2016

# Stigma and HIV Testing Among African American Women in New Jersey

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2016

Abstract

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Doctor of Philosophy

Public Health

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February 2016

# Abstract

African American women are 18 times more likely to contract HIV than are European American women, yet they are less likely to be tested for HIV. Lack of HIV testing leads to late diagnosis and increased mortality from HIV-related illnesses. Based on the health belief model, this correlational study analyzed the extent to which HIV stigma mediated the relationship between perceived benefits or perceived severity of HIV and the uptake of HIV testing among African American women in New Jersey. A total of 93 African American women aged 18 and older who resided in New Jersey completed online questionnaires. Data were gathered via the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale, the Benefits of HIV Testing Scale, and the Severity of HIV Infection Scale. Although there was a relationship between stigma and perceived severity of HIV, this relationship did not translate into uptake of HIV testing. Perceived benefits of HIV testing did show an impact on uptake. Based on the findings of this study, research and intervention programs should concentrate on the potential benefits of HIV testing among African American women. Through dissemination of these findings, positive social change that may result through increased rates of HIV testing in this population and ultimately better health outcomes for patients who have HIV. Additionally, the findings on HIV benefits could be used as supporting data for policymakers to improve HIV/AIDS prevention programs aimed at African American women by emphasizing the benefits of testing.

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# Dedication

I humbly thank God for his grace and mercy in allowing me the opportunity to complete my courses and dissertation. Without the Lord seeing me through, I would not have been able to accomplish this tremendous goal on my own. This dissertation is dedicated to my wonderfully supportive and dedicated husband, Friedmand, who was always there for me throughout so many years of research. Also, to my precious daughters, Alexandria, Gabrielle and Angeline, who always made time for Mommy to study and do her homework. You are my constant inspiration.

# Acknowledgments

I would like to give my sincere appreciation and utmost respect to my committee chair, Dr. Peter Anderson, and my committee member, Dr. Cheri Langley, whose guidance and leadership helped me through this dissertation. You were always so generous with your time and expertise. I learned so much from you. It was an honor to work with such talented colleagues.

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# Chapter 1: Introduction to the Study

## Introduction

In the United States, 1.1 million people are living with HIV/AIDS (United States Department of Health & Human Services, 2014). The Centers for Disease Control and Prevention (CDC) (2012) estimated that 50,000 US citizens would continue to contract HIV each year. Although HIV/AIDS affects people of all races, genders and sexual orientations, African Americans are disproportionately likely to contract the disease. Indeed, African Americans are eight times more likely, than Caucasians, to be diagnosed with HIV/AIDS (CDC, 2014), while, they also accounted for 44% of all new contracted cases of HIV in 2010. In comparison with other races, African American women are 18 times more likely to contract HIV than European American women (CDC, 2013).

The CDC estimated that 21% of infections in African Americans have not yet been diagnosed (CDC, 2012). This lack of a diagnosis is problematic as it increases the likelihood that the infected individuals will spread HIV/AIDS to others (CDC, 2012). The stigma and discrimination against people living with HIV (PLHIV) has had a negative impact on the care and treatment of patients, particularly in the African American community (Liamputtong, 2013). Understanding how HIV stigma influences health behavior is important for reducing the spread of HIV/AIDS, and increasing the quality of life for those living with the disease (Liamputtong, 2013). By analyzing African American women in New Jersey, the present study aimed to contribute to the current HIV stigma literature by examining how stigma affects the uptake of HIV testing in this population.

The purpose of this study was to contribute to the current HIV stigma literature by examining how stigma affects the uptake of HIV testing in African American women. Specifically, I determined if HIV stigma mediates the relationship between perceived benefits or perceived severity, and the uptake of HIV testing. This study may lead to positive social change by providing insights and a better understanding of how HIV stigma affects HIV testing in this population. The findings from this study may provide public health practitioners and governmental organizations important insights on how to create more effective HIV programs for African American women, to reduce the spread of HIV.

In this chapter I reviewed the history of HIV/AIDS and applied a theoretical framework to determine how HIV stigma influenced the testing behaviors of African American women. Specifically, I included a historical overview of HIV and attitudes towards the disease in the African American community, the problem statement, purpose of the study, research questions and hypotheses, theoretical and/or conceptual framework for the study, nature of the study, definitions, assumptions, scope and delimitations, limitations, significance, and summary.

## Background

Although African American women constitute just 13% of the total population in the United States, they are disproportionately affected by HIV/AIDS (Office on Women’s Health, 2014). In fact, African American women account for two-thirds of all new diagnoses among women (Office on Women’s Health, 2014). According to the Kaiser

Foundation (2013), HIV/AIDS is the seventh leading cause of death among African American women. Hence, this high prevalence of HIV/AIDS, and the increased likelihood that this population will succumb to the illness (Kaiser Foundation, 2013), makes HIV/AIDS a deadly problem for African American women.

In exploring what factors influence the increased prevalence of African Americans living with HIV/AIDS, McNair and Prather (2013) argued that socio-cultural factors have changed the way in which the disease is spreading. Although HIV/AIDS was historically more dominant in homosexual men, over the past decade, African Americans have become significantly more likely to contract the disease. From this standpoint, research to explore how African Americans perceive HIV/AIDS is justified, as these perceptions may influence the growing prevalence of individuals who will contract the virus.

There are differences in how African American men and women contract HIV. African American men are more likely to contract HIV from using drugs intravenously, whereas African American women are more likely to contract HIV from sexual encounters (AVERT, 2014). Based on a HIV web study, researchers at the University of Washington (2011) argued that the spread of HIV/AIDS in African Americans is widely attributed to lifestyle factors. Specifically, the researchers  argued “the African American population has experienced an intersection of poverty, drug use, high rates of incarceration and the exchange of sex for drugs” (para. 5). Similar to AVERT (2014), the University of Washington researchers (2011) attributed the spread of HIV/AIDS to the use of drugs, while the Kaiser Foundation (2013) demonstrated that African American women were significantly more likely than other segments of the population to contract HIV/AIDS from sexual activity. However, these studies did not widely explore what factors may have led African Americans to engage in unprotected sexual activity.

In further exploring what factors have led this group of the population to be at an increased risk of contracting HIV/AIDS, Ball, Lawson and Alim (2013) argued that history plays a role in the trust African Americans have in society. They reviewed African American history in the United States, demonstrating that even in the 20th century, African Americans were significantly more likely to be subjected to medical experiments, and hypothesized that these historical trends have decreased this population's trust in doctors. Furthermore, Ball et al. argued that the Tuskegee Syphilis Study that began in 1932 directly influenced the way in which African Americans perceive healthcare. When the study, which focused on the long-term effects of syphilis in African American men (CDC, 2014), began, there was no legitimate treatment for syphilis (Tuskegee University, 2013). Although the study was initially projected to last a few months, it actually lasted for 40 years. All participants in this study were African Americans who believed that they were being treated for medical issues; however, even after a treatment was developed, no participants were treated with medication. On the contrary, the researchers watched the illness progress (Tuskegee University). The widespread publication of this study in 1972, and the subsequent governmental review of its ethical practices have directly influenced how, many African Americans perceive both the medical community and the government (Ball et. al., 2013). Although victims and their loved ones sued Tuskegee University and were awarded over $10 million in damages, the study damaged the trust African Americans have in healthcare. As a result, they are significantly less likely to receive healthcare or practice preventative measures (Doshi, Malebranche, Bowleg & Sangaramoorthy, 2013).

Expanding on medical mistrust among African Americans, many researchers have explored how this population perceives HIV/AIDS. Bogart, Wagner and Galvan (2010) found that many African Americans believe that HIV is a disease manufactured to target African Americans, in order for the government to eliminate this segment of the population. These authors also found that participants diagnosed with HIV/AIDS were significantly less likely to be receiving medication or treatment for the disease compared with other races (Bogart et al., 2010). Zekeri, Habtemariam and Tameru (2009) reported similar findings showing that 29% of participants believed that HIV/AIDS was a disease created by the government against African Americans. Furthermore, more than half of all participants (56%) believed that the US government currently has a cure for AIDS but is not releasing it. However, it should be noted that participants who had a college education were less likely to believe that the government has a cure for AIDS.

The effects of racism and mistrust in healthcare have been further shown to influence the type of care and medical treatment given to African Americans. In a meta-analysis, Gaston and Green (2013) explored the findings of 16 studies to determine the impact of racism and mistrust on African Americans, and the likelihood that this group would seek treatment for HIV. All 16 studies demonstrated a correlation between medical mistrust, perceived racism and the likelihood that the individual would seek care. Gaston and Green (2013) concluded that medical mistrust and conspiracy theories directly influence the delivery of healthcare to this population. Furthermore, the researchers recommended that the medical community work to re-establish trust among African American patients.

In relating medical mistrust to risky behaviors, Ball et al. (2013) concluded that African Americans who have a high level of mistrust in healthcare are less likely to engage in preventative behavior. Furthermore, men were significantly less likely to report using condoms if they believed in conspiracy theories targeting African Americans. These findings may help explain why HIV/AIDS transmission is more likely to occur through sexual behavior in African Americans (United States Department of Health, 2014). Similarly, according to McNair and Prather (2013), African American women are less likely to use protection during sexual intercourse, finding that many believed that condoms are inconvenient. The researchers further found that African American women were less likely to say “no” to their partners due to a high power divide in their relationships.

Despite the foregoing, few studies have examined the role of stigma associated with HIV/AIDS and how this contributes to the prevalence of the disease among African American women (Office of Women’s Health, 2014). For instance, African American women are significantly more likely than European American or Latina women to report that religiosity plays an important role in their lives (Muturi & An, 2010). In this sense, a diagnosis of HIV/AIDS could provide some with the impression that the infected individual is not living up to her religious values. Hence, the stigma associated with a diagnosis of HIV/AIDS may change the way in which individuals perceive the woman, and tarnish her reputation. Indeed, Muturi and An (2010) demonstrated that African American women with a high degree of religiosity are significantly more likely to perceive individuals diagnosed with HIV/AIDS negatively, especially as some participants associate such a diagnosis with drug use (even though drug use is not the most common way in which individuals in this population contract HIV/AIDS).

Previous researchers have used the Berger HIV stigma scale (Jeyaseelan et al., 2013) and the HIV Stigma Scale (HSS-40) (Wiklander et al., 2013) to measure the stigma perceived and experienced by HIV-positive persons. These authors have all measured perceptions of the degree that society would stigmatize an individual. These authors reviewed the perceptions of society's views about the disease, but not the perception of stigma in an individual's direct social group.

The ability to distinguish between societal stigma and stigma among one's direct social network is important, particularly among African American women because of their strong connection to religious institutions (Muturi & An, 2010). No studies have utilized a stigma scale such as the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale, to examine how HIV stigma mediates the perceived benefits and the perceived severity of HIV in African American women. The questionnaire used in the present study was modified to suit this population and to collect data on the background characteristics of respondents, including perceptions of stigmatization by others. This study, could thus add to the current knowledge on HIV stigma. In particular, the findings of this study could help improve programs to reduce HIV-related stigma, and strengthen policies and practices to reduce such discrimination in healthcare settings.

## Problem Statement

Stigma is anything that when associated with a person characterizes him or her as abnormal, different and/or disgraced (Barnett & Prins, 2010). HIV has long been the object of stigma and discrimination against people living with the disease. PLHIV, their spouses and family members all over the world are denied respect and human dignity. They can be treated with violence, and as less human (Wong, 2013). PLHIV in the United States are not exempt from this form of discrimination. They too, are denied access to certain privileges and are treated with bias in healthcare and employment settings (Ford & Spicer, 2012). Women in particular, are more likely to be excluded, abandoned and isolated as a result of their HIV status (Reis, Galvao, & Gir, 2013). This is especially true in minority and urban communities (Cené et al., 2011).

Because HIV/AIDS has no cure, it decreases the life expectancy of those who contract the disease (Harper, MacLehose, & Kaufman, 2014). However, over the past three decades, the prognosis has improved for PLHIV. If tested early, PLHIV can gain access to effective medicines that can help prolong their lives, and prevent the virus from progressing to AIDS (Mayo Foundation for Medical Education and Research, 2014). As a result of the development of antiretroviral therapies, the number of patients progressing from HIV to AIDS or becoming incapacitated and unable to continue with their economic and social responsibilities due to advanced AIDS-related illnesses, has significantly reduced since the 1980s, when the disease was first identified (AIDSinfo.nih.gov, 2014).

Despite these advances and new therapies however, PLHIV continue to experience stigma and this has negatively affected the fight against HIV/AIDS. HIV stigma not only has a negative impact on the patient, it also affects the wider society because it negatively influences the behaviors of PLHIV. HIV stigma reduces the level of testing because people fear the reaction to testing positive by those within their social networks (Young & Zhu, 2012).

This quantitative study aimed to critically evaluate the relationships between stigma and HIV testing, among African American women in New Jersey. Many studies have examined the issue of HIV stigma and how it negatively influences the social and economic lives of PLHIV in the form of discrimination, disrespect and denial of rights (Hatzenbuehler, Phelan, & Link, 2013; Katz et al., 2013; Szaflarski, 2014). However, most studies have tended to focus on homosexual men (Audet, McGowan, Wallston, & Kipp, 2013; Wohl et. al., 2013; Overstreet, Earnshaw, Kalichman & Quinn, 2013), whereas few have documented the experiences of women (Okoror, BeLue, Zungu, Adam & Airhihenbuwa, 2014; Wingood et al., 2013). Even fewer have addressed how HIV stigma affects African American women (Logie, James, Tharao, & Loutfy, 2013; Gilbert, 2013).

## Purpose of the Study

The purpose of this study was to address the gap in the literature regarding how HIV stigma impacts HIV testing among African American women in New Jersey. African American women aged 18 and over who reside in New Jersey were eligible to participate in this study. The goal of the study was to gain a better understanding of the correlation between African American women's experiences with HIV stigma and how these experiences shape their behaviors regarding HIV testing. This study explored the behavioral correlates of HIV testing seeking behavior among African American women by utilizing the constructs of the health belief model (HBM). The independent variables in this study were the perceived benefits of HIV testing and perceived severity of HIV. The dependent variable was HIV testing. This study examined stigma as the mediator. The covariates included socioeconomic status, age and educational level.

## Research Questions and Hypotheses

### Research Question 1

Is there a significant correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

### Hypothesis 1

*Null hypothesis*: There is no correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey.

### Research Question 2

Is there a significant correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

### Hypothesis 2

*Null hypothesis*: There is no correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey.

### Research Question 3

Is there a significant correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 3

*Null hypothesis*: There is no correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey.

Research Question 4

Is there a significant correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 4

*Null hypothesis*: There is no correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey.

Research Question 5

Does HIV stigma mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 5

*Null hypothesis*: HIV stigma does not mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: HIV stigma does mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey.

## Theoretical Framework

The conceptual framework of this dissertation was based on the HBM, a psychological model that explains and predicts health behaviors by individuals (Janz & Becker, 1984). To explain and predict health behaviors, the model focuses on attitudes and beliefs held by individuals. Public health workers have utilized this model to predict the willingness of people to attend free tuberculosis screening programs based on their attitudes and beliefs about the disease (Stone, 2009). Therefore, it can logically be used to predict healthy behaviors relating to HIV testing based on the beliefs, attitudes and perceptions of the disease by people/society. A more detailed discussion on the HBM is provided in chapter 2.

This model was essential to this research study since it would help predict and explain the level of HIV testing likely to be undertaken by the research study population (African American women in New Jersey) based on the attitudes, beliefs and perceptions that the society has regarding HIV, as well as the people living with it; which amounts to HIV stigma.

X = Independent Variables

- Perceived Benefits
- Perceived Severity

Y = Dependent Variables (Outcome)

- HIV Testing

M = Mediator Variable

- Stigma

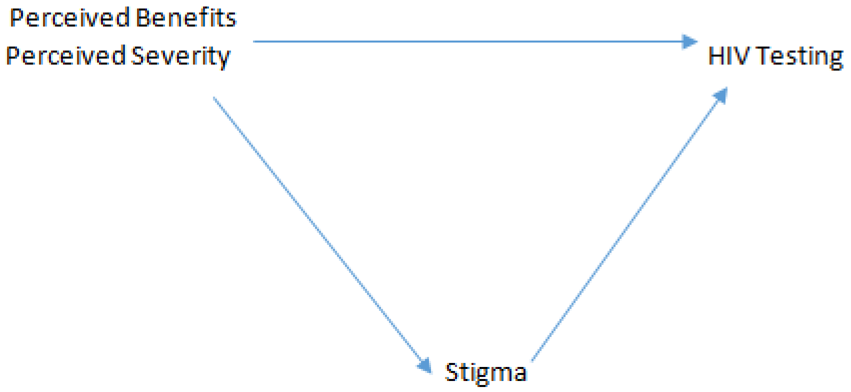

*Figure 1*: Schematic representation of study variables and HBM constructs.

## Nature of Study

This quantitative analysis study utilized questionnaires administered to African American women based on a correlational research design. The proposed correlational design was able to explain the relationships among the study variables chosen in this study (Judd & Kenny, 2010). This study did not aim to manipulate the independent variables and/or assign participants to conditions, as is seen in experimental or quasi-experimental research, but rather explain statistically the relationship between HIV stigma and HIV testing among African American women in New Jersey (Judd & Kenny, 2010).

In this study, the independent variables were two HBM constructs, namely, perceived benefits of HIV testing and perceived severity of HIV. The uptake of HIV testing was the dependent variable and HIV stigma was the mediator variable. More in-depth explanations of the dependent, independent and mediator variables are presented in subsequent chapters.

## Definitions of Terms

*Stigma:* The tendency of society to assign negative attributes and place labels on individuals from a certain group (Corrigan, 2014). For the purposes of this study, the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale was used to measure stigma.

*Perceived Severity:* A person’s belief about the severity of a disease (Hayden, 2013). Perceived severity will be measured using the Severity of HIV Infection Scale.

*Perceived benefits:* Perceived benefits of HIV testing is defined as an individual's beliefs about the effectiveness of HIV testing on their treatment for HIV (Dohro, 2014). Perceived benefits will be measured using the Benefits of HIV Testing Scale.

*HIV Testing:* Test designed to detect HIV (AVERT, 2014).

*PLHIV:* A person who has tested positive for the HIV virus, which may or may not have advanced to "full-blown" AIDS (The People Living with HIV Stigma Index, 2014).

*Discrimination:* Treating an individual differently because of their particular health status (Rethink, 2010).

Stigmatization - The branding of an individual as shamed or disgraced (Naughton, 2013).

*African American:* Anyone who has ancestry belonging to any of the Black racial groups of Africa. It includes people who identify their race as African American, Negro, or black (Index Mundi, 2014)

*Age:* Defined as the number of years from birth of the respondent to the date of the start of the survey, self-reported as greater than 18 years old.

*Socioeconomic status:* For the purposes of this study, socioeconomic status will refer to the respondent's annual income. This information will be self-reported on the Demographics survey.

*Educational level:* In this study, educational level refers to the number of years of education the respondent has completed. This will be self-reported and measured by the Demographic Survey.

## Assumptions

Several assumptions were made in this study to facilitate the answering of my research questions. I assumed that the study participants understood the vocabulary in the questionnaires. In addition, since I asked the respondents to complete the questionnaire themselves, I assumed that they would provide honest and accurate responses; however, some respondents tended to always respond positively to certain questions, which could have introduced bias to the study (Van Vaerenbergh & Thomas, 2013). Despite this, the assumption that respondents answered the questionnaires honestly and accurately was essential for conducting research, utilizing self-reported questionnaires. All the questionnaires in this study were self-administered online, using a survey tool. Self-administration of questionnaires in an anonymous setting, may allow respondents to feel comfortable enough to disclose sensitive information about their sexual practices and HIV testing behaviors (Groves et al, 2013).

## Scope and Delimitations

The delimitations of this study were the ability to read and speak English (literacy), age, and residency in New Jersey. The limited geographical scope of the study may mean that the data are not representative of all African American women in the US.

This study included African American women aged 18 and older. To meet the inclusion criteria, African American women had to be in the age range of interest and had to be permanent residents of New Jersey. I did not include African American men in this study because this population has been extensively studied and was not the focus of this study.

This dissertation was guided by HBM (Janz & Becker, 1984). This theory has been used to describe HIV-related behaviors among various populations (Nakigozi, 2013). The HBM has also been widely used to explain why individuals fail to engage in preventative behaviors that would reduce the likelihood they contract HIV/AIDS (Collins & Obregon, 2012). The Theory of Reasoned Action (TRA) was also considered for this study, but TRA was considered inappropriate for this study because a fundamental structure in this theory is societal norms and beliefs (Deacon, Stephney, Prosalendis, 2010), which was not the focus of this study.

The decision to study African American women in New Jersey was based on the high rate of HIV infection in this state and the increased risk of HIV infection within this demographic, based on a review of the literature. Moreover, prior research on the effects of HIV stigma on HIV testing in this population is scarce, with the few research findings available lacking generalizability because of the limitations of convenience sampling. In addition, the stigma scale used in this study was originally validated in a different population than the target population. I will conduct a reliability and validity assessment to evaluate its use in this study.

## Limitations

This study contained several limitations. The first limitation was related to the availability of data on HIV testing attitudes and the behaviors of African American women, to make a meaningful comparison using the results of this study.

There is the potential for bias associated with people who volunteer to complete questionnaires as their truthfulness in self-reporting and their overestimation or underestimation of responses exhibit what they believe to be a more favorable response. The questionnaires assessed what the respondents stated they did, not necessarily what they in fact did. In addition, since the questionnaire data were self-reported, I was able to confirm that the responses to the questions represent the true perceptions about HIV testing among African American women.

This study contained an online questionnaire, which required internet access; which was not available to everyone (Gjestland, 1996; Sax, Gilmartin, & Bryant, 2003) and with the internet questionnaires there was the possibility that the same participant could complete the questionnaire multiple times to obtain additional incentives. I did not offer incentives to discourage multiple completions by an individual. Respondents may have experienced some technical difficulties if they attempted to complete the questionnaire using a mobile device (Callegaro, 2013) since the online survey was designed to be completed on a standard desktop or laptop screen.

## Significance of the Study

HIV is a serious public health concern that now affects over 37,000 New Jersey residents (NJDOH, 2014). Scientific and medical researchers have been actively seeking a cure for this virus since the early 1980s (Stangl, Lloyd, Brady, Holland & Baral, 2013). Their efforts have been moderately successful, and several antiviral therapies are now available to PLHIV (FDA, 2014). Although these treatments do not cure the disease, they do improve the lives and health of HIV patients (FDA, 2014). However, HIV stigma has remained an obstacle to the fight against HIV across the world, a major barrier to the effective treatment and response to the HIV/AIDS epidemic (Stangl et al., 2013). HIV stigma threatens the progress made on HIV because it negatively impacts on prevention efforts, care and treatment (Kerr et al., 2014).

New Jersey was ranked eighth in Real Gross Domestic Product (GDP) among all states in the United States in 2013 (StatsAmerica, 2014). Several of New Jersey's nearly 100 hospitals are nationally ranked or meet standards for strong performance (U.S. News, 2014). The quality and access to healthcare services offered in New Jersey are thus comparable with other states across the country (U.S. News, 2014). Despite this, 31% of African Americans living in New Jersey have never been tested for HIV (CDC, 2012). Furthermore, according to the New Jersey Department of Health and Senior Services (2010), few African Americans know they are infected and many of those at risk refuse to be tested.

This research was crucial as it addressed an important social subject, namely HIV stigma. This study was significant because it analyzed how HIV stigma mediates the effects of the two HBM constructs in the research questions and how this influenced the uptake of HIV testing in African American women. In particular, healthcare practitioners might gain more insight into this social disorder and better understand its impact on patients (Liamputtong, 2013). Discrimination and stigma against PLHIV can have strong negative effects on care and support-seeking behavior (Liamputtong, 2013). Only by understanding the facts about HIV stigma can society truly deal with HIV from both a social and a medical perspective (Smith, 2013). The insights gained from this study could create positive social change by providing governmental and medical programs that offer assistance and interventions for PLHIV a clearer understanding of the issue of HIV stigma so they can create effective HIV programs that take into account both gender and sociocultural components. Moreover, the information gathered from this study may help these interested stakeholders understand what steps need to be taken to change societies' attitudes towards PLHIV.

Ultimately, this research could help reduce the level of stigma associated with having HIV and thus make life easier for people living with the disease allowing them the freedom to seek care without the burden of being stigmatized. Although stigma is not the only barrier faced by African American women living with HIV, it can play a significant role in the success of HIV prevention programs for this population. Therefore, it is the responsibility of public health practitioners, to reduce the negative health consequences of HIV stigma in African American women (Liamputtong, 2013).

## Summary

Even after 30 years of the HIV epidemic, there is still a lot of stigma and rejection related to the disease especially in minority communities. New Jersey has been more severely impacted than many other states, ranking fourth in the country in the number of reported cases and first in the percentage of women who are infected with HIV (Nyamwange & Nyamwang, 2014).

One of the challenges to curtailing the spread of HIV/AIDS in many African American communities is the lack of an open conversation or dialogue about sexuality, sex and HIV/AIDS (Nyamwange & Nyamwang, 2014). This leads to a lack of understanding about the disease and increases HIV stigma in this community. Several researchers have tested the impact of HIV stigma on the social and economic lives of PLHIV, but few have specifically focused on African American women. The purpose of this study was to address this gap in the literature, and helps provide a clearer understanding of the role of HIV stigma in the uptake of HIV testing among African American women.

The theoretical framework used in this study was the HBM and the variables of interest were HIV stigma, perceived benefits, perceived severity and HIV testing. In addition, covariates of age, socioeconomic status and education level were assessed. The main research question focused on whether HIV stigma mediates the relationship between the HBM constructs of perceived benefits and/or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey.

This study allowed me to provide public health practitioners and program administrators with data to aid them in HIV discussions with patients, and ultimately contribute to increased uptake of HIV testing in African American women, with the goal of reducing HIV infections in this population.

In this chapter, I provided a background of the issues that surround HIV stigma and the attitudes towards HIV in the African American community, particularly among African American women. The fear of being exposed as HIV positive and suffering the shame of HIV stigma from those within their social network, may lead African American women to remain ignorant of their HIV status. The fear of discrimination, rejection and negative perceptions within their community can be an overwhelming emotional burden (Johnny & Mitchell, 2006). Similarly, people fail to continue with their HIV therapy because of this same fear of discrimination and rejection. These issues undermine prevention, control, treatment and care for PLHIV. In addition, I discussed the purpose of the study, theoretical framework, the nature of the study, assumptions, scope and delimitations, limitations and significance of the study.

In Chapter 2, I provide a detailed literature review that summarizes the body of knowledge on HIV stigma and its effects on HIV testing, focusing on African American women. I also review the theoretical framework and the questionnaires utilized in this study.

# Chapter 2: Literature Review

## Introduction

When the first cases of HIV/AIDS were identified in the 1980s, the average American had no idea what the disease was or how it was transmitted (AVERT, 2014). Many people dismissed it as a homosexual disease, not taking the disease seriously until there were reports of injection drug users and women with no other risk factors acquiring this illness (AVERT). The increase in women with AIDS, suggested that the disease was also transmitted through heterosexual sex (AVERT). Today, HIV/AIDS continues to be a deadly pandemic (AIDSmap, 2014). Over the past 30 years, there has been much stigma and rejection associated with HIV/AIDS, especially in minority communities (Muturi & An, 2010). In New Jersey, HIV/AIDS has affected the lives of many people in the African American community. Most African Americans either have HIV/AIDS, have known someone who is infected, or have worked in the healthcare sector interacting with HIV/AIDS patients. According to the New Jersey Department of Health (2010), 14% of the population of New Jersey was African American, however, they represented 54% of those who had HIV. These statistics are alarming and demonstrate how devastating the virus is to the African American community. Furthermore, African Americans have seen the largest percentage of HIV/AIDS cases across multiple categories, including newborns, bisexual/gay men, injection drug users, and increasingly, women (New Jersey Department of Health).

New Jersey has been more severely impacted than many other states, ranking fourth in the country in the number of reported cases and first in the percentage of women infected with HIV (Nyamwange & Nyamwang, 2014). A substantial challenge to curtailing the spread of HIV/AIDS in many African American communities is the lack of open conversation or dialogue about sexuality, sex, and HIV/AIDS ((Nyamwange & Nyamwang). Poor education leads to a poor understanding of HIV/AIDS and an increased stigma towards the disease (Nyamwange & Nyamwang). The Office of National AIDS Policy (2012) national strategy on HIV/AIDS has identified four goals: reduce new infections, improve health outcomes for infected persons, reduce health disparities related to HIV/AIDS, and achieve a more coordinated response. The Office of National AIDS Policy has taken steps to reduce disparities and health inequities as they relate to HIV/AIDS, that include reducing HIV-related mortality within communities where there is high infection, adopting approaches to reduce HIV infection at the community level, and reducing HIV stigma and discrimination against persons affected by HIV/AIDS.

Necessary components required to meet these goals and halt the spread of HIV in the African American community include understanding how stigma affects the uptake of HIV testing and creating effective programs that will target this population (Office of National AIDS Policy). The purpose of this study was to explore the relationship between HIV stigma, perceived benefits of HIV testing, perceived severity of HIV, and the uptake of HIV testing. By examining how stigma mediates these HBM constructs, public health practitioners may be able to create gender and culturally sensitive programs to reduce the prevalence of HIV in African American women. It is important that public health practitioners address HIV stigma to bring about a reduction in this type of stigma (Office of National AIDS Policy). A reduction in HIV stigma could positively affect the number of African American women who undergo testing for HIV.

This chapter includes a literature review of prior studies related to gender disparities in the African American community, African American attitudes and perceptions towards people living with HIV (PLHIV), effects of stigma on HIV testing, African American perceptions of HIV testing, public health consequences of HIV/AIDS stigma, as well as a review of the epidemiology of HIV in the US. The review emphasizes the NJ HIV/AIDS statistics and some of the factors that may cause an increase in the spread of HIV/AIDS among African American women.

## Literature Search Strategy

A comprehensive review of the literature included the following EBSCO databases: Google Scholar, Academic Search Premier, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, MEDLINE, and ProQuest. The key words used in the search were blacks, African American women, minorities, New Jersey, United States, HIV stigma, HIV testing, fear, attitudes, discrimination, stereotypes, gender, women's health, HBM, Health Belief Model, HIV, AIDS and stigma questionnaires. The literature search was limited to studies published between 2010 and 2014 with the exception of the historical review of HIV/AIDS.

## Theoretical Framework

### Health Belief Model

Created in the 1950s, the Health Belief Model (HBM) improved upon explanations of why individuals were not adopting disease prevention strategies

(University of Twente, 2013). According to Boston University (2012), the HBM suggests that a person's belief in the personal threat of an illness or disease, together with a person's belief in the effectiveness of the recommended health behavior or action, is predictive of the person's ability to adopt the behavior (Boston University, para. 1). From this standpoint, it is increasingly important to explore how the individual perceives both the disease and the effectiveness of prevention and treatment measures.

The HBM has six core assertions:

1. The first assertion explores the individual's perception of susceptibility to the illness or disease. Individuals who believe that they are susceptible to the disease are more likely to engage in preventative measures (Orji, Vassileva, & Mandryk, 2012). However, an individual's perceived severity of the illness directly influences their perception of their susceptibility to the illness or disease.
2. The second assertion of the HBM posits that the individual's perception of the severity of the disease left untreated directly affects their decision to utilize prevention tactics. Yet, an individual's perception of an illness and the effect it will have on their life tends to vary. Even in the case of serious disease, some still assume that the illness will not adversely affect their life (Orji, Vassileva, and Mandryk).
3. The next assertion made under the HBM focuses on the individual's perception of benefits. According to Boston University (2012), the individual's perception of the effectiveness of various actions available to reduce the threat of illness or disease, directly influences their behaviors (Boston University, para. 4).

Individuals who believe the illness is serious are more likely to employ prevention measures in their everyday lives. However, if the individual believes that the illness is not severe or easily treated, he or she may be less likely to employ preventative measures in his or her everyday life. The correlation between the perceived benefits of HIV testing and the perceived severity of HIV, and the uptake of HIV testing in the sample population was assessed in Research Questions 1 and 2.

4. The next part of the HBM focuses on barriers to care. Barriers can be physical, monetary, and psychological (University of Twente, 2013). In applying this to HIV, the cost of treatment, the individual's fear, stigma associated with the disease, beliefs about the illness (conspiracy theories), and the individual's mental state can all be barriers to treatment (Averting HIV and AIDS, 2014; Bogart et al., 2010; Carrico, 2010; Catz et al., 2000; Centers For Disease Control & Prevention, 2014; Davis et al., 2013; Gatson & Alleyne-Green, 2013; Muturi & An, 2010; Neff & Goldschmidt, 2012; University of Florida, 2014; Walker, 2014). Importantly, barriers directly influence whether or not the individual receives or adheres to treatment measures.
5. Cues to action describe the next stage of the HBM. According to Boston University (2012), stimuli trigger the decision-making process to accept a recommended health action (Boston University, para. 7). In some cases, the individual may experience physical symptoms. For example, an individual who smokes may experience chest pains or wheezing. In other situations, the

individual may follow the advice of a family or friend. Regardless of what triggers the individual, this is the step when the individual first determines he or she needs medical attention.

6. The final stage of the HBM, relatively new and added in the 1980s, focuses on the individual's perception of himself or herself (Boston University, 2012). The individual's belief or confidence in his or her ability to successfully adhere to or perform a task or behavior, directly influences the treatment he or she receives. Individuals that do not feel that treatment is worth the adverse side effects, or do not believe that they can adhere to a medication schedule are more likely to go against medical recommendations.

The HBM has been widely used to explain why individuals fail to engage in preventative behaviors that would reduce the likelihood of contracting HIV/AIDS (Collins & Obregon, 2012). Lin (2004) extended the HBM to determine why individuals do not undergo HIV testing. Lin's research showed that HBM could assess an individual's perception of HIV and their individual risk. Furthermore, the authors concluded that education helped individuals use their own behaviors to develop correct assumptions pertaining to their perceived risk of HIV (Lin).

The HBM has been widely used in many HIV/AIDS preventive studies (Lin, 2004; Collins & Obregon, 2012). Liivlaid and Uuskula (2012) concluded that knowing someone who had HIV/AIDS was inversely associated with the likelihood that those at risk would engage in high-risk sexual relations. This provided evidence that perceived benefits and severity played a role in predicting HIV related behavior. HBM's ability to predict and explain a variety of health-related behaviors has been validated across numerous public health topics from breast cancer screening (Lee, Stange, & Ahluwalia, 2014) to vaccine acceptance (Adams, Hall, & Fulghum, 2014), and among a wide range of populations (McFarland, 2013; Tsunematsu, Kawasaki, Masuoka, & Kakehashi, 2013). The HBM model has also been utilized in creating effective health intervention programs (Lee, Stange, & Ahluwalia, 2014; McFarland, 2013; Tsunematsu, Kawasaki, Masuoka, & Kakehashi, 2013). HBM is well suited to study HIV/AIDS prevention in the African American community because the theory incorporates both the cognitive and socio-psychological perceptions that individuals have regarding disease (McFarland, 2013).

This literature review has shown that the HBM provides an appropriate conceptual framework for testing the hypotheses in this study regarding the uptake of HIV testing in African American women in New Jersey.

## HIV Studies Utilizing HBM

The health-belief model (HBM) attempts to explain ways in which people take action towards avoiding ill health. Psychological and social theories define the HBM. HBM constructs therefore include perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy. Individuals must first recognize their susceptibility and risk, as well as understand that the condition is severe enough and should be avoided (Asare & Manoj, 2012). Several studies have explored HIV based on the HBM. Asare and Manoj studied the role of HBM in sexual communication among immigrants of

African origin. The purpose of the study was to use the HBM and acculturation to evaluate sexual communication behaviors among immigrants.

The researchers administered a 47-item cross-sectional survey to a sample consisting of 412 African immigrants. HBM constructs significantly predicted sexual communication behaviors: cues to action, perceived susceptibility, perceived benefits, as well as acculturation were significant predictors in sexual communication behavior. Perceived susceptibility correlated positively with the participants' condom use and communication behaviors. Respondents who perceived themselves to be at risk for HIV infection based on their sexual behaviors were more likely to discuss their sexual history with their partners. With respect to cues to action, participants who heard their friends talk about the benefits of sexual communication behaviors were encouraged to practice safe sex, as well as talk to their partners about their sexual history, HIV risk reduction, and condom use. Respondents who perceived sexual communication as important towards preventing HIV infection were more likely to discuss their sexual behaviors with their partners as well.

Solhi et al. (2014) studied perceptions of HIV prevention among barbers based on the HBM. The risk of contracting HIV increases with use of hairdressing equipment or the use of razors for tattoos (Solhi et al., 2014). As such, the researchers used a cross-sectional approach to examine perceptions of male barbers on preventive behaviors for HIV/AIDS. Solhi et al. used a questionnaire to obtain perceived benefits and barriers, perceived severity and susceptibility, as well as important cues to action, concerning HIV/AIDS. The perceived barriers and severity scores for preventing HIV/AIDS were higher than the other perceptions. Specifically, average perceived susceptibility scores were less than the other constructs. A significant relationship existed between education and perceived susceptibility, and between age and perceived susceptibility. These results indicated a need for educational interventions to increase perceived susceptibility while decreasing perceived barriers to the prevention of HIV among hairdressers.

Orji, Vassileva, and Mandryk (2012) explored an extension of the HBM for designing effective health interventions. These authors found relationships between health challenges and changes in lifestyle, and both researchers and health practitioners have applied diverse behavioral interventions to promote change (Orji, Vassileva & Mandryk, 2012). Investigations into why people do not undertake preventive health measures have used the HBM. However, low predictive capacity for existing HBM variables and small effect sizes limits the model. The authors proposed an extension of the HBM by introducing additional variables such as potential determinants for healthy behavior. An extended model added, self-identity, perception of importance, consideration of future consequences, and concern for appearance, to the original HBM to compare differences in predictive capacity between models. The results showed that the newly added determinants were successful at predicting health behavior. Self-identity, consideration of future consequences, concern for appearance, perceived importance, self-efficacy, and perceived susceptibility are all significant determinants of healthy behavior (Orji, Vassileva & Mandryk).

Mediating relationships found between the determinants of HBM revealed that these combinations of determinants could improve designs for effective health promotion programs including those focusing on HIV/AIDS intervention strategies.

The ability of the various HBM components to predict HIV risk-reduction behavior has been inconsistent. There are studies that failed to show a relationship between perceived benefits and/or perceived severity with a change in HIV risk behavior (Adams, Stuewig, Tangney & Kashdan, 2013; Huebner, Neilands, Rebchook & Kegeles, 2011). This may in part be due to the failure of these studies to account for the effect of mediating factors such as stigma. This research study attempted to understand the role of HIV stigma in the uptake of HIV testing among African American women in New Jersey by utilizing the HBM constructs of perceived benefits and perceived severity.

The HBM was suited for this study over other theories because its purpose is to explain preventive health behaviors used by individuals who are trying to prevent disease (Rosenstock, 1974). This makes HBM an appropriate framework for studying the determinants of the uptake of HIV testing.

## Historical Overview of HIV/AIDS

In 1981, the Centers for Disease Control and Prevention observed a new occurrence in patients suffering from severely compromised immune systems (United States Department of Health & Human Services, 2014). Five homosexual men, with no previous medical problems, fell ill and did not respond to treatment. By December 1981, the United States Department of Health and Human Services determined that more than 270 individuals, all homosexual males, had developed severely compromised immune systems. At the time of publication, approximately 120 of these individuals had died. Homosexual males continued to become ill and led health professionals and scientists to believe that a new disease had emerged. In 1982, the Centers for Disease Control and Prevention defined AIDS as a disease at least moderately predictive of a defect in cell-mediated immunity, occurring in a person with no known case for diminished resistance to that disease (United States Department of Health & Human Services, para. 3).

Although scientists and health professionals had defined AIDS, they were unsure of what caused individuals who contracted the disease to develop a compromised immune system. Furthermore, scientists did not understand why this new disease only appeared to affect men. The United States Department of Health and Human Services (2014) reported on the first female to contract AIDS in 1983. The woman reported having sexual relations with a bisexual male prior to her diagnosis, which suggested a link between the exchange of bodily fluids and the development of AIDS to healthcare professionals and scientists (Joshi, 2013). Within months, the number of people contracting AIDS steadily increased, affecting both men and women. Yet another factor emerged during this period; most of the people diagnosed with AIDS had reported using drugs intravenously. Scientists believed bodily fluids contributed to AIDS transmission in females through bi-sexual partners and intravenous drug use.

During the latter half of 1983, scientists reported deficient antibody production and CD4 T-cell loss in the blood stream of individuals, prior to them developing AIDS, which provided evidence that the Human Immunodeficiency Virus caused AIDS (Pallikkuth et al., 2012). Scientists and health professionals were optimistic during this period and believed that a vaccine could prevent individuals from contracting the disease within a few years. Unfortunately, a procedure for screening blood for HIV was not developed until 1985 (Food & Drug Administration, 2014) and as a result, individuals receiving blood transfusions were contracting the virus.

The number of people contracting HIV/AIDS continued to increase throughout the 1980s (Food & Drug Administration, 2014). In 1986, the Center for Disease Control & Prevention began urging people to use condoms during sexual activity as a way of decreasing the likelihood they would contract the disease, however by the latter half of the decade, diagnoses of HIV/AIDS had become a commonality throughout the world (United States Department of Health & Human Services, 2014). By 1989, the United States government had determined that there were more than 100,000 people in the United States living with HIV/AIDS. However, researchers believe this number was significantly higher as there was a time lag between when people got the disease and when they developed symptoms.

Medications to treat the disease developed during the late 1980s. However, these medications were not successful in treating the symptoms of the disease (Food & Drug Administration, 2014). The first vaccine for HIV/AIDS tested during this period, failed to work. However, studies showed prevention techniques and education to be effective in helping reduce the spread of HIV/AIDS.

## HIV/AIDS Statistics in New Jersey

According to the State of New Jersey Department of Health, HIV/AIDS, STD and TB Services (2014), the prevalence rate for persons living with HIV/AIDS in New Jersey in 2012 was 37,511 of an estimated total population of 8,864,590 and the prevalence for HIV/AIDS was 423.2 per 100,000 people. In their 2012 report, the Public Services Branch, Division of HIV/AIDS, STD and TB Services stated that 76% of the cumulative cases of HIV/AIDS were adolescents or adults, and about 77% of all the people living with HIV/AIDS were minorities. Seventy nine percent of the people living with HIV/AIDS were also older than age 40. Sexual contact and injection drug use were the main modes of exposure to the infection.

Passaic, Essex, Union, Hudson, Mercer and Atlantic counties had the highest HIV/AIDS prevalence rates in the state with between 400 to 1299.9 persons for every 100,000 people. Camden, Salem, Cumberland, Monmouth, Middlesex and Cape May counties, had the second highest prevalence rates for the condition with 200 to 399.9 persons for every 100,000 people. The rest have a low prevalence rate of 0.0 to 199.9 persons for every 100,000 people (State of New Jersey Department of Health HIV/AIDS, STD and TB Services, 2013).

## Impact of HIV/AIDS in New Jersey

New Jersey Ride Against Aids (2012) reported that New Jersey was ninth among the states in the country, in terms of total population, and fifth in reported total number of AIDS cases with New York, Texas, California and Florida having more cases (New Jersey Ride Against Aids). The National Academy of Sciences (2014) reported that HIV/AIDS has had an impact on public health, health care, voluntary and community based groups, clinical research and drug regulation, religious groups, correctional facilities, as well as public policies regarding families and children. Furthermore, the public health systems across federal, state and local governments have borne the first shock of the HIV/AIDS epidemic and have continued to be at the forefront in terms of research and policy development. The public health system at local levels has often been the primary service provider for people living with HIV/AIDS because the pandemic has often been concentrated in low-income and minority communities (National Academy of Sciences). HIV/AIDS has accelerated the adoption of voluntary anonymous testing and community education, and invited the intensive application of these practices to this disease. National Academy of Sciences has also reported links between HIV disease and other opportunistic diseases prevalent in poor populations, as well as other sexually transmitted diseases and drug addiction. This has generated an influx of more than 200,000 patients into the NJ healthcare system over the last decade, many who have been uninsured patients or have had limited insurance benefits (National Academy of Sciences). The complexity of HIV/AIDS has further presented a major challenge for healthcare provision because the disease can attack every organ system in the body (National Academy of Sciences). The care of terminally ill AIDS patients has fallen heavily on hospital nurses; this has been emotionally and professionally demanding, as well as has exacerbated staffing problems in both hospitals and other institutions that care for AIDS patients (National Academy of Sciences). Health professionals have also been at risk of HIV infection because of exposure to accidental punctures while caring for HIV patients, even though health care providers have adopted procedures for protection (National Academy of Sciences). HIV/AIDS represents a considerable challenge for NJ’s healthcare system (National Academy of Sciences).

The economic burden of AIDS in NJ has included the cost of drugs and associated ethical issues. The identification, regulation, and testing of new drugs has been a significant burden. Volunteer and religious organizations have carried a large share of the AIDS burden to supplement government responses and efforts (National Academy of Sciences, 2014). The majority of prisoners with HIV/AIDS have been members of minority groups and overwhelmingly poor, which has increased the economic burden of the state to care for these individuals when they are infected. Most inmates have been disproportionately African American men and the rate of HIV prevalence among this group was reported to be 3,109 per 100,000 (National Academy of Sciences). Over the last three decades, prisons have adopted HIV prevention programs. Additionally, public policies have been enacted to help reduce the risk of transmission to children, including mandatory testing for newborns or all pregnant women (National Academy of Sciences). However, this has raised ethical questions about individual rights and privacy (National Academy of Sciences).

HIV/AIDS has disproportionately affected women of color, with African American women accounting for nearly 65% of new infections among women (The Kaiser Henry Foundation). Young adults and teens have also been at increased risk, and young people under the age of 35 accounted for 56% of new cases in 2010. Sexual contact has been the main mode of infection for both women of color and young people. The U.S. government's response to HIV/AIDS has included federal funding of $29.5 billion for care, cash and housing assistance, research and prevention (The Kaiser Henry Foundation). Several programs have provided health insurance coverage, support, and care to people with HIV/AIDS through Medicaid, Medicare, and Housing Opportunities for Persons with HIV/AIDS Program, and Social Security (The Kaiser Henry Foundation).

The healthcare needs of those with HIV/AIDS have continued to stress the New Jersey health care system (National Academy of Sciences, 2014). Despite access to preventative services such as HIV testing and other intervention programs, African American women in New Jersey continue to contract HIV/AIDS. This underscores the need for prevention programs that address the underlying reasons why African American women continue to be disproportionately affected by HIV/AIDS. When addressing the needs of at-risk populations, Schnall, Rojas and Travers (2014) noted that it is important to understand the relevant social and cultural factors that affect their HIV-risk behaviors. This study tested the relationships between perceptions, HIV stigma, and HIV testing among African American women. The results from this study provide relevant information to state and local health agencies and policy makers who develop interventions that could help improve African American female participation in HIV testing.

## Gender Disparities in the African American Community

The fact that African Americans make up 14% of the U.S. population, but represent 44% of all HIV-positive cases (Henry J. Kaiser Henry Foundation, 2014; Robinson & Moodie-Mills, 2012) has illustrated racial disparities in the HIV epidemic. Compared to other racial groups, the burden of HIV/AIDS on African Americans is disproportionate. According to Women in Government (2014), African Americans have been more likely to contract the disease, as well as more likely to die from it compared to Caucasians. The mortality rate for African American men was nine times greater than that of Caucasian men and 21 times greater for African American women compared to Caucasian women (Women in Government). African American women were the largest population of women living with an HIV diagnosis in 2010 (Henry J. Kaiser Foundation Henry Foundation). African American women accounted for the largest percentage of new HIV infections among women of all races. African American women represent 65% of all HIV/AIDS cases among women (Guerra, 2013). The incidence rate for HIV infection among African American women was 20 times higher than the rate among European American women and more than 4 times the infection rate for Latinas (Henry J. Kaiser Foundation Henry Foundation). Heterosexual transmission has been the most common mode of infection for African American women and women in general (Henry J. Kaiser Foundation Henry Foundation). New HIV infections continue to manifest disproportionately among African American women; however, recent data revealed a 21% reduction in the HIV incidence rate for African American women between 2008 and 2010 (Henry J. Kaiser Foundation Henry Foundation). Compared to other races, African American women represented 29% of all new HIV infections among African Americans, while Latina women represented 14% of new infections among Latinas and European American women represented 11% of new infections among European Americans (Henry J. Kaiser Henry Foundation).

Guerra (2013) reported that one out of every four African American women are uninsured, and that this lack of health insurance in combination with numerous other socioeconomic factors drives the health issues, including HIV/AIDS, faced by African American women. For instance, African American women had the highest prevalence of hypertension, highest mortality from breast cancer, as well as have higher infection rates for sexually transmitted diseases including gonorrhea and Chlamydia. They also had a rate of unintended pregnancy 3 times higher than that of European American women, doubled mortality rates from cervical cancer compared to European American women, and the highest rates for premature births and infant mortality (Guerra). The high rate of incarceration among African American males often affects African American women adversely because they are usually the primary caregivers for the children.

African American women in the U.S. have demonstrated a greater incidence of HIV infection attributable to higher numbers of sexual partners, incarceration, and history of drug abuse (Women in Government, 2014). In addition, the pandemic disproportionately affected African American women domestically because of societal factors like power, gender inequality, violence, lower levels of education, and economic instability (Women in Government). The disparities associated with the HIV/AIDS pandemic among African Americans have extended to include access to HIV care, as well as quality of care. According to HIV/AIDS research conducted by Women in Government, African Americans were 56% more likely to undergo a 3-month delay in diagnosis and access to HIV/AIDS care compared to Caucasians. Gaps in the healthcare system, as well as social determinants, have contributed to such disparities in access to screening services and care. Some of the social determinants that have affected access to care and services include stigma, higher levels of environmental stress, health behaviors, unemployment, and depression among African Americans (Women in Government).

Women in Government (2014) continued to report that gaps in the health system due to language and cultural barriers, lack of insurance for low income African Americans, and low awareness of the Ryan European American HIV/AIDS program have contributed to the disparities associated with HIV/AIDS for African Americans. The Ryan White program works with state and local community-based organizations to provide services and access to care to individuals who do not have adequate health insurance or health care coverage, manage their HIV disease (U.S. Department of Health and Human Services, 2014). These barriers have impeded access to both prevention and HIV care programs. Policy initiatives that seek to expand HIV prevention programs and educational activities, increase access to routine voluntary testing, expand access to treatment and care for the disease, reduce the impact of incarceration on African Americans as a catalyst for increased HIV incidence, and reduce marginalization and stigma that is associated with HIV/AIDS in the African American community, have been proposed for their potential to reduce disparities. The authors concluded that such policy efforts would empower African Americans to take control of their social and health behaviors and reduce the spread of HIV/AIDS.

Robinson and Moodie-Mills (2012) stated that behavioral risk factors alone could not explain the racial disparity because African Americans also practice safe sex; rather, the racial gap in HIV correlates with the racial health gap and racial wealth gap. Race intersects with gender, poverty, and sexuality among others to drive multifaceted social exclusion and massive health inequities. Historical variables, as well as contemporary processes of segregation in employment, education, housing, health care, and racially skewed incarceration have contributed to these gaps in health and racial wealth (Robinson & Moodie-Mills). The structural inequities in African American communities have made them more likely to be infected with the disease, as well as less likely to access treatment.

How HIV stigma affects the HIV risk behaviors among African American women in New Jersey has not been widely studied. Considering the consequences that could result from HIV infection and the lack of literature on HIV stigma in this population, the current study is significant because it may determine if there is a relationship between HIV stigma and the uptake of HIV testing.

## HIV/AIDS Statistics for African American Women in New Jersey

New Jersey Ride Against AIDS (2012) reported that New Jersey had the highest estimated number of women living with AIDS among all 50 states in the country. According to the New Jersey Department of Health (2010), women accounted for one-third of both the adult and adolescent HIV/AIDS diagnoses within New Jersey in 2008. Women also consistently comprised 31-34% of the adult and adolescent HIV/AIDS cases diagnosed during 2003-2007 (New Jersey Department of Health). African American women represented 68% of all infections among women and one out of every 304 women older than 13, was living with HIV/AIDS in New Jersey. The reported cases from 2009 in NJ were mostly older women of which 59% were women, ages forty and above. Sixty two percent of women living with HIV/AIDS in the state were between 20 and 49 years old (New Jersey Department of Health).

According to the New Jersey Department of Health (2010) among the adult and adolescent female population in New Jersey, injection drug use accounted for 38% of HIV infections and heterosexual exposure accounted for 55% of HIV infections (including sexual contact with partners whose HIV risk was unknown). Furthermore, the number of women living with HIV/AIDS increased steadily in New Jersey even while there was a reduction in the number of women who reported the use of injection drugs (New Jersey Department of Health). Heterosexual contact was responsible for 56% of the HIV infection cases among women, and exposed more women in New Jersey to the disease compared to any other exposure mode (New Jersey Department of Health). Many women infected with HIV/AIDS lived in poor areas; they had low income and limited access to the health care system. This caused them to experience disparities in receiving care and treatment, which led to the disproportionate rates of HIV infection among women of color (New Jersey Department of Health).

The current statistics on HIV infection among African American women in New Jersey shows that the number of women who are living with HIV/AIDS, infected through heterosexual contact, continues to increase steadily (New Jersey Department of Health, 2014). The purpose of this study was to explore perceptions related to HIV, HIV stigma, and testing among African American women, to help inform the development of HIV intervention programs, to address the prevalence of HIV in this community.

## Prevalence of HIV/AIDS Among African American Women in New Jersey Compared to Other Races

The Department of Health and Senior Services (2014) reported that minority women accounted for a third of the state's adult and adolescent female population while representing 83% of cumulative HIV/AIDS cases among the adult and adolescent female population in the state. Four out of every five women living with HIV/AIDS in the state of New Jersey were from minority groups. The Division of HIV/AIDS Services (2014) reported the rate of HIV diagnosis among African American women to be 23 times higher than the rate for Non-Hispanic European American women during 2006-2007. The racial disparity observed among women in all minority groups was greater than that observed among men (Division of HIV/AIDS Services).

HIV infected minority women, African American and Hispanic, progressed to AIDS more rapidly than their European American, Non-Hispanic counterparts between 1996 and 2007 (Division of HIV/AIDS Services, 2014). At the same time, African American women showed a considerably more rapid progression from HIV to full-blown AIDS when compared to both Hispanics and European American, Non-Hispanic women (New Jersey Department of Health, 2014). African American women who had AIDS also had the poorest survival rates from AIDS diagnosis to death when compared to female AIDS patients from other groups (Division of HIV/AIDS Services).

This high HIV prevalence rate in the African American female population requires a better understanding of the factors that contribute to HIV risk behavior and the lack of HIV testing (Muturi & An, 2010). This study aimed to provide knowledge on

HIV stigma using the HBM constructs, perceived benefits and perceived severity to assess how HIV stigma mediates the effect of these constructs as it relates to HIV testing. This knowledge could assist state agencies in coordinating health care strategies to address HIV stigma and create effective HIV prevention programs.

## Overview of HIV Stigma

Land and Linsk (2013) defined stigma as anything that is associated with a person that results in him or her being viewed as undesirable, disgraced, unrespectable, or abnormal. Others who know the HIV status of an infected individual and as a result do not want to be associated with that person, direct HIV stigma to a person. Grossman and Stangl (2013) found HIV stigma made the life of the stigmatized person extremely challenging and difficult to deal with on a daily basis.

HIV, identified in the 1980s, quickly became the source of stigma and discrimination against people living with the disease. The initial media coverage, which focused heavily on homosexuals with HIV/AIDS, helped to increase the stigma surrounding this illness (Averting HIV and AIDS, 2014). HIV stigma contributed to the fact that many people were fearful they would catch HIV. The mode of HIV transmission has been another problematic feature that has influenced the stigma surrounding the illness. The two most common ways to contract HIV/AIDS have been through intravenous drug use or sexual intercourse (Office of Women’s Health, 2014). As a result, many have assumed that individuals with HIV either used drugs or have had sexual intercourse with multiple people. Despite the efforts of multiple governmental sources such as the Centers for Disease Control & Prevention and Department of Public

Health, many people are still afraid that they can catch HIV from being around people who have it.

Grossman and Stangl (2013) noted that stigma against people living with HIV is expressed in many different ways. These have included, disrespectful behavior, negative attitudes from society, loss of friends, sympathy, and neglect by family and society. Rejection and avoidance of people living with HIV by society or the community has also been a form of HIV stigma. This stigma has contributed to the isolation and ostracizing of people living with HIV because people choose to not be associated with them, out of fear of being gossiped about due to their association or relationship with the HIV positive individual (Grossman & Stangl).

Family members of the person living with HIV have reported HIV stigma as a form of discrimination. Sometimes HIV positive persons have faced rejection, discrimination, gossip, and bias from their parents, spouses, and children (Grossman & Stangl, 2013). Grossman and Stangl reported this as one of the worst forms of HIV stigma because it comes from the people closest to the person living with HIV and consequently makes them feel extremely betrayed. HIV stigma directed to the communities and ethnic groups from which the people living with HIV come from, reinforced existing social inequalities, which are gender, racial, ethnic, socioeconomic, sexual orientation, and culturally based (Grossman & Stangl).

HIV stigma also has involved discrimination and bias against people living with HIV by healthcare professionals, communities, social groups, and the government (Sengupta, Banks, Jonas, Miles, & Smith, 2011). This stigma made a person unable to be a part of any group and thus isolated, left to suffer and deal with the disease alone. Sometimes institutions have implemented policies that require mandatory or compulsory HIV testing of individuals. This has happened in schools and workplaces sometimes without the prior informed consent of the individuals involved. Moreover, this mandatory testing often done without the appropriate confidentiality protections in place, made it easy to determine the HIV status of the individual by others. This had a negative impact on people living with HIV because it sent the message that these institutions do not want HIV-positive people within their organizations (Grossman & Stangl, 2013).

All of these forms of stigma send negative messages that people living with HIV should be treated differently and with less dignity than others in society. In extreme cases, HIV stigma has involved physical and psychological violence against the person with HIV, as well as those perceived to belong to the same community, as was the case with homosexual men (Pantalone, Schneider, Valentine & Simoni, 2012).

Turan et al. (2011) studied the role of HIV stigma on the refusal of HIV testing among pregnant women in rural Kenya. They found that women, who believed that their partners would stigmatize them for undergoing HIV testing, were more than twice as likely to refuse HIV testing. The women were fearful that this stigma would cause them to lose their friends or even break up their relationships. Although these findings reinforce the importance of HIV stigma in HIV prevention, they were specific to women in rural Kenya. Similar studies are needed among other populations of women to gain a better understanding of the influence that HIV stigma may have on HIV testing among different populations.

The literature on the effects of stigma on HIV testing supports the need for a better understanding of HIV-related stigma among a broader population of women, so that programs can be effectively developed and implemented to reduce this type of stigma (Sengupta, Banks, Jonas, Miles, & Smith, 2011; Grossman & Stangl, 2013). Prior studies have all focused on women living in Africa as opposed to African American women living in the US. The current study added to the current knowledge by collecting data from African American women in the US, which may provide additional insights on how HIV stigma impacts the uptake of HIV testing in this population. By reducing HIV stigma, the number of African American women in New Jersey who are tested for HIV and who know their status could increase.

## African American Attitudes and Perceptions Towards PLHIV

African Americans have exhibited varying attitudes pertaining to individuals living with HIV. However, the individual's age has in part contributed to these variations. Younger individuals were more likely to believe that they will not contract HIV (Centers for Disease Control & Prevention, 2013). However, older individuals tended to have diversified attitudes towards HIV. Some research has shown that religious women tend to look down on individuals suffering from HIV (Muturi & An, 2010). As a result, African American women may be less likely to be open about their diagnosis and receive treatment.

African Americans have tended to have a more positive attitude towards HIV if they directly know someone that suffers from the disease (McCoy, Shiu, & Martz, 2013). McCoy et al. further concluded that recruitment by a friend or family member suffering from HIV/AIDS helped newly diagnosed African Americans receive treatment. Despite this finding, the level of stigma surrounding HIV and African American women may have decreased the likelihood that African American women are open about their diagnoses.

In a study by the Kaiser Family Foundation (2000), the researchers determined that African Americans were increasingly concerned about contracting HIV/AIDS because of the negative attitudes prevalent in the community regarding this disease. This study further demonstrated that many individuals knew someone that suffered from HIV/AIDS. However, the research indicated that this increased concern was not influencing the number of African Americans undergoing HIV testing on a regular basis. In this study, only 56% of participants reported undergoing HIV testing within the past year. Of the participants who were not tested within the past year, the most common reason that these individuals gave was that they were married or in a committed relationship. A few participants reported that they had not been sexually active during this period and would not need such a test due to their lack of sexual activity.

In reviewing the findings of McCoy et al. (2013) and the Kaiser Family Foundation (2000), mixed conclusions were present. Although McCoy et al. found that HIV testing and counseling (HTC) using a referral strategy may increase demand for HTC and was helpful in identifying those who were HIV positive, the Kaiser Family Foundation found that 44% of sexually active African Americans have not been tested for HIV. However, in a separate study Logie and Gadalla (2012) concluded that individuals who did not directly know anyone who was suffering from HIV/AIDS were more likely to have a stronger stigmatizing attitude about people living with HIV. The authors of both research studies (McCoy et al., 2013; Kaiser Family Foundation, 2000) concluded that HIV stigma needs to be addressed to minimize its impact on HIV testing and treatment. Review of the current data on the rates of HIV testing among African American women indicated that many fail to test for HIV (CDC, 2012). Therefore, even though the effects of HIV stigma have been studied (Turan et al., 2011; Muturi & Ann, 2010), more research is needed in this population. This study attempted to address this need by testing the relationship between perceptions, stigma and testing.

## African American Perceptions of HIV Testing

According to the Office of Women's Health (2014), although governmental organizations have worked hard to educate people on the importance of taking an HIV test, many people have never taken an HIV test. Fear, disbelief and cost, have deterred individuals from undertaking an HIV test (Dorell et al., 2011; Uhrig, Friedman, Poehlman, Scales, & Forsythe, 2013; Wallace et al., 2011). African Americans tend to have differing perceptions on HIV testing. According to the Office for Women's Health, fear often prevents individuals from scheduling an HIV test. However, multiple factors can contribute to this fear. Stigma is an issue that directly affects individuals living with HIV. According to Averting HIV and AIDS (AVERT, 2014) the consequences of stigma and discrimination are wide ranging: being shunned by family, peers and wider community, poor treatment in healthcare and education settings, an erosion of rights, psychological damage, and a negative effect on the successes of HIV testing and treatment (AVERT, 2014, para. 2). The role of stigma extends to how the individual perceives the illness. Generally, individuals with HIV tend to have lower life expectancies (Centers for Disease Control & Prevention, 2013). Even though early treatment can help to extend the individual’s life, HIV does decrease the individual’s lifespan and there is often a fear of death or an early mortality associated with HIV. Therefore, the individual’s perception of HIV and his or her own personal beliefs can itself be an individualistic stigma.

Stigma can prevent individuals from being tested and receiving treatment for HIV/AIDS. It also contributes to reinforcing stereotypes. According to the University of Florida (2013), the stigma associated with HIV/AIDS has reinforced existing stigmas pertaining to social class, sexuality, culture, and race. In relating this to African American women, one study found that this group has been particularly concerned about stereotypes. Specifically, the term ‘Jezebel’ was widely used in describing African American women who have sexual intercourse. The biblical reference to the term ‘Jezebel’ was further influential as it details the story of an individual falling away from her faith (Davis, Brown & Tucker, 2013). The fear of ‘Jezebel’ stereotyping deterred African American college students who were sexually active from receiving an HIV test.

Davis, Brown & Tucker concluded that culture plays an important role in the prevention of HIV among African American college students. Understanding the role of stigma and other stereotypes among the broader African American female community may help to explain why some African American women do not undergo HIV testing even when they are at-risk of infection. There are studies that address how HIV stigma affects HIV-risk behaviors in women (Turan et al., 2011; Muturi & Ann, 2010).

However, these studies have focused either on African women (Maughan-Brown & Nyblade, 2014) or on adolescents (Schnall, Rojas & Travers, 2014). Few have studied stigma specifically in the African American female population in the US. The proposed study will test the relationships between perceptions, HIV stigma, and HIV testing among African American women in New Jersey. Understanding African American women's perceptions regarding HIV testing can provide areas to target when implementing HIV programs to reduce the number of persons testing late in their disease progression.

## Public Health Consequences of HIV/AIDS Stigma

Although stigma is a commonality throughout the history of public health, the stigma of HIV is particularly problematic (Valdiserri, 2002). In a 2002 study, Herek, Capitanio and Widaman (2003) determined that half of all participants were fearful about taking a HIV test. This fear stemmed from the belief that HIV testing results are not always kept confidential (Herek, Capitanio & Widaman). The researchers concluded that participants were afraid of how a positive test result would influence their lives. Valdiserri concurred with Herek et al.'s assessment and found that one in five people were afraid of individuals that suffer from HIV. The widespread stigma surrounding HIV directly impedes the types of services individuals at risk for HIV use. The stigma serves to further prevent individuals from volunteering for HIV testing. The decision not to take an HIV test can lead an individual to inadvertently infect another person with HIV, without even realizing what they are doing (Centers For Disease Control & Prevention, 2013). If individuals continue to neglect getting an HIV test, they could affect hundreds of people. This fear of stigma could lead them to spread the virus to others without ever knowing they are infected. The International Center for Research on Women (2011) reported that individuals with high levels of stigma associated with HIV were less likely to adopt preventative habits. Combating HIV needs to have a two-fold approach in both educating people on the need to be tested and reducing the stigma surrounding the disease (International Center for Research on Women).

Ideally, the ability to control the spread of HIV/AIDS would increase and eventually eliminate the presence of the virus in the U.S. (National Alliance of State & Territorial Aids Directors, 2012). However, without establishing the need for HIV testing, implementing better prevention methods, and reducing the stigma surrounding individuals suffering from HIV, this outcome is unlikely to occur. Deacon and Stephney (2005) argued that public health campaigns need to lessen the extent to which the responsibility to be safe is placed on the individual, as it encourages blaming behavior. From this perspective, the authors suggested that individuals might feel guilty or experience an increased level of stigma for failing to engage in responsible practices. However, this study did not address how the stigma impacted HIV testing practices in these individuals. This study expanded on this research and explored the relationship between stigma and HIV testing.

In reducing the prevalence of HIV/AIDS, public health often focuses on preventative measures. For example, Sznitman et al. (2011) referenced public health campaigns that use age appropriate messages to encourage African American adolescents to practice safe sex. Although this was just one example of a media campaign aimed at reducing the spread of HIV, it helped to demonstrate that individuals’ behaviors towards

HIV could be positively influenced to affect their behavior. In another study by Schnall, Rojas and Travers (2014), the beliefs, attitudes, and behaviors of minority adolescents as it related to HIV testing were studied. The researchers concluded that it is important to help society understand that individuals should regularly undergo HIV testing if they are not in a committed relationship and are sexually active given that an individual testing positive for HIV a year ago, could have a change in HIV status within the year (Schnall, Rojas & Travers). Encouraging regular testing could help to reduce the spread of HIV (Schnall, Rojas & Travers). The data showed that the HBM constructs influenced adolescents' decisions regarding HIV testing. These findings support the need to design interventions that address barriers to HIV testing (Schnall, Rojas & Travers).

Levels of social support have also been shown to influence an individual’s behavior. Catz et al. (2000) found that social stigma directly influences whether or not the individual seeks HIV care. In another study, Bogart et al. (2010) found that African Americans with HIV/AIDS were more likely to follow up with HIV care if they knew others (family or friends) who suffered from HIV/AIDS and/or were receiving treatment. Davis et al. (2013) further determined that racial stereotypes adversely impacted HIV-risk behaviors among African American women and girls. These studies suggest that stigma negatively impacts HIV care.

To address the growing public health problem of HIV, NJ has further expanded their HIV testing programs across the state (New Jersey Department of Health, 2010). Gaining more insight on the impact of HIV stigma would be useful to state and local organizations when implementing HIV programs and may help ensure that those individuals at highest risk, take advantage of testing opportunities. This study aimed to fill the gap in the literature on the role of HIV stigma in the uptake of HIV testing among African American women in New Jersey.

## Effect of Stigma on HIV Testing

The National Institutes of Health (2014) describes HIV testing as a test that indicates whether a person has the HIV infection, the virus responsible for AIDS. Testing recommendations are at least once in their lifetime for persons between 13 to 64 years of age. Recommendations for people at high risk for HIV infection are annual tests. Risk factors include unprotected sex, sex with many partners, and the use of injection drugs involving the sharing of needles, syringes, or drug equipment with other people. Pregnant women are advised to conduct HIV testing as early as possible during their pregnancy. While testing may detect the HIV virus, it does not show how long the person has had the virus or whether the person has progressed from HIV to AIDS. The HIV antibody test represents the most common type of HIV test. The test looks for HIV antibodies in urine, blood or oral fluids. The body in response to the infection produces HIV antibodies and it takes about 3 to 6 months for the body to produce enough antibodies to facilitate detection by the HIV antibody test. There are also HIV tests that can detect HIV in the blood before the antibodies become detectable, but these are more expensive and not considered routine HIV testing. The Western blot test, confirms results from an initial HIV positive test.

Ahmad et al. (2012) stated that HIV-related stigma was a major barrier to the work of health workers in presenting the necessary solutions for managing HIV/AIDS.

Ahmad et al. showed that stigma limits both primary and secondary prevention and care procedures for HIV/AIDS. The impact of HIV Stigma includes preventing people from accessing testing services. AVERT (2014) also discusses how stigma and discrimination can create negative testing related behaviors. HIV/AIDS patients may suffer discrimination such as being refused drugs and access to facilities including facilities where testing is done. They may also receive HIV testing without consent, as well as a lack of confidentiality. While stigma can impede rapid government action against the disease at a national level, the effect on the individual is the most damaging to the goal of curtailing the spread of the disease. HIV stigma can render individuals reluctant to access counseling and HIV testing services or treatment and care on a personal level. As discussed earlier, stigma constitutes a strong barrier to public action while also undermining the ability of families, individuals, and societies to effectively either protect themselves, or support those affected by the disease (AVERT). Stigma drives concerns about privacy and testing. The fear of stigma and discrimination creates reluctance to go for testing, disclose HIV status, or use of antiretroviral drugs (Ahmad et al., 2014). An unwillingness to access HIV testing services means that there are more people being diagnosed late and at an AIDS status, making treatment less likely to prevent mortality (Ahmad et al.,).

Golub and Gamarel (2013) described the concept of treatment and prevention as being a critical part of biomedical interventions towards preventing HIV transmission. HIV testing and identification of undiagnosed individuals predicated the success of the strategy and ensured sustained linkage and retention in the HIV care continuum. Based on the premise that the impact of HIV/AIDS stigma is well known, but not how anticipated HIV stigma can be a barrier to testing behaviors, the authors studied the relationship between anticipated stigma and testing behaviors among transgender women and men who have sex with men (MSM). Anticipated stigma associated negatively with perception of risk. In multivariate models, younger age, anticipated stigma, and risk perception constituted significant predictors for testing behaviors for HIV.

Leta, Sanday, and Fylkesnes (2012) conducted a study using a cross-sectional survey design to examine factors affecting voluntary HIV counseling and testing for men. The premise of the study was that voluntary testing and counseling constituted an important preventive resource for HIV infection and treatment. However, the utilization of such services among adults was very low, and thus the likelihood of HIV services for adult men, was less likely to be offered. Adult men were less likely to accept routine HIV testing when compared to women. Logistic regression analysis was used to analyse the potential factors associated with male utilization of services. Utilization of services by men was affected by HIV/AIDS related stigma.

Maughan-Brown and Nyblade (2014) explored the dimensions of stigma and how they impede HIV testing. The study was based on the fact that HIV-related stigma was generally known to hinder HIV testing, however, the extent to which the different dimensions of stigma act independently to affect testing behavior, was not well understood. The researchers used data on African American women (n = 674) and African American men (n = 553) to explore the independent effects of perceived stigma, stigmatising attitudes, and observed/enacted stigma on behavior in HIV-testing.

Application of multivariate logistic regression models revealed that stigma was more strongly related to HIV testing behaviors among women, as compared to men (Maughan-Brown & Nyblade, 2014) Stigmatising attitudes were held by women who were more likely to have been tested, while perceived and observed enacted stigma significantly reduced the odds of women having done an HIV test. The researchers concluded that different dimensions of stigma impact HIV testing differently, including having opposite effects on HIV testing. The question of whether different aspects of stigma impact HIV testing were outside the scope of the conducted study. However, from the information gained during this literature review, there is evidence that different dimensions of stigma do impact HIV testing differently.

Conversely, home-based HIV counseling and testing can help to reduce stigma while facilitating uptake of testing services. Nuwaha et al. (2012) measured the population-level changes in knowledge around HIV status, HIV-risk behaviors, and stigma before and after a home-based HIV counseling and testing program to assess if widespread home-based services affected risky behavior trends, as well as stigma and discrimination towards people living with HIV/AIDS. The home-based program provided free counseling and testing services and had a high uptake. Home-based HIV counseling and testing programs rapidly increased the uptake for counseling and testing services, which led to a reduction in risky behaviors, as well as reductions in HIV-related stigma and discrimination.

Addressing the gap in the current literature on HIV stigma and how it impacts African American women in New Jersey was the rationale for undertaking this study. It was important, in this research, to focus on the population of African American women, because there is a lack of literature on how HIV stigma affects this population. A better understanding of how stigma impacts the uptake of HIV testing is useful information for implementing successful programs that could decrease the prevalence of HIV in this population.

## Effect of Stigma on PLHIV

The stigma associated with HIV/AIDS tends to have an adverse effect on the lives of PLHIV. Logie and Gadalla (2009) found that individuals that had HIV demonstrated lower levels of physical and mental health. The study further demonstrated that these individuals believed they had a low level of social support, which participants attributed to their HIV status. In a more recent study, Logie, Wangari, and Loutfy (2013) found that African American women with HIV/AIDS were more likely to suffer from depression than women of other races. However, the researchers did not explore the participants' previous mental health history. It is possible that some participants may have suffered from depression prior to their diagnosis. Future research is needed to confirm these findings.

Although HIV/AIDS has been around for more than 30 years, individuals open about their HIV status tend to experience high levels of discrimination. According to the American Civil Liberties Union (2014), the discriminatory behaviors aimed at individuals that are HIV positive, tend to be based on a misunderstanding pertaining to how a person can contract and function with the illness. Earlier research by Herek, Capitanio and Wildaman (2003), showed that social fear directly influenced workplace discrimination against individuals who are HIV positive. Although the effects of lack of understanding of how HIV/AIDS is contracted and how the individual's functionality has been affected have been widely established in research (American Civil Liberties Union, 2014), the inability of an individual living with HIV/AIDS to secure a form of employment remains problematic (American Civil Liberties Union). Despite the implementation of laws aimed at preventing employers from discriminating against individuals based on their HIV status, the way people in the workplace perceive these individuals may adversely affect the individual's mental health and their ability to perform their duties (American Civil Liberties Union).

Suicidal ideation and intent is another issue that affects individuals suffering from HIV/AIDS. In some cases, the individual's suicidal ideation was related to the stigma experienced because of their HIV status (Logie et al., 2013). However, in other cases, the individual's health status may affect their level of suicidal ideation. Regardless of the causation, individuals that have HIV/AIDS were significantly more likely to commit or think about committing suicide than the general population. According to Carrico (2010), the suicide rate remained more than three times higher among HIV-positive persons than in the general population (Carrico, p. 117). However, Carrico did note that the number of HIV-positive individuals who attempt or commit suicide has significantly dropped with the release of antiretroviral therapy. This may in part be because before antiretroviral therapy, the progression of HIV was rapid, and after diagnosis, individuals often did not live long. Carrico remarked that even though trends in suicide among HIV-positive individuals demonstrated a long-term decline, the inflated suicide rate in this population suggests that suicide is a growing problem among HIV positive individuals.

In my literature review, I found that many researchers have studied the issue of HIV stigma, however, these studies were mainly in the MSM population (Audet, McGowan, Wallston, Kipp, 2013; Logie et. al., 2013; Odimegwu, Adedini, Ononokpono, 2013). The few studies that have addressed this issue in the female population, focused on different countries in Africa (Turan et al., 2011; Wingood et al., 2013). This study aimed to fill this gap, by researching the effects of stigma on HIV testing among African American women in New Jersey. The findings could have implications for HIV prevention programs targeted at African American women in New Jersey.

## Literature Review of HIV Stigma Scale

The purpose of this study was to address the gap in the literature regarding how HIV stigma impacts HIV testing among African American women in New Jersey. This research provides public health administrators with information that they could use to improve voluntary HIV testing in this population. In order to evaluate the individual's perceived HIV stigma (the mediator in this study), I used a modified version of the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale.

Vogel (2009) reviewed fear of stigmatization and its effects on a participant's willingness to engage in psychotherapy. The goal of the study also included determining an appropriate measure of stigmatization. The current study will use a modified Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale to measure how stigma affects a subject's willingness to undertake HIV testing. The study evaluated the role that stigma played in counseling initiatives, and the likelihood that individuals would seek help when warranted.

Vogel (2009) reviewed five samples when developing the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale. In the majority of samples, concurrent validity was supported through associations between three different stigma measures, which included public stigma toward counseling (r=.31), public stigma toward mental illness (r=.20), and self-stigma (r=.31). There were also relationship variables that affected the client's tendency toward counseling, including public stigma toward counseling and self-stigma, which, in two samples, was relevant. The authors concluded that people were not likely to seek psychological counseling during periods of distress largely due to stigma, including public opinions of counseling, and self-concerns about public opinion of mental health problems or illness.

The results of the Vogel study represented the perceptions of college students, a large majority of which were female. The study did have a scoring error in Clinical Sample 5, which did not allow the researcher to match participants with demographic information. The researchers collected data over 2 years from a large Midwestern University. It is unclear whether a larger sample size, reflective of the general population, non-students or students, from a small campus would yield different results regarding perceptions of stigma (Vogel, 2009). Indeed, students may be more susceptible to public image and stigma, and thus the results of the study may not be generalizable to the population at large (Ben-Porath, 2002; Bathje & Pryor, 2011).

Through the reduction of stigma, counselors may have broader depth in relationships with clients requiring therapy. Public stigma however, is difficult to overcome, and may require a joint effort between different health facilities, counselors, and the community at large. Improvements in intervention programs that are sensitive to the effects of stigma and social perceptions of certain health conditions may be critical factors in determining the percentage of clients that receive services and willingly participate in services that can improve their overall health outcomes. While the public has been slow to accept illnesses such as mental health and HIV, an effort from those who have these illnesses may also be required to help facilitate improved counseling, testing, and health outcomes. The results of the study clearly implicated stigma as a factor in resistance to treatment and failure to adhere to treatment goals and outcomes.

I based my decision to use the PSOSH instrument in this study on the assumption that the African American female population, although different from the college students, is also delaying testing and treatment, due to perceived stigmatization regarding HIV. Therefore, this study may expand the use of this scale in other populations and diseases, allowing researchers to implement interventions for improved participation of African-America women in HIV screening programs.

## Identified Gap

Few studies have documented the experiences of women as it relates to the negative impact of HIV stigma. I found no studies that addressed stigma and its effects on HIV testing among African American women in New Jersey. This study attempted to fill this gap by assessing how HIV stigma mediates the effect of perceived benefits and perceived severity of HIV and how this impacts the uptake of HIV testing in this population. The results from this study could provide relevant information to policy makers, who propose interventions that could help improve the participation of African American women in HIV testing.

## Summary

HIV stigma affects the social and economic lives of people in the forms of discrimination, disrespect, and denial of equal rights (American Civil Liberties Union, 2014). This study is significant and timely because it might elaborate on the current knowledge on HIV stigma and its effect on prevention efforts, by focusing on the perspectives of African American women.

This literature review presented data on the prevalence of HIV in African American women, perceptions, cost, public health implications and the impact of HIV stigma in New Jersey. This review further demonstrated that it is critical for public health organizations to educate individuals on the facts about HIV/AIDS in order to reduce stigma (Dohro, 2014). Even though the overall societal knowledge of how HIV/AIDS is transmitted has increased, many individuals remain fearful of HIV/AIDS (AVERT, 2014). The literature review revealed that addressing this fear is key to decreasing the stigma surrounding individuals with HIV/AIDS and maximizing the benefits of HIV prevention programs (Ahmad et al., 2012). A number of studies have established the impact of HIV stigma on HIV prevention efforts, but no researchers have explored HIV stigma as a mediating variable to the HBM constructs of perceived benefits and perceived severity of HIV, and how this impacts the uptake of HIV testing in African American women in New Jersey. This study attempted to fill this gap in the literature by determining if HIV stigma mediates the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey. Chapter 3 will provide an overview of the research design and methodology. This discussion will include population, sample, instrumentation, data collection and analysis procedures, and safeguards for the ethical protection of participants.

# Chapter 3: Research Method

## Introduction

The literature has consistently shown that there is a correlation between stigma and HIV testing and other HIV-risk behaviors among homosexual males (Audet, McGowan, Wallston, Kipp, 2013; Logie et. al., 2013). In addition, the literature has shown that this correlation also occurs among African women and adolescents (Logie, James, Tharao, & Loutfy, 2013; Maughan-Brown & Nyblade, 2014; Schnall, Rojas & Travers, 2014). However, the literature has not adequately explored this relationship in African American women, to determine whether stigma mediates the relationship between perceived benefits and perceived severity and the uptake of HIV testing. The purpose of this study is to address this gap in the literature regarding how HIV stigma impacts HIV testing among African American women in New Jersey.

Chapter 3 provides an overview of the research design and methodology. Study population, setting, recruitment strategy, inclusion and exclusion criteria, sample size determination, power analysis, sampling method, research questions and hypotheses, instrumentation and materials, study variables, data collection, data and statistical analyses, data management (cleaning of data and missing values), and ethical procedures are discussed.

## Research Design and Rationale

### Study Variables

The independent variables in this study were the HBM constructs of (1) perceived benefits (2) perceived severity. The dependent variable in this study was HIV testing. The mediator in this study was HIV stigma. The relevant covariates included age, education level, and socioeconomic status.

The study is a quantitative, correlational study that explored if HIV stigma serves as a mediator in the potential relationship between perceived benefits or perceived severity, and the uptake of HIV testing among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status.

Public health research has commonly used correlational study designs (Howitt & Cramer, 2007). The correlational study design determines if there is a relationship between two or more variables and the strength of that relationship. Furthermore, I assessed the extent to which controlling other variables will affect this association. Correlational studies do not allow the researcher to definitely test causality; however the relationships identified can be useful to support potential causal interpretations (Howitt & Cramer). Since there have been insufficient studies on the role of HIV stigma in preventing African American women from undertaking an HIV test, this correlational study provided an opportunity to further explore the variables and use the results to create HIV intervention programs.

The quantitative research design was selected for use in this study because all the variables were measured quantitatively and the design offered a set of defined strategies (e.g. descriptive) that yielded useful statistics. A couple of research designs have been traditionally available to public health scholars, so it can be difficult to determine which single framework would yield the most accurate, efficient, and in-depth results.

Generally, scholars have considered quantitative research to be fact-based and qualitative research to be opinion-based (Bernard, 2013), a basis for which many researchers choose one approach over the other. H. Russell Bernard (2013) explained the two methodologies for research in the social sciences by stating that quantitative was the positivistic approach and that qualitative was the interpretive-humanistic approach. According to Bernard, most research in psychology has been in the positivistic tradition. While public health is a different field, public health scholars have applied the same maxim as Bernard observed in psychology. Public health researchers have utilized quantitative research as the preferred research method for the field due to its positivist framework, which has yielded interpretable statistical data, which public health officials can act upon.

Quantitative research, by definition, has been different from qualitative research not only in methodology and design but also in philosophy (Creswell, 2014). Quantitative researchers have looked at the way that people or groups of people have ascribed meaning to the issues around them. Quantitative research has used recognized methods for gathering, interpreting, and appropriately detailing data. In addition, this type of research has used a reflexive approach to the research question and has produced sufficiently detailed outputs (Ritchie, Lewis, McNaughton Nichols, & Ormston, 2013). Qualitative researchers, on the other hand, have looked at relationships, motivations, opinions, and connections. Quantitative research also has the capacity to evaluate these relationships (Ritchie, Lewis, McNaughton Nichols, & Ormston).

The difference between the two approaches is how the data is measured. For example, heart rate can be measured as a metric for emotional reactions (Ritchie, Lewis, McNaughton Nichols, & Ormston). The key difference between quantitative and qualitative research is not always what they are measuring but how they are measuring the variable. Qualitative studies are often case studies and focus on information gathered from a particular case (Ritchie, Lewis, McNaughton Nichols, & Ormston). These studies have tended to use smaller research pools or samples, which may yield rich details, but reduce the applicability to large-scale public health issues (Ritchie, Lewis, McNaughton Nichols, & Ormston). The observatory practices employed by qualitative researchers and research studies also tend to speculate on possible explanations and outcomes rather than produce data to explicate causality and predict trends and patterns (Ritchie, Lewis, McNaughton Nichols, & Ormston). While speculations of possible explanations for behaviors have been important to the overall public health and other social sciences research processes, quantitative methodology has still been the preferred framework for public health research due to its ability to provide reliable data that can be used to create interventions if needed (Ritchie, Lewis, McNaughton Nichols, & Ormston).

The purpose of this study was to explore if HIV stigma serves as a mediator in the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status. For this study, the quantitative research design was useful for several reasons. First, the study utilized variables of HIV stigma, dependent and independent variables, and covariates that were measured quantitatively. This will allow study participants to respond to the questions quickly and facilitate an accurate analysis of the data. In addition, in order to secure public or governmental funding for HIV interventions, the research data must be presented in a way that is clear and easily understandable to both health agencies and the individuals or groups being researched. The use of research questions and standard research methodologies which yield data and interpreted statistical output, will help support the case for more funding for future interventions (Adams, Khan & Raeside, 2014). Historically, health agencies and communities have trusted quantitative methodologies because of their familiarity with this type of research and because it has yielded tangible statistics for large study samples that can be analyzed, interpreted, and acted upon (McNabb, 2013).

The quantitative research design was preferred for this study because it provided the data needed to support or refute the hypotheses. Additionally, quantitative statistics promote trust among public health study stakeholders (McNabb, 2013). This study design ensured a higher level of objectivity than qualitative or ethnographic methodologies, and offered analyses of how HIV stigma mediates the effect of perceived benefits or perceived severity, on the uptake of HIV testing among sexually active African American women in New Jersey, which may help planning in future public health interventions.

## Methodology

### Population

The target population for this study was African American women who reside in New Jersey and who are over the age of 18 years. New Jersey ranked third in the percentage of females diagnosed with AIDS in 2009 (CDC, 2010). African American women comprise more than 60% of the females living with HIV/AIDS in New Jersey, with an estimated total of 7,741 living with the disease (HPCPSDI Rutgers.edu, 2011). In this study, African American was defined as anyone who has ancestry belonging to any of the Black racial groups of Africa and included people who identified their race as African American, Negro, or black (Index Mundi, 2014). A resident of New Jersey was defined as an individual who’s fixed or permanent home is in New Jersey (FAFSA, 2014).

## Sampling and Sampling Procedures

A sample of approximately 107 African American women, residing in New Jersey was selected for this study. African American women were selected as the target population because HIV has continued to disproportionately affect African Americans compared to other races (Office of the Women’s Health, 2012). The Office of Women’s Health estimated that two out of every three women, newly infected with HIV, are African American. This quantitative, correlational study aimed to determine whether stigma mediates the relationship between perceived benefits and perceived severity and the uptake of HIV testing among African American women in New Jersey. Although the effects of HIV stigma among women in the US and Africa have been addressed in a handful of studies (Turan et al., 2011; Muturi & Ann, 2010), more research is needed in this population. This study attempted to address this gap in the literature.

Inclusion and exclusion criteria determined eligibility to participate in the study. Inclusion criteria included the following: African American women residing in New Jersey, over the age of 18 years, ability to read and understand English, access to the internet, ability to complete the online surveys, and willingness to sign the informed consent form. Exclusion criteria included any participants who did not meet the stated inclusion criteria. All participation in this study was strictly voluntary. The study consisted of approximately 107 African American women. The sample size was calculated using G*Power version 3.1.9.2 and determined based on a multiple linear regression fixed-predictors model, an effect size $f^2$ of .15 (medium), a $\alpha$-level of 0.05, and power (1-$\beta$) of 0.95.

### Procedures for Recruitment and Participation

After obtaining approval from the Walden University Institutional Review Board (IRB), I recruited participants via flyers posted at community centers, health centers, churches, beauty salons and other areas of gathering, for African American women. I obtained IRB approval of all flyers and recruitment materials, prior to use. The online survey tool SurveyMonkey was used to administer the questionnaires.

The link to the questionnaire was provided on the posted research flyer. The online format allowed participants to complete the questionnaires at their convenience, in any location with internet access allowing for efficient collection of survey-related information, and causing minimal inconvenience to participants. Once the participants arrived at the research website, they were presented with an online informed consent. They had to agree to the informed consent in order to proceed to the questionnaire section. Information on the participants' age, educational level and household income were collected on the sociodemographics questionnaire. Information on whether or not the participant had ever received an HIV test was also collected as part of this questionnaire. Participants were administered a total of four questionnaires. They received instructions on how to accurately complete the questionnaires, which were provided on SurveyMonkey. Once the participants completed all the questionnaires, they exited the website. No additional contact was made with the participants and their identity remained completely anonymous.

## Pilot Study

The purpose of this study was to gain knowledge on whether HIV stigma mediates the relationship between perceived benefits or perceived severity, and the uptake of HIV testing among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status. In order to assess the reliability of the PSOSH questionnaire in this study, a pilot study was performed. Prior to full data collection, the pilot study was conducted to test the reliability of the PSOSH scale, for use to assess HIV stigma in this population.

## Instrumentation and Operationalization of Constructs

Four instruments were used to gather data in this study. The sociodemographics questionnaire collected data on age, education level, socioeconomic status and whether the participant was ever tested for HIV.

The Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale which was developed by Vogel (Vogel, Wade & Ascheman, 2009), was utilized to collect data related to the participants' perception of HIV stigma by others within their social network. Vogel created the PSOSH scale as part of his research on fear of stigmatization, and its effects on a participant's willingness to engage in psychotherapy. The goal of the study also included determining an appropriate measure of stigmatization. Vogel reviewed five samples when developing the PSOSH scale. In the majority of samples, concurrent validity was supported through associations between three different stigma measures, which included public stigma toward counseling (r=.31), public stigma toward mental illness (r=.20), and self-stigma (r=.31). The results of the Vogel study represented the perceptions of college students, a large majority of which were female. This instrument was appropriate for use in this study because it appears to be an adequate measure of stigma from the results of the Vogel study. In addition, this questionnaire was simple and required less time to complete than other stigma questionnaires such as the MacPherson Stigma Scale (MacPherson et al., 2011) because it only contained 5 items for the participant to complete. This questionnaire was modified to reflect HIV instead of mental health, for use in this study. The five-item questionnaire collected responses in the form of a 5-point Likert scale, using a close-ended format ranging from “not at all” (1), to a “great deal” (5). The sum of the scaled responses determined the HIV stigma score. High scores indicate a greater perceived stigma. This instrument was provided only in English and permission for use was obtained from the original author via email (see Appendix E).

The final two instruments used in this study were the HIV-related Health Belief Model (HIVHBM) Questionnaires, which were used to collect data on the HBM constructs (perceived benefits and severity). The HIVHBM questionnaires were adapted from HBM scales developed by Lux and Petosa (1994), Champion and Skinner (1999, 2003), and Awad et al. (2004). Only the severity and benefits questionnaires were used in this study. The Severity of HIV Infection Scale is a seven-item questionnaire used to collect responses in the form of a 5-point Likert scale, using a close-ended format ranging from *Strongly Agree (5)* to *Strongly Disagree (1)*. The score was calculated by averaging the responses to the questions. A higher score indicated a perception of more severe consequences of HIV. The Benefits of HIV Testing Scale is a nine-item questionnaire that collected responses in the form of a 5-point Likert scale, using a close-ended format ranging from *Strongly Agree (5)* to *Strongly Disagree (1)*. Calculating the average of the responses to the questions derived the score. A higher score indicated that the participants' perception of the benefits of HIV testing is greater than that of a participant with a lower score. All instruments were provided only in English and permission to use was obtained from the original authors via email (see Appendix D).

The validity and reliability of the HIVHBM questionnaires have been demonstrated in previous studies. Champion (2003) performed validity and reliability of the benefits construct of the HBM and found a high level of internal consistency. Benefits construct had a final Cronbach's alpha of 0.75. In addition, Boonpongmanee and Jittanoon (2007) also conducted validity on the HBM construct scales in their study on cervical cancer in Women in Bangkok, Thailand. They reported an internal consistency score of 0.83 and Cronbach's alpha values for the subscales, severity and benefits of 0.60 and 0.86, respectively.

## Data Analysis Plan

The data for this study was collected completely online using SurveyMonkey. Participants first completed the informed consent acknowledgement, in order to provide their consent for inclusion of their data in the research study. After confirming their agreement to participate, participants were allowed to proceed to the anonymous demographics questionnaire. The demographic information included age, education level, and socioeconomic status. All questionnaires included the purpose of the questionnaire and instructions on how to complete it. It was estimated that the questionnaires would take approximately 30 minutes to complete. SurveyMonkey automatically saved the data from the completed questionnaires. Access to the raw data was only available via the password-protected database.

After all the participants completed the study, the data was downloaded from SurveyMonkey and analyzed with Software Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to determine relationships between sociodemographic factors and dependent variables. I used multiple linear regression analysis because it can model the relationships between several independent variables and a dependent variable. The independent variables in this study were the HBM constructs of perceived benefits and perceived severity. The dependent variable was the uptake of HIV testing.

Missing values on any of the questionnaires were replaced using the participant's mean score for that particular scale.

## Research Questions and Hypotheses

### Research Question 1

Is there a significant correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New

Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 1

*Null hypothesis*: There is no correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey.

Research Question 2

Is there a significant correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 2

*Null hypothesis*: There is no correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey.

Research Question 3

Is there a significant correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 3

*Null hypothesis*: There is no correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey.

Research Question 4

Is there a significant correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 4

*Null hypothesis*: There is no correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey.

Research Question 5

Does HIV stigma mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African

American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

Hypothesis 5

*Null hypothesis*: HIV stigma does not mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: HIV stigma does mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey.

All of the research questions (RQs) in this study were assessed through the use of a multiple linear regression. For the overarching research question 4, a multiple linear regression was used to determine if HIV stigma mediates the relationship between perceived benefits or perceived severity, and the uptake of HIV testing among sexually active African American women in New Jersey. Multiple linear regression analysis can be useful when assessing a continuous dependent variable from a number of independent variables. A multiple linear regression was the appropriate analysis to test the hypotheses in this study, because the mediating variable (HIV stigma) was measured on a continuous measurement Likert scale with a range of 1 to 5.

## Threats to Validity

### Threats to External Validity

External validity refers to the extent to which the results from this study can be generalized to other situations (Gast & Ledford, 2014). Threats to external validity include how and when a test is administered (Gast & Ledford). For example, the time of day during which the participants took the survey may have been a factor that influenced the outcome of the experiment. This threat was addressed by allowing the participants to complete the surveys at any time they chose. They were also allowed to save the surveys and complete at a later time. The participants answering demographic questions before other survey questions may have also influenced the results. This temporal dynamic may influence the results such that only a particular correlation is determined when the demographic questions are answered first. To address this threat, participants were allowed to complete the surveys in any order they choose.

Another threat to external validity was that the results of this study might not be generalizable to the entire population because those who were unable or unwilling to use the Internet were not included. With the prevalence of smartphones and tablets, this threat was minimal and I did not anticipate that it would have a significant impact on the generalizability of this study to other African American women living in New Jersey. The use of a convenience sample, although convenient and inexpensive, affected the generalizability of the study to the broader African American female population.

### Threats to Internal Validity

Internal validity refers to the extent to which an experiment can conclusively determine cause and effect (Gast & Ledford, 2014). Although the study was not designed to specifically test cause and effect, there are conditions that may affect the ability to interpret relationships found between the independent and dependent variables. The most prominent threats to internal validity in this type of experimental design are those related to selection bias. I attempted to address this threat by controlling for age, education level and SES. Response fatigue can also affect the internal validity because the participants may get tired of answering the different surveys. This could affect the quality of the responses provided by the participants (Egleston, Miller, & Meropol, 2011). I attempted to reduce response fatigue by utilizing the minimum number of questionnaires required to sufficiently answer my research questions. In addition, all of the questionnaires in this study contained less than 10 questions, which made it less likely that the participants would experience response fatigue. Although this would not completely eliminate this threat, it may have helped mitigate it. Another factor inherent to the experimental design that can threaten internal validity is volunteer status. It may be possible that I would find different results in a population that did not volunteer for this study. Although, this is not something that I can control, it is important to be aware of it and this will be discussed further in Chapter 5.

### Threats to Construct Validity

Construct validity refers to how well a test measures what it claims to measure (Epino et al., 2012). The variables in this study were measured using reliable survey instruments, so the construct validity was high.

## Ethical Procedures

The protection of study participants is important in order to ensure that the study is conducted ethically. To ensure that participants were adequately protected, this study was conducted in compliance with Walden University ethical standards.

Informed consent and any recruitment materials received Walden IRB approval, prior to initiation of the study. A certificate of training on Human Research Protection from the National Institute of Health was completed and included as part of my IRB application.

I ensured that participants were clearly and fully informed about the purpose, potential risks, and other critical issues regarding the study, prior to participation. I provided the participants with an informed consent form, which included all elements required by Walden University. The informed consent form adhered to the ethical standards that have their origin in the Declaration of Helsinki. Each participant was provided with an informed consent electronically through SurveyMonkey. Those unable or unwilling to give their electronic consent were not allowed to participate in this study. Participant involvement in the study was completely voluntary, without compensation, with freedom to discontinue participation at any time, without penalty.

All data was collected anonymously through the validated program, SurveyMonkey. The confidentiality of records that could identify subjects was protected, preserving the privacy and confidentiality of the participants. Only Walden University committee members, SurveyMonkey, and I had access to the raw data. I maintained full responsibility for storing, accessing, disseminating and protecting the data. The data was stored on a password-protected drive on my personal computer, and the data will be destroyed 5 years after completion of study.

There was limited risk to participants in this study. There was no known harm associated with completing these questionnaires. The questionnaires did not contain any questions that may inadvertently disclose the identity of participants. Lastly, no individual was coerced to participate in this study. The rights and well-being of the study participants were of utmost importance and prevailed over other interests of science and society.

## Summary

In this chapter, I discussed the research design, methodology, data collection and analysis plan, threats to validity and ethical considerations associated with the study. I provided a detailed explanation of how this study was conducted to yield the data needed to determine whether stigma mediates the relationship between perceived benefits of HIV testing and perceived severity of HIV and the uptake of HIV testing. The purpose of this study was to address this gap in the literature regarding how HIV stigma impacts HIV testing among African American women in New Jersey. In Chapter 4, I will present the results of the analysis of the data collected in the study.

# Chapter 4: Results

## Introduction

The purpose of this study was to explore if HIV stigma serves as a mediator in the relationship between perceived benefits or perceived severity and the uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status. This chapter will present the findings of the pilot study and the full data collection process. Data for the pilot study was first analyzed for internal consistency. A pre-analysis data screen was then conducted on the full sample to determine a final sample size. Descriptive statistics were performed to determine trends in demographic characteristics. Means and standard deviations were calculated for the four scales – perceived benefits, perceived severity, HIV family stigma, and HIV friend/coworker stigma. A reliability analysis was conducted on the scales using Cronbach's alpha statistics. Finally, the research questions were answered using linear regression, logistic regression, and mediation analysis.

## Pilot Study

Prior to starting the full study, a pilot study was conducted with twelve individuals to ensure that the survey questions for HIV stigma were easy to interpret, and that they applied to the topic of interest. A total of 12 participants completed the stigma questionnaire as part of the pilot study. The participants were recruited using my personal contacts. The pilot study was informative and based on comments from the participants, I split the stigma survey into two categories: HIV family stigma and HIV friend and colleagues stigma in the main study. Frequencies and percentages were examined for the responses and are presented in Table 1.

Table 1

*Frequencies and Percentages of HIV Stigma Questions (Pilot Study)*

| HIV Stigma Question | *n* | % |
|---|---|---|
| Imagine you had HIV. If you sought treatment for this disease, how do you think the people you interact with would: | | |
| 1. React negatively to you | | |
| Not at all | 0 | 0 |
| A little | 2 | 17 |
| Some | 6 | 50 |
| A lot | 3 | 25 |
| A great deal | 1 | 8 |
| 2. Think bad things of you | | |
| Not at all | 1 | 8 |
| A little | 0 | 0 |
| Some | 7 | 58 |
| A lot | 3 | 25 |
| A great deal | 1 | 8 |
| 3. See you as engaging in immoral behavior | | |
| Not at all | 2 | 17 |
| A little | 0 | 0 |
| Some | 5 | 42 |
| A lot | 4 | 33 |
| A great deal | 1 | 8 |
| 4. Think of you in a less favorable way | | |
| Not at all | 1 | 8 |
| A little | 0 | 0 |
| Some | 7 | 58 |
| A lot | 3 | 25 |
| A great deal | 1 | 8 |
| 5. Think you posed a risk to others | | |
| Not at all | 0 | 0 |
| A little | 2 | 17 |
| Some | 5 | 42 |
| A lot | 3 | 25 |
| A great deal | 2 | 17 |

*Note.* Due to rounding error, all the percentages may not add up to 100.

## Reliability of HIV Stigma Questionnaire (Pilot Study)

Cronbach's alpha test of reliability and internal consistency was conducted on the HIV stigma scale with the pilot study data. The Cronbach's alpha provides the mean correlation between each pair of items and the number of items in a scale (Brace, Kemp, & Snelgar, 2006). The alpha values were interpreted using the guidelines suggested by George and Mallery (2010) where $\alpha > .9$ excellent, $>.8$ good, $>.7$ acceptable, $>.6$ questionable, $>.5$ poor, and $\leq .5$ unacceptable. The results of the reliability analysis indicated excellent reliability for HIV stigma ($\alpha = .93$): therefore, the survey questions for HIV stigma were appropriate to utilize in the main study. The Cronbach's alpha reliability statistics are presented in Table 2.

Table 2

*Cronbach's Alpha Reliability Statistics for Composite Scores*

| Scale | No. of Items | α |
|---|---|---|
| HIV stigma | 5 | .93 |

## Data Collection

The data for the main study was collected over a period of seven months, from May 2015 to November 2015. A total of 108 participants responded to the main study. Most of the participants were recruited from Health Fairs and HIV centers, which may affect the generalizability of the results from this study. The data were checked for non-responses, and 14 participants were removed for not responding to the question for uptake of HIV testing. One participant was removed for not meeting the inclusion criteria of being a female. Therefore, the final analysis was conducted on 93 participants. A post hoc power analysis was conducted to calculate the achieved power, using the significant alpha level ($\alpha = .05$), sample size ($n = 93$), and effect size ($f^2 = .15$). The achieved power was calculated to be 0.92.

## Full Study Results

### Descriptive Statistics

**Frequencies and percentages of demographics.** As part of the inclusion criteria, all participants were required to be African American females currently residing in the state of New Jersey. The majority of the participants attended church ($n = 60$, 65%). Most participants were aged 40 years and older ($n = 62$, 67%), and many participants had earned a graduate degree ($n = 34$, 37%). Most participants reported a socioeconomic status as an income more than $50,000 ($n = 57$, 61%). The majority of the participants had received an HIV test ($n = 77$, 83%). The frequencies and percentages of demographic characteristics are presented in Table 3.

Table 3

*Frequencies and Percentages of Demographic Characteristics*

| Demographic | *n* | % |
|---|---|---|
| Church membership | | |
| No | 33 | 36 |
| Yes | 60 | 65 |
| Age | | |
| 18 to 20 years | 3 | 3 |
| 21 to 29 year | 9 | 10 |
| 30 to 39 years | 19 | 20 |
| 40 to 49 years | 32 | 34 |

| | | |
|---|---|---|
| 50 to 59 years | 22 | 24 |
| 60 years or more | 8 | 9 |
| Education level | | |
| High school | 7 | 8 |
| Some college, but no degree | 25 | 27 |
| Associate degree | 9 | 10 |
| Bachelor degree | 18 | 19 |
| Graduate degree | 34 | 37 |
| Socioeconomic Status | | |
| Less than $20,000 | 16 | 17 |
| $20,000 to $34,999 | 12 | 13 |
| $35,000 to $49,000 | 8 | 9 |
| $50,000 to $74,999 | 20 | 22 |
| $75,000 to $99,999 | 12 | 13 |
| $100,000 to $149,999 | 13 | 14 |
| $150,000 or more | 12 | 13 |
| Have you ever received an HIV test? | | |
| Yes | 77 | 83 |
| No | 16 | 17 |

*Note.* Due to rounding error, not all percentages may sum to 100.

**Descriptive statistics of continuous variables.** The scores for perceived benefits ranged from 1.44 to 5.00 with *M* = 4.13 and *SD* = 0.74. Perceived severity ranged from 2.00 to 5.00 with *M* = 3.57 and *SD* = 0.75. HIV family stigma scores ranged from 1.00 to 5.00 with *M* = 3.00 and *SD* = 1.41. HIV friend stigma scores ranged from 1.00 to 5.00 with *M* = 3.00 and *SD* = 1.20. The descriptive statistics of the continuous variables are presented in Table 4.

Table 4

*Descriptive Statistics of Continuous Variables*

| Continuous Variables | *Min.* | *Max.* | *M* | *SD* |
|---|---|---|---|---|
| Perceived benefits | 1.44 | 5.00 | 4.13 | 0.74 |
| Perceived severity | 2.00 | 5.00 | 3.57 | 0.75 |
| HIV family stigma | 1.00 | 5.00 | 3.00 | 1.41 |
| HIV friend stigma | 1.00 | 5.00 | 3.00 | 1.20 |

**Reliability**

Cronbach's alpha tests of reliability and internal consistency were conducted on scales, with one test per scale. The Cronbach's alpha provides the mean correlation between each pair of items and the number of items in a scale (Brace, Kemp, & Snelgar, 2006). The alpha values were interpreted using the guidelines suggested by George and Mallery (2010) where α > .9 excellent, >.8 good, >.7 acceptable, >.6 questionable, >.5 poor, and ≤.5 unacceptable. The results for perceived benefits indicated good reliability (α = .86). The results for perceived severity indicated acceptable reliability (α = .79). The results for HIV family stigma and HIV friend stigma indicated excellent reliability (α = .97), as well as HIV friend stigma (α = .96). The Cronbach's alpha reliability statistics are presented in Table 5.

Table 5

*Cronbach's Alpha Reliability Statistics for Composite Scores*

| Scale | No. of Items | A |
|---|---|---|
| Perceived benefits | 9 | .86 |
| Perceived severity | 7 | .79 |
| HIV family stigma | 5 | .97 |
| HIV friend stigma | 5 | .96 |

## Research Question 1

Is there a significant correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New

Jersey after controlling for the covariates of age, education level, and socioeconomic status?

## Hypothesis 1

*Null hypothesis*: There is no correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey.

**Perceived benefits and uptake of HIV testing.** To address research question one, a binary logistic regression was conducted to determine whether a significant relationship exists between perceived benefits of HIV testing and uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status. The results of the overall model for the regression were significant, ($\chi^2(4) = 20.39$, $p < .001$, Nagelkerke $R^2 = .328$), suggesting that age, education level, socioeconomic status, and perceived benefits were collectively significant in predicting uptake of HIV testing. The Nagelkerke $R^2$ value indicates that age, education level, socioeconomic status, and perceived benefits accounted for 32.8% of the variance in uptake of HIV testing.

Education level was a significant predictor of uptake of HIV testing (Wald (1) = 5.51, $p = .019$), suggesting that for every one level increase in education, participants were 1.94 times more likely to have been tested for HIV. Perceived benefits was significantly correlated with the uptake of HIV testing (Wald(1) = 7.26, *p* = .007), suggesting that for every one unit increase in perceived benefits, participants were 3.06 times more likely to have been tested for HIV. Age and SES were not significant predictors of the uptake of HIV testing among the respondents. Based on these results, the null hypothesis ($H_01$) for research question one can be rejected. Results of the binary logistic regression are presented in Table 6.

Table 6

*Binary Logistic Regressions of the Correlation of Perceived Benefits to the Uptake of HIV Testing*

| Source | *B* | *SE* | Wald(1) | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.17 | 0.25 | 0.48 | .491 | 0.84 |
| Education level | 0.66 | 0.28 | 5.51 | .019 | 1.94 |
| Socioeconomic status | 0.11 | 0.20 | 0.33 | .568 | 1.12 |
| Perceived benefits | 1.12 | 0.42 | 7.26 | .007 | 3.06 |

*Note.* $\chi^2$ (4) = 20.39, p < .001, Nagelkerke $R^2$ = .328

## Research Question 2

Is there a significant correlation between the perceived severity of HIV and the uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status?

### Hypothesis 2

*Null hypothesis*: There is no correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived severity of HIV and the uptake of HIV testing among sexually active African American women in New Jersey.

**Perceived severity and uptake of HIV testing.** To address research question two, a binary logistic regression was conducted to determine whether a significant relationship exists between perceived severity of HIV testing and uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status. The results of the overall model for the regression were significant, ($\chi^2(4) = 12.51$, $p < .001$, Nagelkerke $R^2 = .210$), suggesting that age, education level, socioeconomic status, and perceived severity were collectively significant in predicting uptake of HIV testing. The Nagelkerke $R^2$ value suggests that age, education level, socioeconomic status, and perceived severity accounted for 21.0% of the variance in uptake of HIV testing. Education level was a significant predictor of uptake of HIV testing (Wald(1) = 4.00, $p = .046$), suggesting that for every one level increase in education level, participants were 1.72 times more likely to have been tested for HIV. Perceived severity was not significantly correlated with the uptake of HIV testing (Wald(1) = 0.55, $p = .458$). Age and SES were not significant predictors of the uptake of HIV testing among the respondents. There is not sufficient evidence to reject the null hypothesis ($H_02$) for research question two. Results of the binary logistic regression are presented in Table 7.

Table 7

*Binary Logistic Regressions of the Correlation of Perceived Severity to the Uptake of HIV Testing*

| Source | *B* | *SE* | Wald | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.23 | 0.23 | 1.00 | .318 | 0.80 |
| Education level | 0.54 | 0.27 | 4.00 | .046 | 1.72 |
| Socioeconomic status | 0.15 | 0.19 | 0.66 | .418 | 1.17 |
| Perceived severity | -0.30 | 0.41 | 0.55 | .458 | 0.74 |

*Note.* $\chi^2$ (4) = 12.51, $p$ = .014, Nagelkerke $R^2$ = .210

## Research Question 3

Is there a significant correlation between the perceived benefits of HIV testing and HIV stigma, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status?

### Hypothesis 3

*Null hypothesis*: There is no correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey.

To address research question three, two multiple linear regressions were conducted to assess the relationship between perceived benefits and HIV stigma, among sexually active African American women in New Jersey, while controlling for age, education level, and socioeconomic status. I used multiple linear regressions because the goal of this study was to assess the strength of the relationship between a group of predictor variables and a continuous criterion variable (Tabachnick & Fidell, 2012). One multiple linear regression was used to examine HIV family stigma and a second multiple linear regression was used to examine HIV friend stigma.

**Perceived benefits and HIV family stigma.** A multiple linear regression was conducted between perceived benefits and HIV family stigma, while controlling for age, education level, and socioeconomic status. Prior to analysis, the assumptions of normality and homoscedasticity were assessed. The assumption of normality checks that the residuals are normally distributed. The assumption was checked using a scatterplot, and the assumption was met as data followed the normality line (Figure 2). The assumption of homoscedasticity was assessed with a residuals scatterplot (Figure 3). The assumption was met because the data were distributed in a rectangular form and there was no distinguishable pattern (Stevens, 2009).

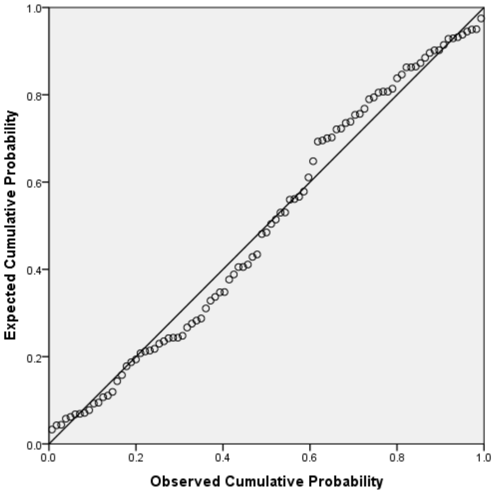

*Figure 2.* Scatterplot to assess for normality between perceived benefits and HIV family stigma.

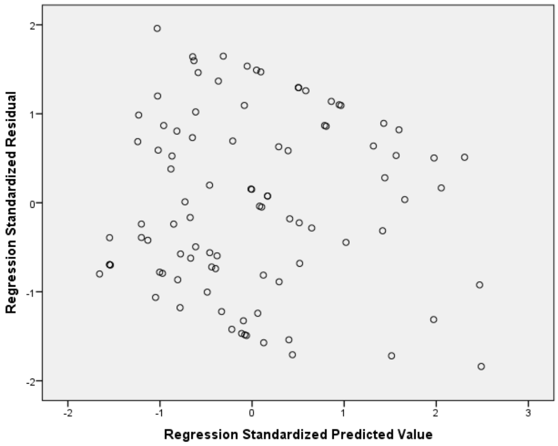

*Figure 3.* Residuals scatterplot for homoscedasticity between perceived benefits and HIV family stigma.

The results of the overall model for the regression were significant, $F(4, 88) = 4.33$, $p = .003$, $R^2 = .164$, suggesting that age, education level, socioeconomic status, and perceived benefits were collectively significant in predicting HIV family stigma. The $R^2$ value suggests that age, education level, socioeconomic status, and perceived benefits accounted for 16.4% of the variance in HIV family stigma scores. Age was a significant predictor of HIV family stigma scores, ($t = -2.66$, $p = .009$), suggesting that for every one level increase in age, participants' HIV family stigma scores decreased by 0.31 units. Socioeconomic status was a significant predictor of HIV family stigma scores, ($t = -2.45$, $p = .016$), suggesting that for every one level increase in socioeconomic status, participants' HIV family stigma scores decreased by 2.45 units. Perceived benefits were not significantly correlated with HIV family stigma, ($t = -0.12$, $p = .904$). Education level was not significantly correlated with HIV family stigma ($t = 0.47$, $p = .637$). The results of the linear regression are presented in Table 8.

Table 8

*Results for Multiple Linear Regression with Perceived Benefits and its Correlation to HIV Family Stigma*

| Source | *B* | *SE* | Β | *t* | *p* |
|---|---|---|---|---|---|
| Age | -0.31 | 0.12 | -0.27 | -2.66 | .009 |
| Education level | 0.06 | 0.12 | 0.06 | 0.47 | .637 |
| Socioeconomic status | -0.21 | 0.09 | -0.30 | -2.45 | .016 |
| Perceived benefits | -0.02 | 0.19 | -0.01 | -0.12 | .904 |

*Note.* $F(4, 88) = 4.33$, $p = .003$, $R^2 = .164$

**Perceived benefits and HIV friend stigma.** A multiple linear regression was conducted between perceived benefits and HIV friend stigma, while controlling for age, education level, and socioeconomic status. Prior to analysis, the assumptions of normality and homoscedasticity were assessed. The assumption of normality checks that the residuals are normally distributed. The assumption was checked using a scatterplot, and the assumption was met as data followed the normality line (Figure 4). The assumption of homoscedasticity was assessed with a residuals scatterplot (Figure 5). The assumption was met because the data were distributed in a rectangular form and there was no distinguishable pattern (Stevens, 2009).

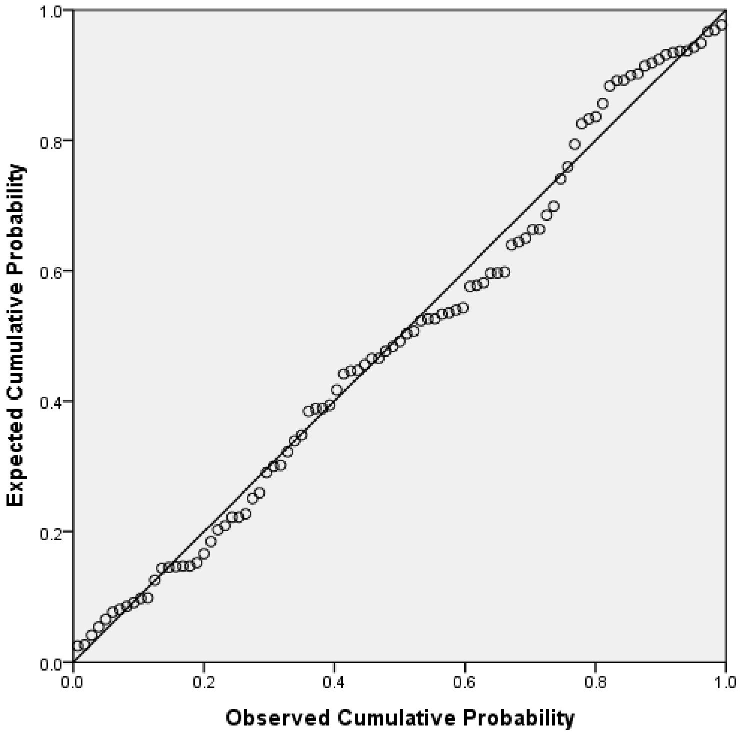

*Figure 4.* Scatterplot to assess for normality between perceived benefits and HIV friend stigma.

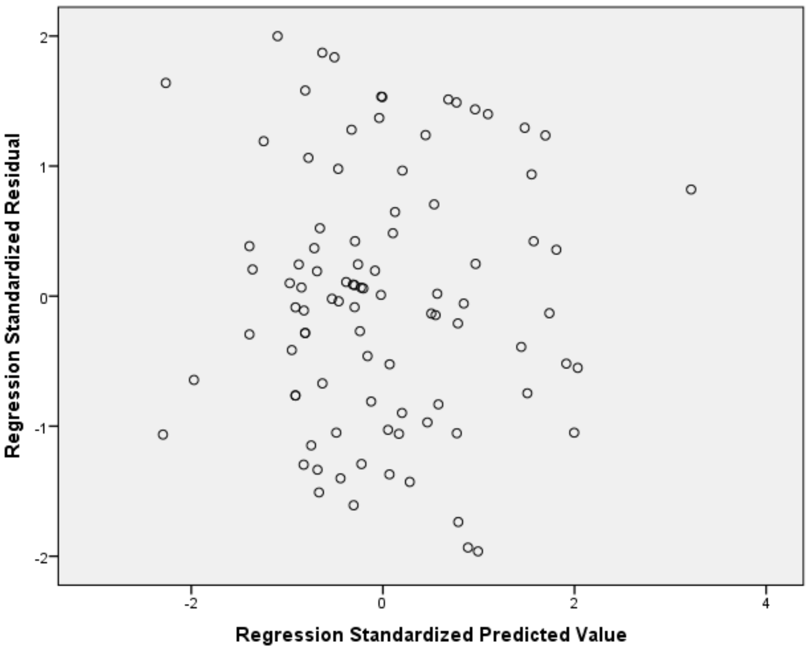

*Figure 5.* Residuals scatterplot for homoscedasticity between perceived benefits and HIV friend stigma.

The results of the overall model for the regression were significant, $F(4, 88) = 1.71$, $p = .154$, $R^2 = .072$, suggesting that age, education level, socioeconomic status, and perceived benefits were collectively significant in predicting HIV friend stigma. Perceived benefits were not a significant predictor of HIV friend stigma, ($t = -0.76$, $p = .448$) and none of the other variables were independent predictors of HIV friend stigma. The results of the linear regression are presented in Table 9. As indicated by the two regressions, there was not a significant relationship between perceived benefits, HIV family stigma, or HIV friend stigma. Thus, there is not sufficient evidence to reject the null hypothesis ($H_03$) for research question three.

Table 9

*Results for Multiple Linear Regression with Perceived Benefits and its Correlation to HIV Friend Stigma*

| Source | *B* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Age | -0.20 | 0.10 | -0.21 | -1.95 | .054 |
| Education level | 0.15 | 0.11 | 0.18 | 1.37 | .175 |
| Socioeconomic status | -0.10 | 0.08 | -0.18 | -1.35 | .181 |
| Perceived benefits | -0.13 | 0.17 | -0.08 | -0.76 | .448 |

*Note.* $F(4, 88) = 1.71$, $p = .154$, $R^2 = .07$

## Research Question 4

Is there a significant correlation between the perceived severity of HIV and HIV stigma, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status?

## Hypothesis 4

*Null hypothesis*: There is no correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey.

*Alternative hypothesis*: There is a correlation between the perceived severity of HIV and HIV stigma among sexually active African American women in New Jersey.

To address research question four, two multiple linear regressions were conducted to assess the relationship between perceived severity and HIV stigma, among sexually active African American women in New Jersey, while controlling for age, education level, and socioeconomic status. One multiple linear regression was used to examine HIV family stigma and a second multiple linear regression was used to examine HIV friend stigma.

**Perceived severity and HIV family stigma.** A multiple linear regression was conducted between perceived severity and HIV family stigma, while controlling for age, education level, and socioeconomic status. Prior to analysis, the assumptions of normality and homoscedasticity were assessed. The assumption was checked by examination of a scatterplot, and the assumption was met as data followed the normality line (Figure 6). The assumption of homoscedasticity was assessed with a residuals scatterplot (Figure 7). The assumption was met because the data were distributed in a rectangular form and there was not a distinguishable pattern (Stevens, 2009).

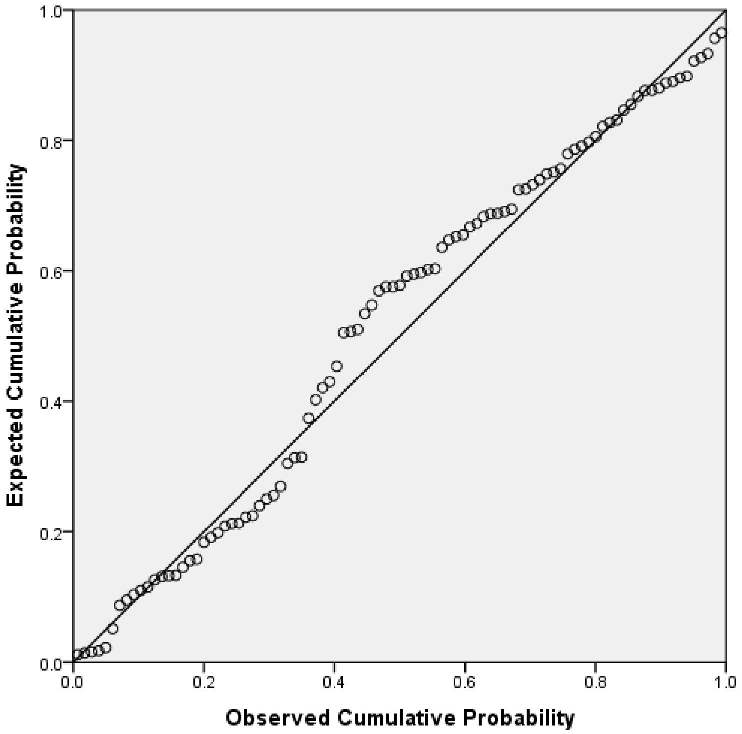

*Figure 6.* Scatterplot to assess for normality between perceived severity and HIV family stigma.

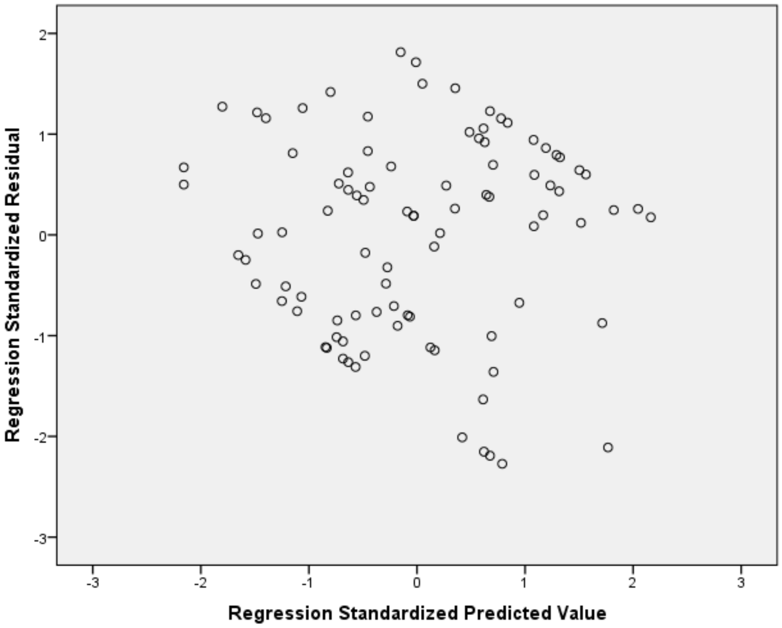

*Figure 7.* Residuals scatterplot for homoscedasticity between perceived severity and HIV family stigma.

The results of the overall model for the regression were significant, $F(4, 88) = 11.54, p < .001$, suggesting that age, education level, socioeconomic status, and perceived severity were collectively significant in predicting HIV family stigma. The $R^2$ value indicates that age, education level, socioeconomic status, and perceived severity accounted for ($R^2$) 34.4% of the variance in HIV family stigma scores. Age was a significant predictor of HIV family stigma scores, ($t = -3.00, p = .009$), suggesting that for every one level increase in age, participants' HIV family stigma scores decreased by 0.31 units. Socioeconomic status was a significant predictor of HIV family stigma scores, ($t = -2.42, p = .017$), suggesting that for every one level increase in socioeconomic status, participants' HIV family stigma scores decreased by 0.18 units. Perceived severity was significantly correlated with HIV family stigma, ($t = 4.91, p < .001$), suggesting that for every one unit increase in perceived severity scores, participants' HIV family stigma scores increased by 0.82 units. Education level was not a significant predictor of HIV family stigma ($t = 1.28, p = .204$). The results of the linear regression are presented in Table 10.

Table 10

*Results for Multiple Linear Regression with Perceived Severity and its Correlation to HIV Family Stigma*

| Source | *B* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Age | -0.31 | 0.10 | -0.26 | -3.00 | .003 |
| Education level | 0.14 | 0.11 | 0.14 | 1.28 | .204 |
| Socioeconomic status | -0.18 | 0.08 | -0.26 | -2.42 | .017 |
| Perceived severity | 0.82 | 0.17 | 0.44 | 4.91 | < .001 |

*Note.* $F(4, 88) = 11.54, p < .001$ , $R^2 = .344$

**Perceived severity and HIV friend stigma.** A multiple linear regression was conducted between perceived severity and HIV friend stigma, while controlling for age, education level, and socioeconomic status. Prior to analysis, the assumptions of normality and homoscedasticity were assessed. The assumption was checked by examination of a scatterplot, and the assumption was met as data followed the normality line (Figure 8). The assumption of homoscedasticity was assessed with a residuals scatterplot (Figure 9). The assumption was met because the data were distributed in a rectangular form and there was no distinguishable pattern (Stevens, 2009).

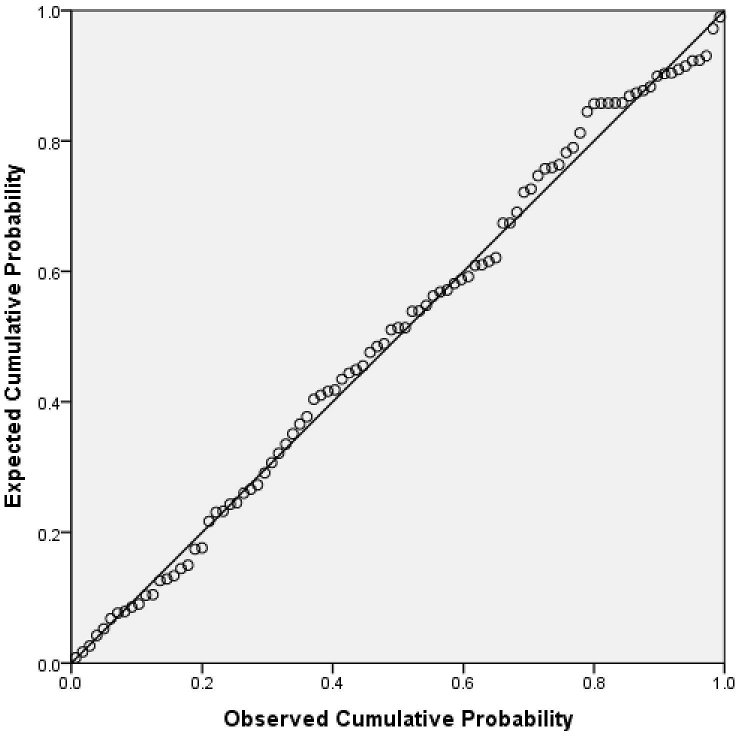

*Figure 8.* Scatterplot to assess for normality between perceived benefits and HIV friend stigma.

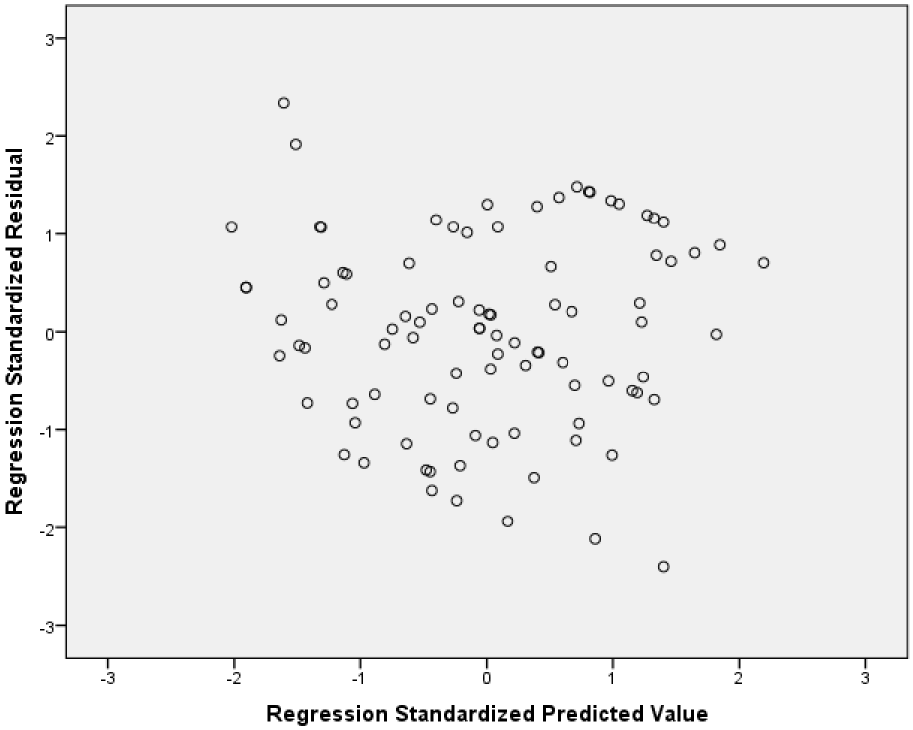

*Figure 9.* Residuals scatterplot for homoscedasticity between perceived severity and HIV friend stigma.

The results of the overall model for the regression were significant, $F(4, 88) = 6.38$, $p < .001$, suggesting that age, education level, socioeconomic status, and perceived severity were collectively significant in predicting HIV friend stigma. The $R^2$ value indicates that age, education level, socioeconomic status, and perceived severity accounted for 22.5% of the variance in HIV friend stigma scores. Age was a significant predictor of HIV friend stigma scores, ($t = -2.06$, $p = .043$), suggesting that for every one level increase in age, participants' HIV friend stigma scores decreased by 0.19 units. Education level was a significant predictor of HIV friend stigma scores, ($t = 2.21$, $p = .043$), suggesting that for every one level increase in education level, participants' HIV friend stigma scores decreased by 0.22 units. Perceived severity was a significant predictor of HIV friend stigma scores, ($t = 4.25$, $p < .001$), suggesting that for every one unit increase in perceived severity scores, participants' HIV friend stigma scores increased by 0.65 units. SES was not a significant predictor of HIV friend stigma ($t = -1.54$, $p = .213$) among the respondents. As indicated by the two regressions, there was a significant relationship between perceived severity, HIV family stigma, and HIV friend stigma. Thus, there is sufficient evidence to reject the null hypothesis ($H_04$) for research question four. The results of the linear regression are presented in Table 11.

Table 11

*Results for Multiple Linear Regression with Perceived Severity Predicting HIV Friend Stigma*

| Source | *B* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Age | -0.19 | 0.09 | -0.20 | -2.06 | .043 |
| Education level | 0.22 | 0.10 | 0.26 | 2.21 | .030 |
| Socioeconomic status | -0.09 | 0.07 | -0.15 | -1.54 | .213 |
| Perceived severity | 0.65 | 0.15 | 0.41 | 4.25 | < .001 |

*Note.* $F(4, 88) = 6.38$, $p < .001$, $R^2 = 0.225$

## Research Question 5

Does HIV stigma mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status?

### Hypothesis 5

*Null hypothesis*: HIV stigma does not mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey.

*Alternative hypothesis*: HIV stigma does mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey.

To examine research question five, four mediation analyses were conducted to examine the mediating effect that HIV stigma may have on the relationship between perceived benefits or perceived severity, and the uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status. The mediations will be organized as follows:

1. Examine the mediation effect that HIV family stigma has on perceived benefits and the uptake of HIV testing.
2. Examine the mediation effect that HIV friend stigma has on perceived benefits and the uptake of HIV testing.
3. Examine the mediation effect that HIV family stigma has on perceived severity and the uptake of HIV testing.
4. Examine the mediation effect that HIV friend stigma has on perceived severity and the uptake of HIV testing.

## Mediation Analysis

### Mediation #1: HIV family stigma as mediator of perceived benefits and uptake of HIV testing

A Baron and Kenny mediation analysis was conducted to assess if HIV family stigma mediated the relationship between perceived benefits and the uptake of HIV testing (Baron & Kenny, 1986). In this analysis, the independent variable was perceived benefits, the mediator was HIV family stigma, and the dependent variable was uptake of HIV testing. To assess for mediation, three regressions were conducted. For mediation to be supported, four criteria must be met:

1. The independent variable (perceived benefits) must be related the dependent variable (uptake of HIV testing).
2. The independent variable (perceived benefits) must be related to the mediator variable (HIV family stigma).
3. The mediator (HIV family stigma) must be related to the dependent variable (uptake of HIV testing) while in the presence of the independent variable (perceived benefits).
4. The independent variable (perceived benefits) should no longer be a significant predictor of the dependent variable (uptake of HIV testing) in the presence of the mediator variable (HIV family stigma).

**Perceived benefits and uptake of HIV testing.** First, the regression with perceived benefits (independent variable) predicting uptake of HIV testing (dependent variable) was conducted. The results of the overall model for the regression were significant, $\chi^2(4) = 20.39$, $p < .001$, Nagelkerke $R^2 = .328$, suggesting that age, education level, socioeconomic status, and perceived benefits were collectively significant in predicting uptake of HIV testing. Perceived benefits was a significant predictor for uptake of HIV testing (Wald(1) = 4.67, $p = .031$). This suggests that perceived benefits was statistically associated with uptake of HIV testing. The first criteria of the Baron and Kenny method was met. Results of the first regression for the mediation analysis are presented in Table 12.

Table 12

*Results for Regression #1 of Mediation Analysis with Perceived Benefits Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald(1) | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.17 | 0.25 | 0.48 | .491 | 0.84 |
| Education level | 0.66 | 0.28 | 5.51 | .019 | 1.94 |
| Socioeconomic status | 0.11 | 0.20 | 0.33 | .568 | 1.12 |
| Perceived benefits | 1.12 | 2.17 | 4.67 | .031 | 0.01 |

*Note.* $\chi^2$ (4) = 20.39, $p < .001$, Nagelkerke $R^2 = .328$

**Perceived benefits and HIV family stigma.** Second, the regression with perceived benefits (independent variable) predicting HIV family stigma (mediator) was conducted. The results of the overall model for the regression were significant, $F(4, 88) = 4.33$, $p = .003$, $R^2 = .164$, suggesting that age, education level, socioeconomic status, and perceived benefits were collectively significant in predicting HIV family stigma. Perceived benefits were not a significant predictor of HIV family stigma ($t = -0.12$, $p = .904$). The second criteria of the Baron and Kenny method was not met. Results of the second regression for the mediation analysis are presented in Table 13.

Table 13

*Results for Regression #2 of Mediation Analysis with Perceived Benefits Predicting HIV Family Stigma*

| Source | *B* | *SE* | Β | *t* | *P* |
|---|---|---|---|---|---|
| Age | -0.31 | 0.12 | -0.27 | -2.66 | .009 |
| Education level | 0.06 | 0.12 | 0.06 | 0.47 | .637 |
| Socioeconomic Status | -0.21 | 0.09 | -0.30 | -2.45 | .016 |
| Perceived benefits | -0.02 | 0.19 | -0.01 | -0.12 | .904 |

*Note.* $F(4, 88) = 4.33$, $p = .003$, $R^2 = .164$

**Perceived benefits, HIV family stigma, and uptake of HIV testing.** Finally, the multiple logistic regression was conducted with perceived benefits (independent variable) and HIV family stigma (mediator) predicting uptake of HIV testing (dependent variable). The results of the overall model for the regression were significant, ($\chi^2(5) = 21.76$, $p = .001$, Nagelkerke $R^2 = .347$), suggesting that age, education level, socioeconomic status, perceived benefits, and HIV family stigma were collectively significant in predicting uptake of HIV testing.

HIV family stigma was not a significant predictor for uptake of HIV testing (Wald(1) = 1.32, $p = .251$). Thus, the third criteria of the Baron and Kenny method was not met. Perceived benefits was still a significant predictor of uptake of HIV testing (Wald(1), $p = .007$) while in the presence of HIV family stigma. Due to the independent variable being a significant predictor in the presence of the mediator, the fourth criteria of the Baron and Kenny method was not met. Thus, three of the four criteria for the mediation analysis were not met. Results of the third regression for the mediation analysis are presented in Table 14.

Table 14

*Results for Regression #3 of Mediation Analysis with Perceived Benefits and HIV Family Stigma Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald(1) | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.28 | 0.28 | 1.06 | .304 | 0.75 |
| Education level | 0.68 | 0.29 | 5.62 | .018 | 1.97 |
| Socioeconomic status | 0.06 | 0.21 | 0.08 | .776 | 1.06 |
| Perceived benefits | 1.11 | 0.41 | 7.41 | .007 | 3.03 |
| HIV family stigma | -0.32 | 0.28 | 1.32 | .251 | 0.72 |

*Note.* $\chi^2(5) = 21.76$, $p = .001$, Nagelkerke $R^2 = .347$

### Mediation #2: HIV friend stigma as mediator of perceived benefits and uptake of HIV testing

A Baron and Kenny mediation analysis was conducted to assess if HIV friend stigma mediated the relationship between perceived benefits and uptake of HIV testing (Baron & Kenny, 1986). In this analysis, the independent variable was perceived benefits, the mediator was HIV friend stigma, and the dependent variable was uptake of HIV testing. To assess for mediation, three regressions were conducted. For mediation to be supported, four criteria must be met:

1. The independent variable (perceived benefits) must be related to the dependent variable (uptake of HIV testing).
2. The independent variable (perceived benefits) must be related to the mediator variable (HIV friend stigma).
3. The mediator (HIV friend stigma) must be related to the dependent variable (uptake of HIV testing) while in the presence of the independent variable (perceived benefits).

4. The independent variable (perceived benefits) should no longer be a significant predictor of the dependent variable (uptake of HIV testing) in the presence of the mediator variable (HIV friend stigma).

**Perceived benefits and uptake of HIV testing.** First, the regression with perceived benefits (independent variable) predicting uptake of HIV testing (dependent variable) was conducted. The results of the overall model for the regression were significant, $\chi^2(4) = 20.39$, $p < .001$, Nagelkerke $R^2 = .328$, suggesting that age, education level, socioeconomic status, and perceived benefits were collectively significant in predicting uptake of HIV testing. Perceived benefits was a significant predictor for uptake of HIV testing (Wald(1) = 4.67, $p = .031$). This suggests that perceived benefits was statistically associated with uptake of HIV testing. The first criteria of the Baron and Kenny method was met. Results of the first regression for the mediation analysis are presented in Table 15.

Table 15

*Results for Regression #1 of Mediation Analysis with Perceived Benefits Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald(1) | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.17 | 0.25 | 0.48 | .491 | 0.84 |
| Education level | 0.66 | 0.28 | 5.51 | .019 | 1.94 |
| Socioeconomic status | 0.11 | 0.20 | 0.33 | .568 | 1.12 |
| Perceived benefits | 1.12 | 2.17 | 4.67 | .031 | 0.01 |

*Note.* $\chi^2$ (4) = 20.39, $p < .001$, Nagelkerke $R^2 = .328$

**Perceived benefits and HIV friend stigma.** Second, the regression with perceived benefits (independent variable) predicting HIV friend stigma (mediator) was conducted. The results for the overall model of the regression were not significant, *F*(4,

88) = 1.71, $p = .154$, $R^2 = .07$, suggesting that age, education level, socioeconomic status, and perceived benefits were not collectively significant in predicting HIV friend stigma. Perceived benefits was not a significant predictor for HIV friend stigma ($t = -0.76$, $p = .448$). Thus, the second criteria of the Baron and Kenny method was not met. Results of the second regression for the mediation analysis are presented in Table 16.

Table 16

*Results for Regression #2 of Mediation Analysis with Perceived Benefits Predicting HIV Friend Stigma*

| Source | *B* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Age | -0.20 | 0.10 | -0.21 | -1.95 | .054 |
| Education level | 0.15 | 0.11 | 0.18 | 1.37 | .175 |
| Socioeconomic status | -0.10 | 0.08 | -0.18 | -1.35 | .181 |
| Perceived benefits | -0.13 | 0.17 | -0.08 | -0.76 | .448 |

*Note.* $F(4, 88) = 1.71$, $p = .154$, $R^2 = 0.07$

**Perceived benefits, HIV friend stigma, and uptake of HIV testing.** Finally, the multiple logistic regression was conducted with perceived benefits (independent variable) and HIV friend stigma (mediator) predicting uptake of HIV testing (dependent variable). The results of the overall model for the regression were significant, ($\chi^2(5) = 20.41$, $p = .001$, Nagelkerke $R^2 = .328$), suggesting that age, education level, socioeconomic status, perceived benefits, and HIV friend stigma were collectively significant in predicting uptake of HIV testing.

HIV friend stigma was not a significant predictor for uptake of HIV testing (Wald(1) = 0.02, $p = .902$). The third criteria of the Baron and Kenny method was not met. Perceived benefits was a significant predictor for uptake of HIV testing (Wald(1), *p* = .008) while in the presence of HIV friend stigma. Due to the independent variable being a significant predictor in the presence of the mediator, the fourth criteria of the Baron and Kenny method was not met. Thus, the three of the four criteria were not met for the mediation analysis. Results of the third regression for the mediation analysis are presented in Table 17.

Table 17

*Results for Regression #3 of Mediation Analysis with Perceived Benefits and HIV Friend Stigma Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald(1) | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.16 | 0.26 | 0.39 | .530 | 0.85 |
| Education level | 0.66 | 0.29 | 5.34 | .021 | 1.93 |
| Socioeconomic status | 0.11 | 0.20 | 0.33 | .565 | 1.12 |
| Perceived benefits | 1.13 | 0.42 | 7.09 | .008 | 3.09 |
| HIV family stigma | 0.04 | 0.29 | 0.02 | .902 | 1.04 |

*Note.* $\chi^2(5) = 20.41$, $p = .001$, Nagelkerke $R^2 = .328$

### Mediation #3: HIV family stigma as mediator of perceived severity and uptake of HIV testing

A Baron and Kenny mediation analysis was conducted to assess if HIV family stigma mediated the relationship between perceived severity and uptake of HIV testing (Baron & Kenny, 1986). In this analysis, the independent variable is perceived severity, the mediator is HIV family stigma, and the dependent variable is uptake of HIV testing. To assess for mediation, three regressions were conducted. For mediation to be supported, four criteria must be met:

1. The independent variable (perceived severity) must be related the dependent variable (uptake of HIV testing).
2. The independent variable (perceived severity) must be related to the mediator variable (HIV family stigma).
3. The mediator (HIV family stigma) must be related to the dependent variable (uptake of HIV testing) while in the presence of the independent variable (perceived severity).
4. The independent variable (perceived severity) should no longer be a significant predictor of the dependent variable (uptake of HIV testing) in the presence of the mediator variable (HIV family stigma).

**Perceived severity and uptake of HIV testing.** First, the regression with perceived severity (independent variable) predicting uptake of HIV testing (dependent variable) was conducted. The results of the overall model for the regression were significant, ($\chi^2(4) = 12.51$, $p < .001$, Nagelkerke $R^2 = .210$), suggesting that age, education level, socioeconomic status, and perceived severity were collectively significant in predicting uptake of HIV testing. Perceived severity was not a significant predictor for uptake of HIV testing (Wald(1) = 0.55, $p$ = .458). This suggests that perceived severity was not statistically associated with uptake of HIV testing. The first criteria of the Baron and Kenny method was not met. Results of the first regression for the mediation analysis are presented in Table 18.

Table 18

*Results for Regression #1 of Mediation Analysis with Perceived Severity Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.23 | 0.23 | 1.00 | .318 | 0.80 |
| Education level | 0.54 | 0.27 | 4.00 | .046 | 1.72 |
| Socioeconomic status | 0.15 | 0.19 | 0.66 | .418 | 1.17 |
| Perceived severity | -0.30 | 0.41 | 0.55 | .458 | 0.74 |

*Note.* $\chi^2$ (4) = 12.51, $p = .014$, Nagelkerke $R^2 = .210$

**Perceived severity and HIV family stigma.** Second, the regression with perceived severity (independent variable) predicting HIV family stigma (mediator) was conducted. The results of the overall model for the regression were significant, $F(4, 88) = 11.54$, $p < .001$, $R^2 = .344$, suggesting that age, education level, socioeconomic status, and perceived severity were collectively significant in predicting HIV family stigma. Perceived severity was a significant predictor of HIV family stigma ($t = 4.91$, $p < .001$). The second criteria of the Baron and Kenny method was met. Results of the second regression for the mediation analysis are presented in Table 19.

Table 19

*Results for Regression #2 of Mediation Analysis with Perceived Severity Predicting HIV Family Stigma*

| Source | *B* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Age | -0.31 | 0.10 | -0.26 | -3.00 | .003 |
| Education level | 0.14 | 0.11 | 0.14 | 1.28 | .204 |
| Socioeconomic status | -0.18 | 0.08 | -0.26 | -2.42 | .017 |
| Perceived severity | 0.82 | 0.17 | 0.44 | 4.91 | < .001 |

*Note.* $F(4, 88) = 11.54$, $p < .001$ , $R^2 = .344$

**Perceived severity, HIV family stigma, and uptake of HIV testing.** Finally, the multiple logistic regression was conducted with perceived severity (independent variable) and HIV family stigma (mediator) predicting uptake of HIV testing (dependent variable). The results of the overall model for the regression were significant, ($\chi^2(5) = 13.30$, $p = .021$, Nagelkerke $R^2 = .222$), suggesting that age, education level, socioeconomic status, perceived severity, and HIV family stigma were collectively significant in predicting uptake of HIV testing.

HIV family stigma was not a significant predictor for uptake of HIV testing (Wald(1) = 0.76, $p = .383$). Thus, the third criteria of the Baron and Kenny method was not met. Perceived severity was not a significant predictor for uptake of HIV testing (Wald(1) = 0.06, $p = .808$) while in the presence of HIV family stigma. Due to the independent variable being a significant predictor in the presence of the mediator, the fourth criteria of the Baron and Kenny method was met. Thus, three of the four criteria for the mediation analysis were not met. Results of the third regression for the mediation analysis are presented in Table 20.

Table 20

*Results for Regression #3 of Mediation Analysis with Perceived Severity and HIV Family Stigma Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald(1) | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.32 | 0.26 | 1.56 | .212 | 0.73 |
| Education level | 0.56 | 0.27 | 4.29 | .038 | 1.76 |
| Socioeconomic status | 0.13 | 0.20 | 0.42 | .517 | 1.13 |
| Perceived severity | -0.11 | 0.47 | 0.06 | .808 | 0.89 |
| HIV family stigma | -0.24 | 0.27 | 0.76 | .383 | 0.79 |

*Note.* $\chi^2(5) = 13.30$, $p = .021$, Nagelkerke $R^2 = .222$

### Mediation #4: HIV friend stigma as mediator of perceived severity and uptake of HIV testing

A Baron and Kenny mediation analysis was conducted to assess if HIV friend stigma mediated the relationship between perceived severity and uptake of HIV testing (Baron & Kenny, 1986). In this analysis, the independent variable was perceived severity, the mediator was HIV friend stigma, and the dependent variable was uptake of HIV testing. To assess for mediation, three regressions were conducted. For mediation to be supported, four criteria must be met:

1. The independent variable (perceived severity) must be related to the dependent variable (uptake of HIV testing).
2. The independent variable (perceived severity) must be related to the mediator variable (HIV friend stigma).
3. The mediator (HIV friend stigma) must be related to the dependent variable (uptake of HIV testing) while in the presence of the independent variable (perceived severity).
4. The independent variable (perceived severity) should no longer be a significant predictor of the dependent variable (uptake of HIV testing) in the presence of the mediator variable (HIV friend stigma).

**Perceived severity and uptake of HIV testing.** First, the regression with perceived severity (independent variable) predicting uptake of HIV testing (dependent variable) was conducted. The results of the overall model for the regression were significant, ($\chi^2(4) = 12.51$, $p < .001$, Nagelkerke $R^2 = .210$), suggesting that age, education level, socioeconomic status, and perceived severity were collectively significant in predicting uptake of HIV testing. Perceived severity was not a significant predictor for uptake of HIV testing (Wald(1) = 0.55, $p$ = .458). This suggests that perceived severity was not statistically associated with uptake of HIV testing. The first criteria of the Baron and Kenny method was not met. Results of the first regression for the mediation analysis are presented in Table 21.

Table 21

*Results for Regression #1 of Mediation Analysis with Perceived Severity Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.23 | 0.23 | 1.00 | .318 | 0.80 |
| Education level | 0.54 | 0.27 | 4.00 | .046 | 1.72 |
| Socioeconomic status | 0.15 | 0.19 | 0.66 | .418 | 1.17 |
| Perceived severity | -0.30 | 0.41 | 0.55 | .458 | 0.74 |

*Note.* $\chi^2$ (4) = 12.51, $p$ = .014, Nagelkerke $R^2$ = .210

**Perceived severity and HIV friend stigma.** Second, the regression with perceived severity (independent variable) predicting HIV friend stigma (mediator) was conducted. The results of the overall model for the regression were significant, $F(4, 88)$ = 6.38, $p < .001$, $R^2 = .23$, suggesting that age, education level, socioeconomic status, and perceived severity were collectively significant in predicting HIV friend stigma. Perceived severity was a significant predictor of HIV friend stigma ($t$ = 4.25, $p < .001$). The second criteria of the Baron and Kenny method was met. Results of the second regression for the mediation analysis are presented in Table 22.

Table 22

*Results for Regression #2 of Mediation Analysis with Perceived Severity Predicting HIV Friend Stigma*

| Source | *B* | *SE* | β | *t* | *p* |
|---|---|---|---|---|---|
| Age | -0.19 | 0.09 | -0.20 | -2.06 | .043 |
| Education level | 0.22 | 0.10 | 0.26 | 2.21 | .030 |
| Socioeconomic status | -0.09 | 0.07 | -0.15 | -1.54 | .213 |
| Perceived severity | 0.65 | 0.15 | 0.41 | 4.25 | < .001 |

*Note.* $F(4, 88) = 6.38, p < .001, R^2 = 0.23$

**Perceived severity, HIV friend stigma, and uptake of HIV testing.** Finally, the multiple logistic regression was conducted with perceived severity (independent variable) and HIV friend stigma (mediator) predicting uptake of HIV testing (dependent variable). The results of the overall model for the regression were significant, ($\chi^2(5) = 12.55$, $p = .028$, Nagelkerke $R^2 = .028$), suggesting that age, education level, socioeconomic status, perceived severity, and HIV friend stigma were collectively significant in predicting uptake of HIV testing.

HIV friend stigma was not a significant predictor for uptake of HIV testing (Wald(1) = 0.04, $p = .841$). Thus, the third criteria of the Baron and Kenny method was not met. Perceived severity was not a significant predictor for uptake of HIV testing (Wald(1) = 0.57, $p = .450$) while in the presence of HIV friend stigma. Due to the independent variable being a significant predictor in the presence of the mediator, the fourth criteria of the Baron and Kenny method was met. Thus, only two out of four of the criteria for the mediation analysis were met. Results of the third regression for the mediation analysis are presented in Table 23

Table 23

*Results for Regression #3 of Mediation Analysis with Perceived Severity and HIV Friend Stigma Predicting Uptake of HIV Testing*

| Source | *B* | *SE* | Wald(1) | *p* | *OR* |
|---|---|---|---|---|---|
| Age | -0.21 | 0.24 | 0.82 | .367 | 0.81 |
| Education level | 0.53 | 0.28 | 3.61 | .057 | 1.70 |
| Socioeconomic status | 0.16 | 0.19 | 0.68 | .411 | 1.17 |
| Perceived severity | -0.34 | 0.45 | 0.57 | .450 | 0.71 |
| HIV friend stigma | 0.06 | 0.29 | 0.04 | .841 | 1.06 |

*Note.* $\chi^2(5) = 12.55$, $p = .028$, Nagelkerke $R^2 = .210$

## Summary

The purpose of this study was to explore if HIV stigma serves as a mediator in the relationship between perceived benefits or perceived severity and the uptake of HIV testing among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status. It was determined that a significant relationship exists between perceived benefits and uptake of HIV testing; thus, the null hypothesis for research question one was rejected. The results show that a significant relationship does not exist between perceived severity and uptake of HIV testing; thus, the null hypothesis for research question two was not be rejected. The results show that a significant relationship does not exist between perceived benefits, HIV family stigma, or HIV friends' stigma; thus, the null hypothesis for research question three was not be rejected. The results show that a significant relationship exists between perceived severity, HIV family stigma, or HIV friends' stigma; thus, the null hypothesis for research question four was rejected. Four mediation analyses were used to examine the relationship between perceived benefits, perceived severity, and uptake of

HIV testing while treating HIV stigma as a mediator.  None of the mediation analyses met all four criteria of Baron and Kenny's method. Thus, the null hypothesis for research question five was not be rejected.

In Chapter Five, these findings will be discussed further and the results compared to the existing literature. The statistical findings will also be connected by the literature and theoretical framework. The next chapter will also provide a discussion of the limitations and offer suggestions for future research.

# Chapter 5: Discussion, Conclusions, and Recommendations

## Introduction

The purpose of this quantitative, correlational study was to determine if HIV stigma mediates the relationships between perceived benefits or perceived severity, and the uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status. HIV Stigma in the African American community has caused an increase in the incidences of HIV in this population, even while the rates of HIV/AIDS have been decreasing in the US (AVERT, 2014). This stigma has complicated care and prevention efforts and led to further spread of the disease (AVERT, 2014). This study could lead to an increased understanding of how HIV stigma affects the uptake of HIV testing in order to design adequate interventions that will meet the needs of this population. I utilized a quantitative study design because it allowed for quick and efficient analysis of the results to determine if HIV stigma was a mediating factor. The perceived benefits and perceived severity constructs from the HBM was used as the theoretical framework for this study.

As it pertains to the core research question of whether HIV stigma has a mediating effect on the relationship between perceived benefits or perceived severity and the uptake of HIV testing, among sexually active African American women in New Jersey, the results of this study showed that none of the mediators met all four criteria of Baron and Kenny’s method. Therefore, the null hypothesis for research question five could not be rejected. However, there were significant correlations found between some of the HBM constructs and HIV testing and HIV stigma.

## Interpretation of Findings

There were five research questions addressed in this research study.

Research question 1: Is there a significant correlation between the perceived benefits of HIV testing and the uptake of HIV testing among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

A significant relationship was found to exist between perceived benefits and the uptake of HIV testing; thus, the null hypothesis for research question one could be rejected. This result is consistent with prior studies. Musheke et al. (2013) conducted a systematic review of the qualitative findings in which researchers discussed factors that enabled and deterred the rate of HIV testing in Sub-Saharan Africa. The authors found that the perceived benefits of HIV testing and having an understanding of these benefits were a major factor in the uptake of HIV testing. Although the results do not relate directly to the rates in African American women, they do suggest that there is a correlation in other areas, which means that the results from the current study may be relevant to other populations. This indicates that the reduction of HIV-related stigma also played a role in increased uptake, supporting the increase associated with the perceived benefits of testing.

Research Question 2: Is there a significant correlation between the perceived severity of HIV and the uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status?

The null hypothesis in this case could not be rejected, as there was no distinct relationship between perceived severity of HIV and the uptake of HIV testing. This is similar to findings from previous research. Ojikutu et al. (2013), found that US-born and non-US-born Blacks had different HIV testing patterns. Despite the findings that the perceived severity of HIV was the same in both groups, HIV testing was higher in the US-born black population. This supports the idea that it is not the perceived severity of HIV that has an effect on HIV testing uptake. This study underscores the need for further research on the factors and the different variables that can explain the lack of uptake of HIV testing among African American women.

In another study, Smith et al. (2012) investigated the attitudes and program preferences of young urban African American adults regarding pre-exposure prophylaxis (PrEP). They found that the perceived risk of contracting HIV was universally low, even in groups that exhibited risky behaviors. The participants were aware of the risks of HIV and therefore the benefits of PrEP, but their knowledge about the severity of the disease did not have an effect on their uptake. This suggests that perceived severity does not have an effect on the uptake of other HIV-related programs, not related to general testing. More research needs to be conducted to better understand why the severity of HIV does not seem to affect the uptake of HIV testing in African American women, and how this can be addressed.

Research Question 3: Is there a significant correlation between the perceived benefits of HIV testing and HIV stigma among sexually active African American women in New Jersey after controlling for the covariates of age, education level, and socioeconomic status?

This study found that there was not a significant relationship between perceived benefits of HIV testing and HIV stigma. A search of the literature found that this is not consistent with prior research findings. Morris et al. (2014) found that sexually transmitted infections testing-related stigma and shame among African American youth, was a major barrier to testing, partner notification and treatment. Although, there was no statistical link found in the current study, Morris et al. reported that perceived HIV stigma had a significant impact on the rates of testing. Morris et al. (2014) also suggested that the perceived benefits of testing are often undermined by the stigma related to HIV status, which is a more dominant factor. In the context of the current study, it could be that the perceived benefits are not having any effect on how stigma affects rates of HIV testing, suggesting that stigma may not play a significant role in the uptake of HIV testing rates among sexually active African American women.

Research Question 4: Is there a significant correlation between the perceived severity of HIV and HIV stigma, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status?

The perceived severity of HIV did have a significant relationship with HIV-related stigma in African American women. Similarly, Derose et al. (2015) found that the stigma of HIV is often increased by the fact that it is a life-long illness, which increases the perceived severity of the disorder. Despite the fact that treatment options do exist, which can reduce rates of transmission and increase longevity, it is the association of HIV with death in the African American and Latino communities that has an effect on the stigma (Derose et al., 2015). Despite this, one factor was found to be much more highly correlated with stigma and perceptions of HIV – religiosity. The association of HIV with homosexuality and promiscuity in the African American and Latino religious communities, meant that stigma was higher in this population and thus rates of HIV testing reduced (Derose et al., 2015). Delrose et al. (2015) also noted that these communities felt that individuals who contracted HIV were immoral and this had an impact on the rates of HIV testing.

On a global scale, further support for the relationship between stigma and perceived severity of HIV was found. Evangeli, Pady and Wroe (2015) conducted a systematic review of qualitative studies from a variety of different geographical areas and found a similar result. If individuals perceive themselves to be more at risk of contracting HIV, they are more likely to understand the severity of the disease and how it can affect their life. The higher level of stigma among HIV-positive individuals negates this effect because individuals are not seeking treatment even if they know they are at risk and understand the severity of the disease (Evangeli, Pady & Wroe, 2015). This supports the need for reduction of HIV-related stigma, which may allow the understanding of the severity of the disease to motivate individuals to get tested. It is also likely that individuals who understand the treatment options will have reduced levels of stigma (Evangeli, Pady & Wroe, 2015).

Research Question 5: Does HIV stigma mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing, among sexually active African American women in New Jersey, after controlling for the covariates of age, education level, and socioeconomic status?

In this study, none of the mediators met all four criteria of Baron and Kenny's method. Therefore, the null hypothesis for research question five could not be rejected. This is in contrast to previous findings regarding the effect of stigma. Smit et al. (2012) found that high levels of stigma were associated with seroguessing, which is based on the idea that an individual can guess whether they are HIV positive based on their perceived risk levels. In this case, the perceived benefits of HIV testing are reduced, as individuals feel confident in their ability to detect whether they have HIV and conclude that they do not need to be tested. Although the link is difficult to test, Smit et al. (2012) stated that there is a relationship between HIV stigma, perceived benefit and HIV testing uptake, which contradicts the findings in this research study.

Additionally, Calabrese and Underhill (2015) found that similar difficulties surrounded the understanding of how stigma affected other variables related to the use of HIV PrEP. Although stigma of promiscuity and HIV is high, little information was found about how this affected perceived benefits of PrEP or perceived severity of HIV. Despite this, individuals who did not stigmatize HIV were more likely to have PrEP if they were in an at-risk group. Understanding how the other two variables act as mediating factors is key to gaining a full understanding of the relationship between different attitudes towards HIV, and how this affects the likelihood of getting tested for HIV. More research needs to be done in this area to add to the current literature. Overall, however, stigma does appear to be related to having an understanding of HIV as a disease (Calabrese & Underhill, 2015), and this may help reduce the perceived severity of the disease and increase HIV testing rates.

As discussed in previous chapters, there is a gap in the literature as it pertains to HIV stigma and its impact on HIV testing in African American women. A number of studies have established the impact of HIV stigma on HIV prevention efforts but no researchers have explored HIV stigma as a mediating variable to the HBM constructs of perceived benefits and perceived severity of HIV, and how this impacts the uptake of HIV testing in African American women. The findings in this research study did support findings from previous studies as they relate to the HBM construct of perceived severity. However, my study did not find that HIV stigma mediated the relationship between perceived benefits or perceived severity, and the uptake of HIV testing, among sexually active African American women in New Jersey. Despite the findings, this study remains significant because it will add to the minimal literature available regarding HIV stigma and this population.

## Limitations of Study

A key limitation in this study is the generalizability of the results because all of the participants were recruited from Central New Jersey. The decision to conduct this study on African American women in New Jersey was based on the high incidence of HIV infection within this population, according to the most recent statistics (NJDOH, 2014; StatsAmerica, 2014). However, there were no prior studies on the effect of HIV stigma on the HIV testing in this population. Without any other supporting studies, the study findings may be restricted to those who took part in the study. Additionally, I used a convenience sample for this study, which reduces the generalizability of the study results. More studies will be needed in order to support the generalization of the findings.

The online survey was the only means to complete this study. This may have excluded some qualified respondents from participating in the study. Since the data collected was self-reported, it is not possible to fully assert that all the answers to the questions asked during the study reflected the true perceptions about HIV Stigma and HIV testing of African American Women in NJ. The respondents may not have accurately reported their actual perceptions and HIV testing, which may affect the validity of the study.

Lastly, the HIV Stigma scale that was used in this study was validated in a different population from that in this study. The HIV Stigma scale was validated on a sample of college students, to measure perceptions of stigma by others for seeking psychological help. To control for this limitation, I conducted a pilot study prior to starting the main study. In Chapter 4, I discussed the Cronbach's alpha values obtained from the 13 pilot study participants. The HIV Stigma scale was found to have high reliability.

## Recommendations

I strongly recommend that this study be repeated in a broader cross section of African American women. Additional larger studies might strengthen the generalization of the results from this study, to the overall population of African American women.

Studies conducted with a greater sample size, from a wider geographical region representative of all African American women, could capture more informative data on HIV Stigma and its effect on HIV testing in this population. Qualitative and mixed methods studies might also be beneficial in order to compare and contrast themes produced from the qualitative-structured study with the quantitative results.

Since not all African American women are technologically savvy or have access to the Internet, a study conducted using a paper format, may provide further insights; especially with regards to the findings from this current study, demonstrating that education has a correlation with perception of HIV stigma.

Studies looking at the larger community and access to HIV testing could also help explain the results and provide supporting data to this study. A study conducted on how community-based HIV testing could improve and supplement the services offered in health institutions for both primary and secondary care, could examine the role of the community; while another study could be carried out on the efficiency and the effectiveness of the use of fourth generation HIV Ab/Ag combination assays. Lastly, it may be beneficial to structure and conduct a study that assesses HIV stigma and HIV testing in the overall US population. Such a study could provide further understanding into the effect of HIV stigma on HIV testing, within the overall populations who have different socio-demographic factors (National Institute for Heath and Care Excellence, 2014).

The results of this study did not show that stigma had a mediating effect on the perceived benefits or perceived severity, and the uptake of HIV testing, among sexually active African American women in New Jersey. This may indicate that other factors have a greater impact on the uptake of HIV testing in this community. One such factor may be access to HIV testing centers. I recommend facilitating a number of HIV testing centers with adequate and well-trained personnel in high-risk areas. Branson, et al. (2006) found that such testing centers could be very convenient to those in the community and could result in a substantial number of HIV diagnoses. Community-based HIV testing can also improve and supplement services offered in larger healthcare institutions, further reducing late HIV diagnoses (AVERT, 2014).

## Implications for Social Change

The relevance of this study is aligned with the goals of the US National HIV/AIDS strategy, which is to reduce HIV-related health inequalities by the year 2020 (AIDS.gov, 2015). The results of this study showed that HIV stigma does not mediate the relationship between perceived benefits or perceived severity and the uptake of HIV testing in African American women. The potential implications for positive social change is that the findings may aid in strengthening HIV prevention, and control strategies that focus on African American women by providing insights regarding their perceptions of the benefits and severity of HIV. As previously noted, perceived benefits was significantly correlated with the uptake of HIV testing. Health care professionals could use this information to tailor discussions and interventions regarding HIV testing to African American women, focusing on the benefits of getting tested early. Also, understanding the role of stigma in African American women’s perceptions of HIV may allow health care providers to be more comfortable in discussing HIV and HIV testing with this population.

Planned distribution of this information will be through the use of academic publications, presentations at seminars, direct contact when possible with all of the stakeholders, including community partners such as the HIV Prevention Community Planning Support and Development Initiative, among others. In addition, an abstract of the results of the study will be posted to my Facebook page and personal website.

## Conclusion

African American women still represent a significant number of all HIV-positive cases (Henry J. Kaiser Foundation, 2014). The Kaiser Foundation reported that African American women were the largest population of women living with an HIV diagnosis in 2010. Compared to other races, African American women represented 29% of all new HIV infections among African Americans, while Latina women represented 14% of new infections among Latinas and European American women represented only 11% of new infections among European Americans (Henry J. Kaiser Henry Foundation). However, the latest studies have shown that there is a decline in HIV/AIDS occurrence in the overall population as a result of safe sex practices, and HIV testing (Division of HIV/AIDS Services, 2014).

This study examined if HIV stigma would have a mediating effect on the relationship between perceived benefits or perceived severity, and the uptake of HIV testing, among sexually active African American women in NJ. The findings from this quantitative study adds to the knowledge of HIV stigma, perceptions of HIV and HIV testing in this population, and may possibly enable healthcare practitioners to improve HIV programs and increase the rates of HIV testing. Perceived benefits was found to be significantly related to the undertaking of HIV testing in African American women. These findings support the need for healthcare institutions to adequately convey to the community the benefits of undergoing HIV testing.

Programs aimed at increasing HIV testing rates among African American women, should consider findings from this study to gain a better understanding of African American women's perceptions of HIV and to develop targeted interventions, which will better meet the needs of African American women. Although many African American women in our study had been tested for HIV, they reported differing levels of stigma that would need to be addressed to increase the willingness to be tested of this population.

In conclusion, since this study addressed a gap in the literature, it has provided preliminary, significant information relating to HIV stigma and its effect on HIV testing in African American women. Although a significant relationship existed between perceived benefits and uptake of HIV testing, and a significant relationship existed between perceived severity and HIV stigma, the mediation analysis showed that HIV stigma did not mediate the effect of the HBM constructs. Findings from this study demonstrate the importance of healthcare practitioners focusing on the benefits of HIV testing.

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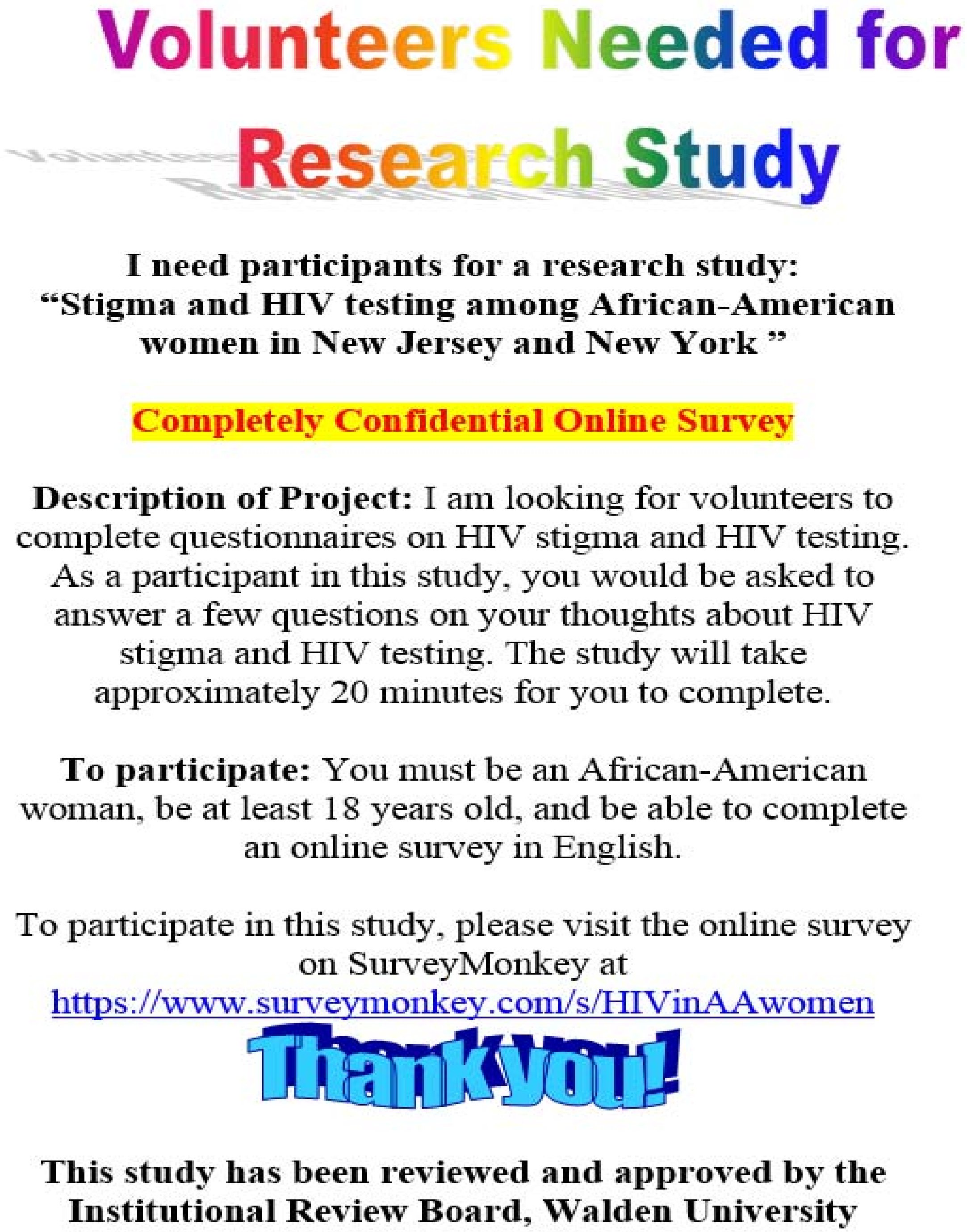
# Appendix A: Recruitment Flyer



## Volunteers Needed for Research Study

**I need participants for a research study:**
**"Stigma and HIV testing among African-American women in New Jersey and New York "**

**Completely Confidential Online Survey**

**Description of Project:** I am looking for volunteers to complete questionnaires on HIV stigma and HIV testing. As a participant in this study, you would be asked to answer a few questions on your thoughts about HIV stigma and HIV testing. The study will take approximately 20 minutes for you to complete.

**To participate:** You must be an African-American woman, be at least 18 years old, and be able to complete an online survey in English.

To participate in this study, please visit the online survey on SurveyMonkey at
https://www.surveymonkey.com/s/HIVinAAwomen

Thank you!

**This study has been reviewed and approved by the Institutional Review Board, Walden University**

## Appendix B: Informed Consent (Pilot Study)

### CONSENT FORM FOR PILOT STUDY

You are invited to take part in a pilot study of the effects of stigma on HIV testing in African American women in NJ using the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) (Stigma Scale). The researcher is inviting African American women, who are at least 18 years old, and able to complete an online survey in English, to be in the pilot study. This form is part of a process called "informed consent" to allow you to understand this pilot study before deciding whether to take part.

This pilot study is being conducted by a researcher named Mirriam Limage Pierre who is a doctoral student at Walden University.

**Background Information:**

The purpose of this pilot study is to determine the reliability of the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) (Stigma scale). This questionnaire will be used to assess HIV stigma in the main study. The data collected from the main study will help to contribute to the current HIV stigma information available by studying how stigma affects the use of HIV testing in African American women. The findings from this main study may provide public health organizations important details on how to create more effective HIV programs for African American women to reduce the spread of HIV.

**Procedures:**

If you agree to be in this pilot study, you will be asked to:

- Complete the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) (Stigma scale) to assess the reliability of the questionnaire.

Here are some sample questions:

Imagine you had HIV. If you sought treatment for this disease, how do you think the people you interact with would:

- React negatively to you- *Not at all (1), A little (2), Some (3), A lot (4), A great deal (5).*
- Think bad things of you - *Not at all (1), A little (2), Some (3), A lot (4), A great deal (5).*
- See you as engaging in immoral behavior- *Not at all (1), A little (2), Some (3), A lot (4), A great deal (5).*
- Think of you in a less favorable way - *Not at all (1), A little (2), Some (3), A lot (4), A great deal (5).*
- Think you posed a risk to others- *Not at all (1), A little (2), Some (3), A lot (4), A great deal (5).*

**Voluntary Nature of the Pilot Study:**
This pilot study is voluntary. Everyone will respect your decision of whether or not you choose to be in the pilot study. No one at Walden University will treat you differently if you decide not to be in the pilot study. If you decide to join the pilot study now, you can still change your mind later. You may stop at any time.

**Risks and Benefits of Being in the pilot Study:**
Being in this type of pilot study involves some risk of the minor discomforts that can be encountered in daily life, such as stress or becoming upset. Being in this pilot study would not pose risk to your safety or wellbeing. The potential benefits of this pilot study is that it may provide public health practitioners and governmental organizations important insights on how to create more effective HIV programs for African American women to reduce the spread of HIV.

**Payment:**
There will be no payment for completion of this pilot study.

**Privacy:**
Any information you provide will be kept confidential. The researcher will not collect your personal information for any purpose or use it outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the pilot study outputs. Data will be kept secure by the researcher and stored on a password protected drive on a personal computer and data will be destroyed 5 years after completion of main study. Data will be kept for a period of at least 5 years, as required by the university.

**Contacts and Questions:**
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via email at mirriam.limage-pierre@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. Walden University's approval number for this pilot study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.**

Please print or save this consent form for your records.

**Statement of Consent:**

I have read the above information and I feel I understand the pilot study well enough to make a decision about my involvement. By selecting "I CONSENT" below, I understand that I am agreeing to the terms described above.

# Appendix C: Informed Consent (Full Study)

## CONSENT FORM

You are invited to take part in a research study of the effects of stigma on HIV testing in African American women in NJ and NY. The researcher is inviting, African American women, who are at least 18 years old, and able to complete an online survey in English, to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Mirriam Limage Pierre who is a doctoral student at Walden University.

**Background Information:**
The purpose of this study is to contribute to the current HIV stigma information available by studying how stigma affects the use of HIV testing in African American women. The findings from this study may provide public health organizations important details on how to create more effective HIV programs for African American women to reduce the spread of HIV.

**Procedures:**
If you agree to be in this study, you will be asked to:

- Complete a Demographics survey to collect some details on your age, socioeconomic status, educational level and HIV testing history - approx. 5 minutes
- Complete a Perceived Benefits of HIV Testing questionnaire to determine how you perceive the value or usefulness of getting an HIV test to decrease your risk of HIV - approx. 5 minutes
- Complete a Perceived severity of HIV testing questionnaire to determine how you perceive the severity of HIV and its potential consequences - approx. 5 minutes
- Complete the Stigma Scale to determine your perception of stigma towards people who are HIV positive by others within your social network.

Here are some sample questions:

- HIV causes death - *Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Strongly agree (5).*
- I would rather have any other terminal illness than HIV - *Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Strongly agree (5).*

- I would rather die from a violent death (such as gunshot, car accident etc.) than from HIV/AIDS - *Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Strongly agree (5).*
- I believe the chances of contracting HIV can be significantly reduced if I obtain an HIV test - *Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Strongly agree (5).*
- I think it is worth the effort to seek HIV testing - *Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Strongly agree (5).*
- The benefits of seeking an HIV test outweigh the potential negative health consequences - *Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Strongly agree (5).*

**Voluntary Nature of the Study:**
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Walden University will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

**Risks and Benefits of Being in the Study:**
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as stress or becoming upset. Being in this study would not pose risk to your safety or wellbeing. The potential benefits of this study is that it may provide public health practitioners and governmental organizations important insights on how to create more effective HIV programs for African American women to reduce the spread of HIV.

**Payment:**
There will be no payment for completion of this study.

**Privacy:**
Any information you provide will be kept confidential and anonymous. The researcher will not collectyour personal information for any purpose or use it outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Data will be kept secure by the researcher and stored on a password protected drive on a personal computer and data will be destroyed 5 years after completion of study. Data will be kept for a period of at least 5 years, as required by the university.

**Contacts and Questions:**
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via email at mirriam.limage-pierre@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number

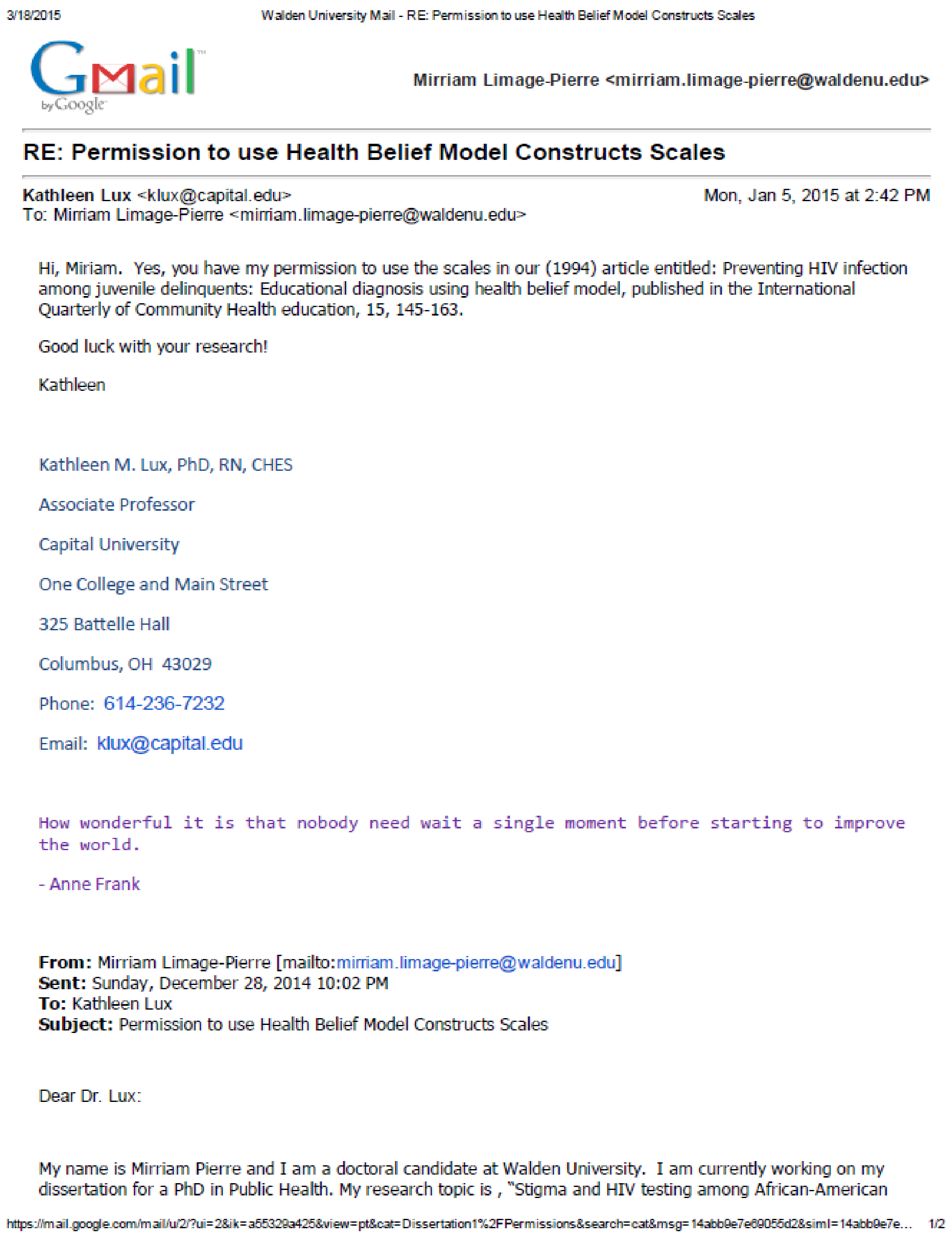
is 612-312-1210. Walden University's approval number for this study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.**

Please print or save this consent form for your records.

**Statement of Consent:**

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By selecting "I CONSENT" below, I understand that I am agreeing to the terms described above.

# Appendix D: Permission to use Health Belief Model Constructs Scales



3/18/2015 Walden University Mail - RE: Permission to use Health Belief Model Constructs Scales

Mirriam Limage-Pierre <mirriam.limage-pierre@waldenu.edu>

**RE: Permission to use Health Belief Model Constructs Scales**

**Kathleen Lux** <klux@capital.edu> Mon, Jan 5, 2015 at 2:42 PM
To: Mirriam Limage-Pierre <mirriam.limage-pierre@waldenu.edu>

Hi, Miriam. Yes, you have my permission to use the scales in our (1994) article entitled: Preventing HIV infection among juvenile delinquents: Educational diagnosis using health belief model, published in the International Quarterly of Community Health education, 15, 145-163.

Good luck with your research!

Kathleen

Kathleen M. Lux, PhD, RN, CHES

Associate Professor

Capital University

One College and Main Street

325 Battelle Hall

Columbus, OH 43029

Phone: 614-236-7232

Email: klux@capital.edu

How wonderful it is that nobody need wait a single moment before starting to improve the world.

- Anne Frank

**From:** Mirriam Limage-Pierre [mailto:mirriam.limage-pierre@waldenu.edu]
**Sent:** Sunday, December 28, 2014 10:02 PM
**To:** Kathleen Lux
**Subject:** Permission to use Health Belief Model Constructs Scales

Dear Dr. Lux:

My name is Mirriam Pierre and I am a doctoral candidate at Walden University. I am currently working on my dissertation for a PhD in Public Health. My research topic is , "Stigma and HIV testing among African-American

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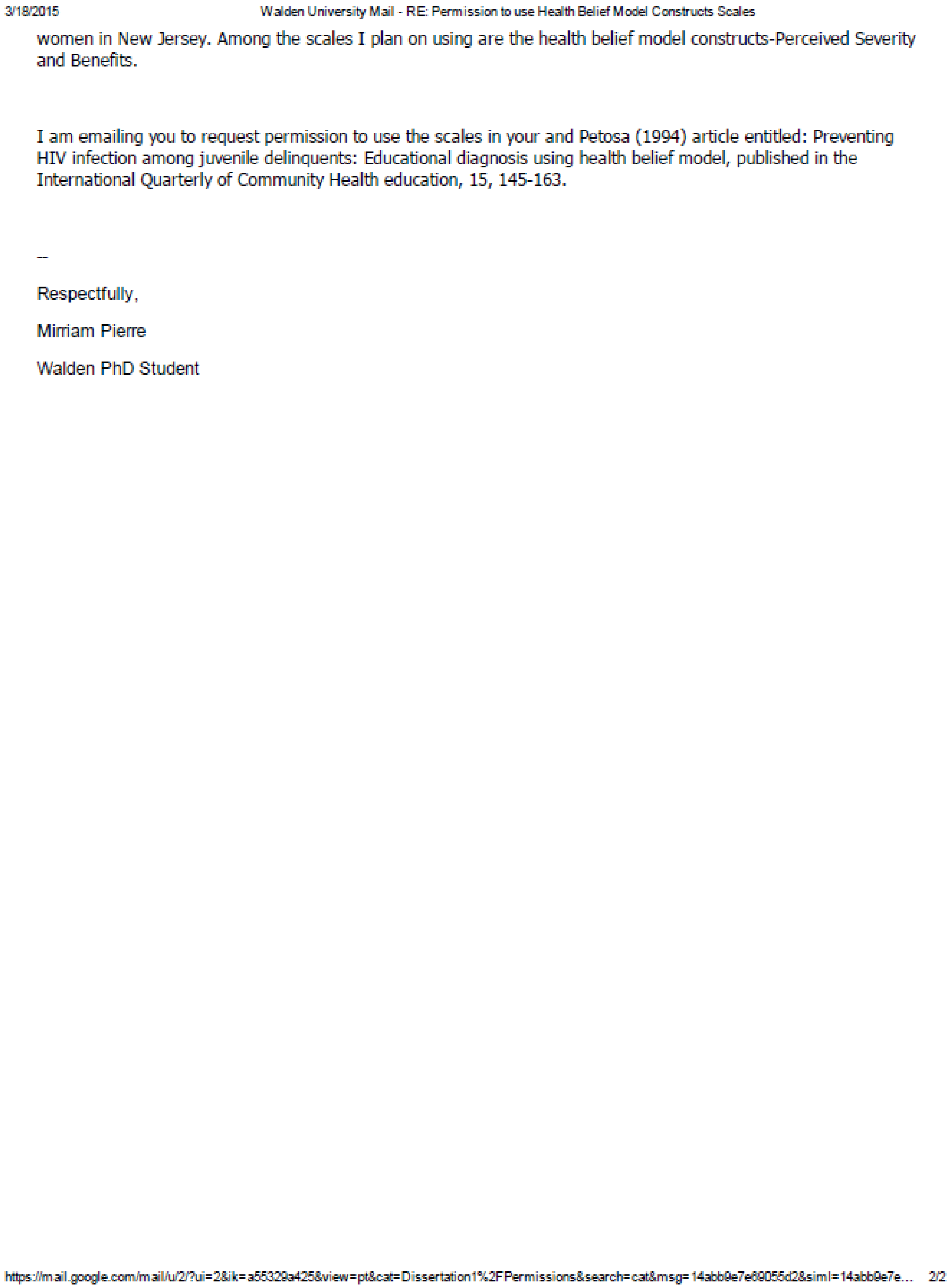

3/18/2015 Walden University Mail - RE: Permission to use Health Belief Model Constructs Scales

women in New Jersey. Among the scales I plan on using are the health belief model constructs-Perceived Severity and Benefits.

I am emailing you to request permission to use the scales in your and Petosa (1994) article entitled: Preventing HIV infection among juvenile delinquents: Educational diagnosis using health belief model, published in the International Quarterly of Community Health education, 15, 145-163.

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Respectfully,

Mirriam Pierre

Walden PhD Student

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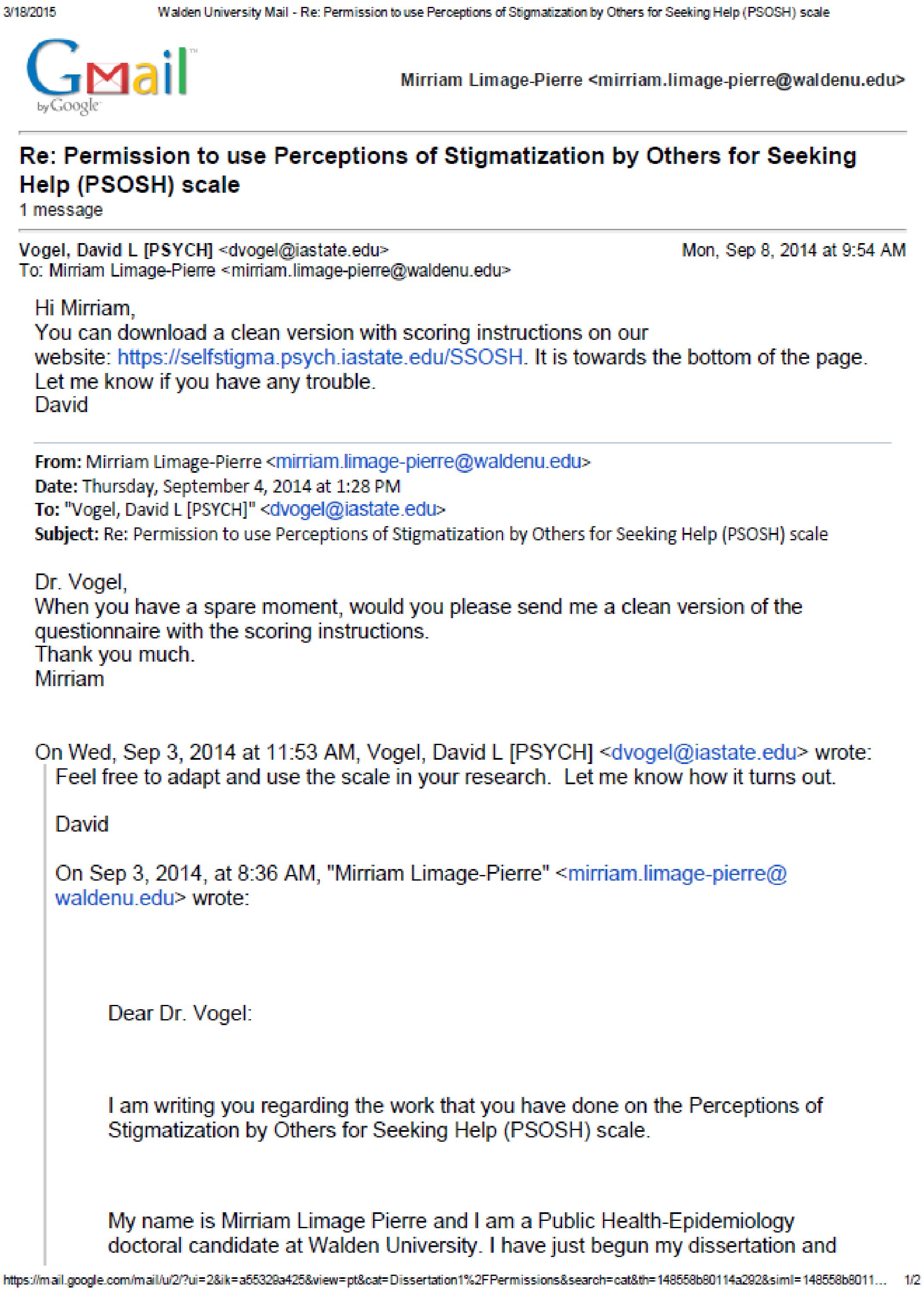
# Appendix E: Informed Permission to Use PSOSH (Stigma) Scale



3/18/2015 Walden University Mail - Re: Permission to use Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale

**Mirriam Limage-Pierre <mirriam.limage-pierre@waldenu.edu>**

**Re: Permission to use Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale**

1 message

**Vogel, David L [PSYCH]** <dvogel@iastate.edu> Mon, Sep 8, 2014 at 9:54 AM
To: Mirriam Limage-Pierre <mirriam.limage-pierre@waldenu.edu>

Hi Mirriam,
You can download a clean version with scoring instructions on our website: https://selfstigma.psych.iastate.edu/SSOSH. It is towards the bottom of the page.
Let me know if you have any trouble.
David

---

**From:** Mirriam Limage-Pierre <mirriam.limage-pierre@waldenu.edu>
**Date:** Thursday, September 4, 2014 at 1:28 PM
**To:** "Vogel, David L [PSYCH]" <dvogel@iastate.edu>
**Subject:** Re: Permission to use Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale

Dr. Vogel,
When you have a spare moment, would you please send me a clean version of the questionnaire with the scoring instructions.
Thank you much.
Mirriam

On Wed, Sep 3, 2014 at 11:53 AM, Vogel, David L [PSYCH] <dvogel@iastate.edu> wrote:

> Feel free to adapt and use the scale in your research. Let me know how it turns out.
>
> David
>
> On Sep 3, 2014, at 8:36 AM, "Mirriam Limage-Pierre" <mirriam.limage-pierre@waldenu.edu> wrote:
>
> Dear Dr. Vogel:
>
> I am writing you regarding the work that you have done on the Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale.
>
> My name is Mirriam Limage Pierre and I am a Public Health-Epidemiology doctoral candidate at Walden University. I have just begun my dissertation and

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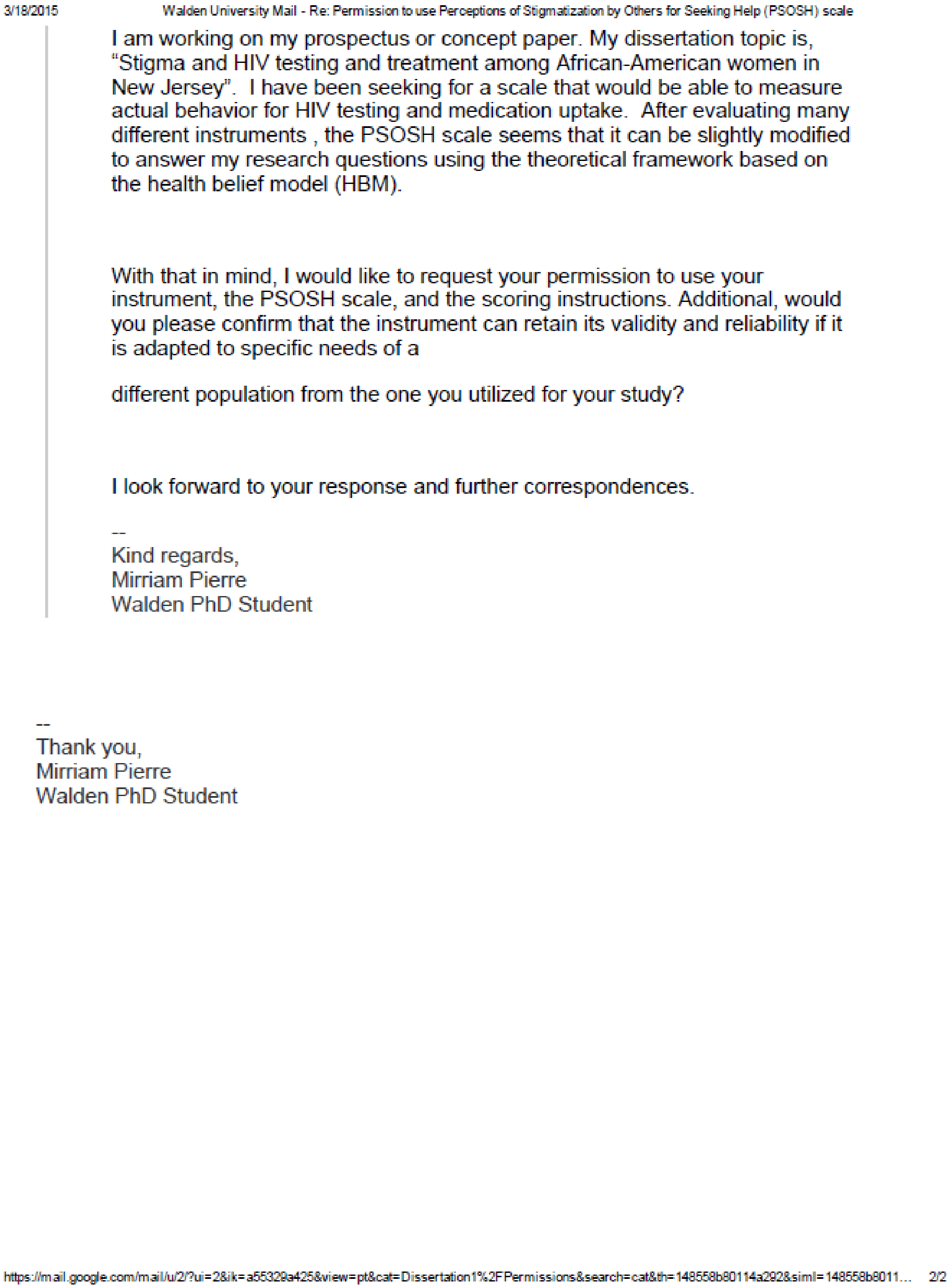

3/18/2015 Walden University Mail - Re: Permission to use Perceptions of Stigmatization by Others for Seeking Help (PSOSH) scale

> I am working on my prospectus or concept paper. My dissertation topic is, "Stigma and HIV testing and treatment among African-American women in New Jersey". I have been seeking for a scale that would be able to measure actual behavior for HIV testing and medication uptake. After evaluating many different instruments , the PSOSH scale seems that it can be slightly modified to answer my research questions using the theoretical framework based on the health belief model (HBM).
>
> With that in mind, I would like to request your permission to use your instrument, the PSOSH scale, and the scoring instructions. Additional, would you please confirm that the instrument can retain its validity and reliability if it is adapted to specific needs of a
>
> different population from the one you utilized for your study?
>
> I look forward to your response and further correspondences.
>
> --
> Kind regards,
> Mirriam Pierre
> Walden PhD Student

--
Thank you,
Mirriam Pierre
Walden PhD Student

https://mail.google.com/mail/u/2/?ui=2&ik=a55329a425&view=pt&cat=Dissertation1%2FPermissions&search=cat&th=148558b80114a292&siml=148558b8011… 2/2

# Appendix F: NIH Certification

1/3/2015 Protecting Human Subject Research Participants

**Certificate of Completion**

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Mirriam Pierre** successfully completed the NIH Web-based training course “Protecting Human Research Participants”.

Date of completion: 01/03/2015

Certification Number: 1640382