association was found between depression and sexual risk-taking behavior and condom use during anal sex among individuals who were not depressed ($p = 0.05$, Fischer's exact test). The statistical significance between individuals with poor social support and no barrier method during oral sex ($p = .043$), although small, is consistent with previous studies (Gause et al., 2019; Opara et al., 2021; Yeshaneh et al., 2021). These results and other studies show that socioeconomic status and loneliness influence the frequency of condom use for Black women. The dispersion or standard deviation in most of the analysis shows the data to spread away from the mean, which indicates that there was more variation in how participants responded to some of the sexual risk behavior questions. The outliers could also have come from participants' refusal to answer some of the questions. As in the study conducted by De Olivera et al. (2020), this study analyzed data based on SEM factors as determinants of depression among HIV-infected adult Black women. Results from this study show SEM factors as determinants of depression among older Black women living with HIV in the Southeastern United States.

Depression and Sexual-Risk Taking Behaviors Prediction

RQ1: Is there an association between depression (as measured by the CES-D; Andersen et al., 1994) and sexual risk-taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected adult Black women in the Southeastern United States after controlling for socioeconomic and marital status?

Results from this study showed a small statistically significant relationship between depression and one of four sexual risk-taking behaviors (no condom use during anal sex), for which binary logistic regression was conducted ($p = 0.05$, Fisher's exact test). According to Messer et al., (2020), HIV-infected Black women in the South who utilize social networks for HIV emotional support experience fewer depressive episodes than those who do not and tend to. I, therefore, partially reject the null hypothesis that there is no association between depression and sexual risk-taking behaviors among HIV-infected adult Black women in the Southeastern United States.

Social Support and Sexual Risk-Taking Behaviors

RQ2: Is there an association between social support (as measured by the MACS/WIHS 18-item social support scale) and sexual risk-taking behaviors (as measured by the MACS/WIHS health behavioral questionnaire) among HIV-infected Black women in the Southeastern United States after controlling for socioeconomic and marital status?

The binary logistic regression analysis showed that there is a significant association between poor social support and the frequency of barrier method during oral sex ($p = 0.043$). I, therefore, partially reject the null hypothesis that there is no association between social support and sexual risk-taking behavior: frequency of use of barrier method when receiving oral sex among HIV-infected adult Black women in the Southeastern United States. These findings are consistent with Medina-Perusha et al. (2019), who attested that some Black women who do not feel that they possess power

over how, when, and if the male condom should be used and who do not have a strong social support system may forego condom use.

Because no other sexual risk-taking behaviors were measured in this study to answer Research Question 2, I fail to reject the null hypothesis that there is no association between social support and three of the four sexual risk-taking behaviors among HIV-infected adult Black women in the Southeastern United States.

Although the analyses for depression, social support, and sexual risk-taking behaviors yielded fewer results and small significance, these results are consistent with previous studies.

Limitations of the Study

This study was limited to HIV seropositive non-Hispanic Black women and yielded a small sample size. The study is limited in generalizability to the larger population because participants were enrolled in a clinical trials cohort study and reported to the clinics every 6 months. As such, results from this study could have been due to treatment or exposure. Because this was a cross-sectional nonexperimental study and the variables were measured at the same time, establishing a causal relationship between the variables was not possible (Wang & Cheng, 2020). Accessibility of public data was limited because of a lack of funding and support from the NIH or Johns Hopkins, and as such, I was not able to complete the concept sheet for detailed data. The available data were only from 2013 to 2015, which also yielded a small sample size.

Another limitation of this study was the self-reported data due to the sensitivity of some of the sexual risk-taking behaviors questions. This could have led the participants to not answer some sensitive questions honestly or not answer the questions at all.

Recommendations

I recommend that future studies on depression, social support, and sexual risk-taking behaviors from WIHS data include data from a period longer than 3 years to gather more information on the relationship between the variables, as well as proper funding and support from the NIH and Johns Hopkins. I also recommend not using sociodemographic characteristics as the control variable but rather including them in the analysis and conducting a correlation coefficient between the variables to measure the degree of relatedness. I also recommend the using the concept sheet to request detailed data.

Implications for Social Change

The positive social change implication for this study is that it may provide additional insight into escalating HIV infection rates among adult African American women and lead to expanded research and professional applications triggering a reduction in HIV infections. The study may also aid in further studies on culturally appropriate intervention programs and policies that address sexual behaviors that address gaps in healthcare for Black women living with HIV in the Southeastern United States.

Implications for Practice

Results from this study can be used by public health professional researchers in the Southeastern United States to incorporate studies and programs that address all HIV-

contributing factors such as socioeconomic, psychological, environmental, and cultural factors that negatively affect the health of HIV-infected Black women.

Conclusions

This study demonstrates that some sexual risk behaviors were dependent upon social support, and depression was an independent risk factor for sexual risk behaviors among WIHS participants in the Southeastern United States. The amount of information that can be drawn from the association between relationship dynamics and condom use denotes that there is a need for more studies involving not just Black women, but also couples. Furthermore, effective HIV intervention programs for Black women must incorporate cultural sensitivity strategies that are tailored to specific socioeconomic tiers and social contexts. Furthermore, from this study, it can be concluded that interpersonal, intrapersonal, and community-level factors are significant in the management of social support among adult Black women living with HIV. Further research is needed to better understand how cultural/societal, individual, and interpersonal factors influence the sexual behaviors of adult HIV-infected Black women.

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Appendix A: CES-D Depression Scale

HAND PARTICIPANT RESPONSE CARD 16.
First, I am going to read a list of the ways you might have felt or behaved in the past week. Please tell me how often you have felt this way during the past week.

During the Past Week

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1–2 days)	Occasionally or a moderate amount of time (3–4 days	All of the time (5–7 days)
1. I was bothered by things that usually don't bother me	0	1	2	3
2. I did not feel like eating; my appetite was poor	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family or friends	0	1	2	3
4. I felt I was just as good as other people	0	1	2	3
5. I had trouble keeping my mind on what I was doing	0	1	2	3
6. I felt depressed	0	1	2	3
7. I felt that everything I did was an effort	0	1	2	3
8. I felt hopeful about the future	0	1	2	3
9. I thought my life had been a failure	0	1	2	3
10. I felt fearful	0	1	2	3
11. My sleep was restless	0	1	2	3
12. I was happy	0	1	2	3
13. I talked less than usual	0	1	2	3
14. I felt lonely	0	1	2	3
15. People were unfriendly	0	1	2	3
16. I enjoyed life	0	1	2	3
17. I had crying spells	0	1	2	3
18. I felt sad	0	1	2	3
19. I felt that people dislike me	0	1	2	3
20. I could not get "going"	0	1	2	3

WIHS Form 26: Psychosocial Measures–10/02/13a

ITEM WEIGHTS Items 4, 8, 12, & 16 3 2 1 0 All other items: 0 1 2 3
SCORING: Score is the sum of the 20 item weights. If more than 4 items are missing, do not score the scale. A score of 16 or greater is considered depressed.

Appendix B: Social Support

SECTION D: SOCIAL SUPPORT, SOCIAL ISOLATION, ANXIETY

*Source: Loneliness scale (Hughes; shortened version of the R-UCLA)

*Tangible and Emotional Support subscales of MOS SSS, with additional questions added

*GAD-7 assessment of anxiety

INTRODUCTION TO PARTICIPANT: The next questions ask about your feelings these days. Please tell me how often you feel the way described in each of the following statements.

D1. How often do you feel that you lack companionship? Is it hardly ever, some of the time, or often?

HARDLY EVER 1
SOME OF THE TIME 2
OFTEN 3

D2. How often do you feel left out? Is it hardly ever, some of the time, or often?

HARDLY EVER 1
SOME OF THE TIME 2
OFTEN 3

D3. How often do you feel isolated from others? Is it hardly ever, some of the time, or often?

HARDLY EVER 1
SOME OF THE TIME 2
OFTEN 3

INTRODUCTION TO PARTICIPANT*:* People sometimes look to others for company, for help, or for other kinds of support. How often are each of the following kinds of support available to you when you need it?

	None of the time	**A little of the time**	**Some of the time**	**Most of the time**	**All of the time**	**NA**
D4. Someone you can count on to listen to you when you need to talk.	1	2	3	4	5	
D5. Someone to give you information to help you understand a situation.	1	2	3	4	5	
D6. Someone to give you good advice about a crisis.	1	2	3	4	5	
D7. Someone to confide in or talk to about yourself or your problems.	1	2	3	4	5	
D8. Someone whose advice you really want.	1	2	3	4	5	
D9. Someone to share your most private worries and fears with.	1	2	3	4	5	
D10. Someone to turn to for suggestions about how to deal with a personal problem.	1	2	3	4	5	
D11. Someone who understands your problems.	1	2	3	4	5	
D12. Someone to help you if you were confined to bed.	1	2	3	4	5	
D13. Someone to take you to the doctor or somewhere you had to go if you needed it.	1	2	3	4	5	
D14. Someone to prepare your meals if you were unable to do it yourself.	1	2	3	4	5	

D15. Someone to help with daily chores like grocery shopping if you were sick.	1	2	3	4	5	
D16. Someone to care for children/ grandchildren/others in your care, even for a short time if you were unable.	1	2	3	4	5	6
D17. Someone to give you a place to live if you needed it even if for a short time.	1	2	3	4	5	
D18. Someone to give you money for things you really needed like food and clothing.	1	2	3	4	5	

Appendix C: Sexual Behavior

LIFETIME MALE PARTNERS

INTRODUCTION: Now I will ask you some questions about all types of sexual behavior with men or women including prostitution or sex for money or drugs or shelter. I understand that this is very personal, but your answers are very important to this research study. There are a lot of different people in this study and many questions may not apply to you.

D1. The first set of questions are about all the males you have ever had sex with in your lifetime. In this case, "sex" should include vaginal sex (when a male puts his penis in your vagina), both types of oral sex (a penis in your mouth and/or when a male puts his tongue in or on your vagina), or anal sex (sex in your bottom/butt/ass). How many different males (men or boys) have you had sex with in your lifetime?
(**PROBE**: This includes any sexual encounters with males, with or without consent.)
(**PROBE:** Please estimate as best you can.)
(CODE AS "000" IF NONE)

|___|___|___|
MALE PARTNERS

PROMPT: IF RESPONSE AT D1 = "000" SKIP TO F1, PAGE 15

D2. How old were you when you had your first sexual encounter with a man or boy with or without consent?

|___|___|
YEARS

[INTRODUCTION FOR D3-D6]

Since 1978, have you ever had any type of sex (vaginal, oral, or anal) with a man who, to your knowledge...	YES	NO	DON'T KNOW
...ever used drugs by injection (by a needle; that is skin popping, shooting up, or intravenously) that were not prescribed by a doctor?	1	2	<-8>
...had hemophilia (a bleeding disease in which bleeding takes a long time to stop or does not stop at all)?	1	2	<-8>
...tested positive for HIV (the virus that causes AIDS) or became sick or died from AIDS or AIDS- related symptoms?	1	2	<-8>
...ever had sex with another man?	1	2	<-8>

D7. How many different males (including men or boys) have you had sex with in the past five years?
(CODE AS "000" IF NONE)

|___|___|___|
OF MALE PARTNERS

PROMPT: IF RESPONSE AT D7 = "000" SKIP TO F1, PAGE 15

SECTION E.
MALE PARTNERS WITHIN THE PAST SIX MONTHS

E1. How many different males (including men or boys) have you had sex with during the past six months? **(CODE AS "000" IF NONE)**

|___|___|___|
OF MALE PARTNERS

PROMPT: IF RESPONSE AT E1= "000" SKIP TO F1, PAGE 15

E2. For these next questions, I am going to ask about the male partner(s) you have had sex with during the past six months. Please think of [this partner/all of these partners] when answering these questions. During the past six months have you had vaginal sex (when your partner puts his penis in your vagina) with [this partner/these partners]?

YES 1
NO 2 **(E3)**

a. During the past six months, how often did you have vaginal sex with [this partner/these partners]? Please give your answer in times per week, times per month, or total times in the past six months; whichever is easiest.

|___|___| PER WEEK 1
TIMES PER MONTH 2
TOTAL DURING PAST 6 MONTHS 3

b. During the past six months, how often did your partner(s) wear a rubber or condom when you had vaginal sex?

Always 1
Sometimes **2**
Never **3**

REFER PARTICIPANT TO COUNSELOR

E3. Have you performed oral sex on [this partner/these partners] (blow job or putting his penis in your mouth) during the past six months?

YES 1
NO 2 **(E4)**

a. During the past six months, how often did you perform oral sex on [him/them] (blow job or putting his penis in your mouth)? Please give me your answer in times per week, times per month, or total times in the past six months; whichever is easiest.

|___|___| PER WEEK 1
TIMES PER MONTH 2
TOTAL DURING PAST 6 MONTHS 3

b. During the past six months, when you performed oral sex on [him/them] (blow job or putting his penis in your mouth), how often did your partner(s) wear a rubber or condom?

Always 1
Sometimes **2**
Never **3**

REFER PARTICIPANT TO COUNSELOR

E4. During the past six months, when you had sex with [this partner/these partners] did you receive oral sex? (That is when your partner puts his tongue in or on your vagina.)

YES 1
NO 2 **(E5)**

a. During the past six months, when you had sex with [him/them], how often did you receive oral sex? (That is when your partner puts his tongue in or on your vagina.) Again, please give me your answer in times per week, times per month, or total times in the past six months; whichever is easiest.

|___|___| PER WEEK 1
TIMES PER MONTH 2
TOTAL DURING PAST 6 MONTHS 3

b. During the past six months, when you received oral sex (that is, when your partner put his tongue in or on your vagina), how often was a dental dam or similar barrier method used?

Always 1
Sometimes **2**
Never **3**

REFER PARTICIPANT TO COUNSELOR

E5. Now I am going to ask you some questions about anal sex. First I need to ask you, have you ever had anal sex (sex in your bottom/butt/ass) with a male partner?

YES 1
NO 2 **(SECTION F)**
DON'T KNOW <-8> **(SECTION F)**

a. Have you had anal sex (sex in your butt/bottom/ass) with any male partner during the past six months? (Please think about all of your male partners during the past six months.)

YES 1
NO 2 **(SECTION F)**
DON'T KNOW <-8> **(SECTION F)**

b. How often did you have anal sex during the past six months. Please give me your answer in times per week, times per month, or total times in the past six months; whichever is easiest. (Please think about all of your male partners during the past six months.)

|___|___| PER WEEK 1
TIMES PER MONTH 2
TOTAL DURING PAST 6 MONTHS 3

c. During the past six months, when you had anal sex (sex in your bottom/butt/ass), how often did your partner use a rubber or condom?

Always	1
Sometimes	**2**
Never	**3**

Appendix D: Multicenter AIDS Cohort Study/ Women's Interagency HIV Study

Combined Cohort Study Data Sets Request

Dear Joy Kagendo ,
Thank you for your interest in using the MACS/WIHS Combined Cohort Study (MWCCS) Public Use Data Sets (PDS). The Data Analysis & Coordination Center (DACC) offers two methods for receiving MWCCS:

- Public Use Data Set (PDS)
- Concept Sheet (CS) submission & review

There are many advantages in choosing to submit a CS over the using the PDS. They include:

- Access to the full MWCCS data set (includes data not available in the PDS, such as neurocognitive data, abuse data, healthy aging, etc.).
- Assistance in understanding the MWCCS study and the complexity of the MWCCS data.
- Linkage to a MWCCS liaison who can offer expertise in your area of study.
- Support regarding study design, methodology, and statistical analysis.
- Access to all summary files, such as AIDSDRUG (which has a summary of therapy use), SOCDEM (which has QOL and CES-D calculations), and HEPSUM (which has hepatitis testing results).

If you are interested in submitting a CS, we can connect you with a liaison in your area of study. This person will help you to develop your concept sheet and can offer assistance throughout the review and approval process. Once your concept sheet has been submitted, it will be reviewed in approximately 14 days. Once approved, you can request analytic data sets based on your specific inclusion and exclusion criteria. Depending on the complexity of your study, this process can take up to 2 months.
For the PDS, information (including an FAQs) and access to the data sets can be found here: https://drive.google.com/drive/u/2/folders/1-bODn2agcy9ojuUSapS7j-i7-dnAIM9_

Thank you.

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