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## Predictors of PrEP Uptake by Black Gay and Bisexual Men in Ohio

Ade Elisha  
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# Walden University

College of Health Sciences and Public Policy

This is to certify that the doctoral dissertation by

Ade Elisha

has been found to be complete and satisfactory in all respects,  
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the review committee have been made.

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Walden University  
2024

Abstract

Predictors of PrEP Uptake by Black Gay and Bisexual Men in Ohio

by

Ade Elisha

MBA, Franklin University, 1999

MBBS, University of Ilorin.1988

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

May 2024

## Abstract

The association between preexposure prophylaxis (PrEP) stigma, PrEP knowledge, medical mistrust, and the adoption of PrEP was examined in a sample of 123 self-identified HIV-negative adult black gay and bisexual men in the state of Ohio. Age, highest level of education attained, and annual income of the participants were identified as possible confounders and accounted for using binary logistic regression. This research is grounded in the information motivation behavioral skills model, which is used to explain how various factors work together to affect health behavior. African American men who have sex with men, who were disproportionately affected by the epidemic, were the least likely to adopt PrEP when compared with other ethnic or racial populations. There was a 61.5% decrease in the adoption likelihood with each one unit increase in stigma. A statistically significant and positive association existed between PrEP knowledge and the willingness to adopt PrEP, with a 271.2% increased likelihood of PrEP adoption per unit increase in knowledge. PrEP adoption has the potential to reduce health inequality for black gay and bisexual men. Implications for positive social change include policymakers and public health providers designing culturally competent policies and programs with consideration for stigma, knowledge, and inherent mistrust; such policies and programs can improve the health and lives for this at-risk group of men.

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## Dedication

This work is dedicated to my wife Lucy and my two sons, Femi and Deji, whose time and attention were sacrificed for this program.

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I would like to extend my sincere appreciation to the following individuals who played pivotal roles in the completion of this dissertation: Professor Anderson, my dissertation chair, has been an unwavering source of guidance and encouragement. His expertise, patience, and commitment to my success have been invaluable. Despite his busy schedule, Professor Anderson generously devoted his time, even during holidays, to provide insightful feedback and steer me in the right direction. I am profoundly grateful for his mentorship. Thank you, Pete, Peace! Professor Dunn, as the second member of my committee, contributed significantly to the development of this research. His thoughtful critiques, thought-provoking questions, and constructive suggestions enriched my work. Professor Dunn's dedication to academic excellence and his willingness to engage in rigorous discussions were instrumental in shaping the outcome.

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## Chapter 1: Introduction to the Study

### Introduction

In 2019, 36,398 Americans were newly diagnosed with HIV infection in the United States (CDC, 2020). Sixty-six percent or 23,866 were men who have sex with men (MSM). Similarly, there were 897 newly diagnosed HIV cases in the state of Ohio in 2020, of which 431, or 48% were MSM (CDC, 2020). In the same year, Black men constituted 51% of all the newly diagnosed cases in Ohio. Again, of the 1,044,977 individuals living with HIV infection at the end of 2019, 644,274 were MSM, representing 68% of cases. In Ohio, at the end of 2020, there were 25,096 diagnosed people living with HIV of which 13,409 or 68% were MSM. Even though the Black MSM population in Ohio is approximately 3% of the total population of Ohio, they represent 37% of all HIV infections.

There has been a significant advance in HIV treatment since the disease was discovered in 1981. The mortality and morbidity have been reduced to a chronic infectious disease level. The advancement in treatment has so far failed to translate to a significant reduction in rates of infection among MSM. The risk of infection is preponderantly higher for anal sex and injection drug use. In one estimate, the risk of transmission per 10,000 exposures was estimated at 138 for receptive anal intercourse, 8 for receptive penile-vaginal intercourse, and 63 for needle sharing (Riddell & Amico, 2018)

Despite the grim picture painted above, pre-exposure prophylaxes or PrEP for the prevention of HIV infection for all risk factors is providing hope across the world. It has

the potential to end epidemics and create health equity all at the same time. Studies and empirical evidence have shown that antiretroviral medication such as tenofovir disoproxil fumarate combined with emtricitabine and zidovudine could prevent rectal transmission of HIV (Riddell & Amico, 2018). There are other medications currently under development by pharmaceutical companies.

Daily intake of PrEP by people at higher risk of HIV infection has shown significant efficacy in preventing HIV transmission among MSM. In one study, it was estimated that a third of HIV infections among MSM could be prevented if only 40% of the community used PrEP (Goedel et al., 2020). Data showed the efficacy of PrEP in reducing sexual transmission of HIV could be as high as 99% when used daily as prescribed (Spinner, C.D, & Boesecke, C, 2016)

Even though Black MSM are disproportionately affected by HIV and the resultant impacts, Black MSM are the least likely to adopt PrEP as a prevention method for HIV. In one study conducted using the United States pharmacies records, the adoption of PrEP was found to be highest among White MSM at 75% and lowest among Black MSM at 10% when racial grouping and ethnicity were considered (Lelutiu-Weinberger, C., & Golub, S. A. (2016).

Identifying the predictors of the likelihood of PrEP uptake could fundamentally change the approach to health promotion programs and implementation. Providers of PrEP may gain a better understanding of the major predictors and be more informed in their approach to black MSM (Straus B. B, & Greene G. J., 2017) Healthcare providers can use the available information to develop patient education strategies to address their

specific needs. Ultimately, The knowledge of factors that predict the uptake of PrEP among black gay and bisexual men who are disproportionately impacted by the HIV epidemics may one day enable public health planners and policymakers to know the specific area of concentration when designing or planning for HIV intervention among this population (Cahill et al., 2017) The positive social change implications of this is to reduce health inequality for the entire African American population in the area of HIV mortality and morbidity because men who have sex with men and women among African-Americans are suspected (Cahill et al., 2017) of creating the disproportional impact of HIV within the entire African American population because they take the HIV infection home to their unsuspecting spouses and female sexual partners who may think they have no reason for HIV testing (Cahill et al., 2017).

This introductory chapter will describe the rationale for this study, the background, problem statement, study purpose, research questions/hypothesis, theoretical framework, the nature of the study, definitions, assumptions about the study, scope, limitations, and significance.

### **Background**

PrEP is a promising part of HIV prevention, yet racial disparities in PrEP uptake persist. Evidence indicates that Black gay, bisexual, and other men who have sex with men (GBM) face numerous social and structural barriers to PrEP, including stigma, medical mistrust, and exclusion from the healthcare system(Quinn et al., 2020) Despite increasing rates of PrEP use across the United States, nearly 50% of all PrEP users in 2016 resided in just five states: New York, California, Florida, Texas, and Illinois. In



particular, young Black GBM have 84% lower odds of having ever used PrEP in comparison to their White counterparts (Quinn et al., 2020). To understand the influence of peers and social networks on Black GBM's perceptions of and decisions about PrEP use, qualitative cross-sectional research was conducted with 46 Black GBM in Milwaukee, WI, and Cleveland, OH. Results indicated that participants' primary source of information on PrEP was other Black GBM in their communities. Peers and social networks served three primary functions about PrEP: (1) filling informational gaps left by healthcare providers, (2) increasing trust in PrEP, and (3) reducing PrEP stigma. Participants described the "movers and shakers" in Black LGBT communities who have been influential in educating others and advocating for PrEP. Well-respected vocal advocates for PrEP have emerged in the Black LGBT community as PrEP champions who have successfully influenced young Black GBM's views on PrEP (Quinn et al., 2020).

This quantitative study is needed to examine the relative roles of HIV/PrEP knowledge, HIV/PrEP stigma, and medical mistrust in the final decision to adopt PrEP by black gay and bisexual men in Ohio. Currently, no research has examined this specific subject in the state.

### **Problem Statement**

The disparity of HIV burden among black gay and bisexual men and their low adoption of PrEP as a metabolic approach to HIV prevention which has the potential to reduce the epidemic (Goedel et al., 2020) is the main propellant for this research. Kanny et al. (2019) showed a significant ethnic disparity in PrEP adoption. African American

MSM, who are disproportionately affected by the epidemic are the least likely to adopt PrEP when compared with other ethnic or racial populations (Kanny D., & Jeffries I. W., 2019) The disproportionate impact of the HIV epidemic on African American MSM has created health inequalities that need to be addressed (Ezennia et al., 2019) MSM made up 70% of the newly diagnosed HIV cases in the United States in 2014. However, they constitute less than 2% of the United States population (Cahill et al., 2018). More than 50% of affected MSM were African Americans (Ezennia et al., 2019). Pre-exposure HIV prophylaxis is 99% effective in some cases (Pinto M. R., & Lacombe-Duncan A., 2019) but adoption by African American MSM has been extremely low (Ezennia et al., 2019).

According to the Ohio Department of Health (ODH), in 2019, there were 1,021 new HIV diagnoses in the state, of which 38% (387) were among African American gay and bisexual men (ODH- nd). This means that African American gay and bisexual men had a diagnosis rate of 1,072 per 1 population, compared to 6 per 100,000 population for white gay and bisexual men and 16 per 100,000 population for Hispanic/Latino gay and bisexual men. Furthermore, ODH reports that in 2019, an estimated 23,000 people were living with HIV in Ohio, of which 28% (6,440) were African American gay and bisexual men. This means that African American gay and bisexual men had a prevalence (existing infections) rate of 17.8% of the population, compared to 4.4% of the population for white gay and bisexual men and 7.1% of the population for Hispanic/Latino gay and bisexual men (ODH-nd)

My understanding of these statistics is that African American gay and bisexual men in Ohio are disproportionately affected by HIV/AIDS, both in terms of new

diagnoses and existing infections. They also suggest that this group faces significant barriers to accessing effective prevention and treatment services (ODH-nd).

One of the evidence-based strategies to prevent HIV infection among gay and bisexual men is PrEP, a daily pill that can reduce the risk of acquiring HIV by up to 99% when taken as prescribed<sup>1</sup>. However, PrEP adoption rates vary by race and ethnicity, and African American gay and bisexual men have lower rates of PrEP use than other groups. According to the CDC, in 2017, only 27% of African American gay and bisexual men who could benefit from PrEP reported using it, compared to 31% of Hispanic/Latino and 42% of White gay and bisexual men (CDC, 2019). Similarly, in Ohio, only 11% of people who were eligible for PrEP had it prescribed it in 2019, indicating a low uptake or adherence rate among Ohio residence. These disparities in PrEP use may reflect eligible for PrEP had it prescribed in 2019, indicating a low uptake or adherence rate among Ohio residents African American gay and bisexual men face in accessing health care services, such as poverty, lack of insurance, stigma, discrimination, mistrust eligible for PrEP had it prescribed in 2019, indicating a low uptake or adherence rate among Ohio residents competing needs (CDC, 2019). Therefore, there is a need for more efforts to increase PrEP awareness, availability, affordability, and acceptability among African American gay and bisexual men in Ohio. I will evaluate the comparative roles of stigma, knowledge/awareness, and medical mistrust among gay and bisexual men in Ohio.

Despite the disproportional impact of HIV among the African American Gay and Bisexual population, no research specifically addressed the issues. I endeavor to address

the roles of PrEP stigma, PrEP awareness or knowledge, and medical mistrust among the study population in Ohio.

There is a significant gap in research on black MSM and PrEP uptake (Ayangeakaa, S.D., & Kerr, J., 2023). To my knowledge there is no specific research that addresses the factors that predict the likelihood of Black gay, and bisexual men adopting PrEP as a metabolic preventive method for HIV infection in the state of Ohio where there is a significant disparity of HIV impact among African American gay and bisexual men.

### **Purpose of the Study**

Through this cross-sectional quantitative study, I examined the association between PrEP stigma, PrEP knowledge, and medical mistrust and the adoption of PrEP by black gay and bisexual men in the state of Ohio. The study used a cross-sectional quantitative research design to collect data from a sample of Black gay and bisexual men in Ohio. The data were analyzed using statistical methods to identify the predictors of PrEP uptake among this population. The findings of this study will contribute to the development of effective interventions to increase PrEP uptake among Black gay and bisexual men in Ohio and reduce the incidence of HIV among this population.

### **Research Questions and Hypotheses**

RQ1: Is there an association between PrEP stigma and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H<sub>0</sub>1*: There is no association between PrEP stigma and PrEP adoption by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H*<sub>11</sub>: There is an association between PrEP stigma and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

RQ2: Is there an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H*<sub>02</sub>: There is no association between knowledge of PrEP and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H*<sub>12</sub>: There is an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income.

RQ3: Is there an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H*<sub>03</sub>: There is no association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H*<sub>13</sub>: There is an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

## Theoretical Foundation

The information-motivation-behavioral skills (IMB) , model is a general social psychological conceptualization for understanding and promoting healthy behavior. It was developed by Fisher and Fisher in 1992. The authors posited that the three constructs are the fundamental determinants of behavior change: information, motivation, and behavioral skills (Fisher & Fisher, 2003). The IMB model is a theoretical framework that has been used to understand and promote health behaviors, including the uptake of PrEP among at-risk populations (Dubov et al., 2018). The IMB model asserts that to the extent that at-risk groups are well-informed about PrEP, motivated to act on their knowledge and have the necessary behavioral skills to seek out and initiate PrEP regimen, they will successfully overcome obstacles to initiate and adhere to PrEP (Dubov et al., 2018).

In the context of my dissertation titled "Predictors of PrEP Uptake by Black Gay and Bisexual Men in Ohio," the IMB model would be used to identify factors that predict the uptake of PrEP among this population. The model would also be used to help explain poor uptake and may help develop interventions to maximize PrEP uptake and adherence (Dubov et al., 2018).

A study by Dubov et al. (2018) applied the IMB model to conceptualize factors that influence PrEP uptake among MSM. The authors found that the IMB model was useful in predicting reasons for poor uptake of PrEP and developing interventions to maximize PrEP uptake and adherence. Another study by Quinn et al. (2020) examined how social networks can influence PrEP use among Black gay, bisexual, and other MSM.

The researchers found that peers and social networks played a significant role in increasing PrEP use among this population.

Therefore, the IMB model is a useful framework for understanding factors that predict the uptake of PrEP among Black gay and bisexual men in Ohio. By identifying predictors of PrEP uptake using the IMB model, interventions can be developed to increase PrEP uptake and adherence among this population.

Information refers to the knowledge and awareness of health issues or behavior represented in my study by knowledge of PrEP. Motivation refers to the individual's desire or intention to perform the behavior represented by medical mistrust. Behavioral skills refer to the ability to perform the behavior represented by stigma.

The IBM model fits directly with the conceptualization of both the outcome and the exposure measures of this work and has been utilized extensively in HIV prevention research as described in Chapter 2.

### **Nature of the Study**

To address the research questions in this quantitative study, the specific research design will include a cross-sectional study using validated survey instruments to measure both the independent variables and the outcome variable at the same time (Creswell & Creswell, 2018) The outcome prevalence at the point in time of the research can be deducted using a cross-sectional survey. A quantitative cross-sectional research design is useful when answering questions about the incidence or prevalence of a condition, belief, or situation. It is also useful in establishing what the norm is for a specific demographic at a specific time (Wang and Cheng, 2020). Cross-sectional studies allow you to collect

data from a large pool of subjects and compare differences between groups. They capture a specific moment in time and reflect the incidence rate such as the adoption of PrEP (Wang and Cheng, 2020).

The outcome/dependent variable will be the yes/no to the adoption of PrEP. The independent variables are the knowledge of PrEP, the level of stigma, and the level of medical mistrust of the individual all measured with validated instruments using a Likert scale. (Exhibit1) The covariates are the educational levels and income attained and the age of the respondents as explained in detail in Chapter 2 and Exhibit 1.

Quantitative primary data will be collected from black gay and bisexual men in the three big cities in Ohio. The cities are Columbus, Cleveland, and Cincinnati. Data collection efforts was from LGBTQ centers, gay clubs, and from SafeZone workshops. Following a simple statistical analysis of the variables, logistic regression will be utilized to test the relationships between the dependent and the independent variables after adjusting for the covariates.

### **Definitions**

*Pre-exposure prophylaxis or PrEP* refers to the prevention of HIV transmission from HIV-positive partners to HIV-negative partners during sexual activities or needle sharing with the use of medicine that reduces the chances of getting HIV infection (Ridell IV, J., & Amico, K. R., 2018). Researchers have demonstrated the utilization of HIV treatment as a metabolic prevention method. The use of antiretroviral (AR) for people living with HIV significantly reduces the risk of transmission to their seronegative partner. Similarly, daily intake of PrEP by seronegative partners is designed to prevent



transmission with seropositive partners (Bor, & Fisher, 2021). This adoption of PrEP is the outcome variable measured as a dichotomy of Yes or No.

*Black men* are described by the Oxford Dictionary as male adults who are members of an ethnic group with darkly pigmented skin whose original ancestors came from Africa (Oxford Dictionary-nd). Participants will be asked to identify their ethnicity and Race as part of the biographic information (Exhibit 4).

*Stigmatization* is a process of making a person or group of individuals judged to be unworthy of social investment. Stigma is measured as a function of social distance (Reidpath, D.D., & Chan, K. Y., 2005). Individuals receive greater bias toward them because of their group membership as a result of the stigma associated with the group. PrEP stigma will be measured using a validated scale (Exhibit 1) HPSS is a brief measure of PrEP stigma and was developed and evaluated based on a stigma theory and with attention to an optimal response option strategy (Siegler et al., 2020)

*Men who have sex with men* or MSM refers simply to male-to-male sexual contact. Questionnaires will be used for self-identification by the participants as to their sexual preferences as part of the social demographic questions (Exhibit 4)

*PrEP knowledge or awareness* is simply defined as previous knowledge of PrEP and what it is used for, including the efficacy and major side effects (Kayle, M. E., & Sullivan, E., 2018). A validated instrument (Exhibit 2) based on the Likert scale will be utilized for the measurement. PrEP knowledge can be measured using a PrEP knowledge scale. The PrEP knowledge scale is correlated to PrEP attitudes and subjective norms

scales and negatively with PrEP stigma. The attitudes scale correlated to the stigma scale, descriptive norms, subjective norms, and self-efficacy (Mueses-Marin et al., 2021).

*Medical mistrust* is defined as the inclination to distrust medical systems and healthcare personnel that are believed to represent the dominant culture (Valeria, P., & Boyas F. J., 2016). The concept of health is determined within our cultural context because cultural, social, and family influences are the major factors that shape our health beliefs and practices. The level of medical mistrust will be measured with a validated instrument based on the Likert Scale (Exhibit 3). Medical mistrust among black or African American MSM can be measured using a medical mistrust scale (Quinn et al., 2018). Race-based medical mistrust is a strong predictor of decreased willingness to use PrEP by African American MSM

*Age* is the chronological number of years of being at the time of the survey (Chakrabarti, 2014). Age was measured in years as a continuous variable.

### **Assumptions**

This study assumes that all the participants are sexually active and may have multiple partners. PrEP efficacy to prevent HIV infection is better when the infection is likely to be through sexual activities (Kayle, M. E., & Sullivan, E., 2018). It is also assumed that all participants who identified as African American are black of African descent and are the subject of this research. An assumption is also made about gender identification. All participants who identified as male are assumed to be biological males. It is assumed that all participants will be truthful and provide accurate information and

participate willingly. It is also assumed that the survey instrument will be reliable, and that the study will be conducted ethically with respect for all participants.

## **Scope and Limitations**

### **Limitations**

The major limitation of this study is that there is no comparison between black gay and bisexual men with another racial or ethnic grouping. Knowledge obtained from the analysis may not necessarily represent any peculiarity with the study population. The other limitation is that the research relies on self-identification by the population as gay or bisexual. The layers of stigma within the black population for such identification may create bias. A major challenge will be access to the study population because of the layers of the stigma associated with black gay and bisexual men within the larger African American population. There are LGBTQ centers in Ohio in large cities such as Columbus, Cleveland, and Cincinnati; however, records show poor utilization by Black gay and bisexual men. This will be a significant limitation in terms of access to the study population. Funding and time limitations are also significant challenges that will need to be overcome.

### **Significance**

This study is significant in that knowledge of factors that predict the uptake of PrEP among black gay and bisexual men who are disproportionately impacted by the HIV epidemic will enable public health planners and policymakers to know the specific area of concentration when designing or planning for HIV interventions among this population (Cahill et al., 2017) The positive social change implications of this, if

successful, is to reduce health inequality for the entire African American population in the area of HIV mortality and morbidity because men who have sex with men and women among African-Americans are suspected (Cahill et al., 2017) of creating the disproportional impact of HIV within the entire African American population because they take the HIV infection home to their unsuspecting spouses and female sexual partners who may think they have no reason for HIV testing.

### **Summary**

In the introductory part of this chapter, I discussed the disparity of HIV burden among black gay and bisexual men and their low adoption of PrEP as a metabolic approach to HIV prevention which has the potential to reduce the epidemic. African American MSM, who are disproportionately affected by the epidemic, are the least likely to adopt PrEP when compared with other ethnic or racial populations. The disproportionate impact of the HIV epidemic on African American MSM has created health inequalities that need to be addressed. Pre-exposure HIV prophylaxis is 99% effective in some cases but adoption by African American MSM has been low. In Ohio, there were 1,021 new HIV diagnoses in the state in 2019, of which 38% were among African American gay and bisexual men. This disparity, in my view, requires a better understanding through research. Therefore, in this research, a quantitative cross-sectional design will be used to evaluate the role of PrEP stigma, knowledge, and medical mistrust in the adoption of PrEP by black gay and bisexual men in Ohio. Other sections of the chapter extensively discussed the conceptual framework, the research question and hypotheses, the nature of the study, the summary of the methodology, the target

population, and the proposed data analysis method. In subsequent sections, I discussed the terminologies used, the scope and delimitation, and the significance of the study.

The next chapter will be devoted to reviewing existing literature to gain a good understanding of what others have done and what needs to be done. The chapter will start with an introduction, literature search strategy, and a description of the theoretical foundation of the research. That will be followed by a revision of the current literature on both the outcome and exposure variables which will constitute a major part of chapter two. The last segment will describe the confounders.

## Chapter 2: Literature Review

### **Introduction**

This goal of this chapter to examine the current knowledge about the roles of PrEP stigma, PrEP knowledge, and medical mistrust in the adoption of PrEP by African American gay and bisexual men in the state of Ohio.

The first part of the chapter will be used to discuss the literature search strategy and the theoretical foundation of the research. Subsequent sections will provide a review of the current knowledge on the roles of PrEP stigma, knowledge, and medical mistrust on the uptake of PrEP.

The disparity of HIV burden among black gay and bisexual men and their low adoption of PrEP as a metabolic approach to HIV prevention has the potential to end the epidemic (Calabrese, & Easley, 2018). Unfortunately, African American MSM and who are disproportionately affected by the epidemic are the lowest adopters of PrEP when compared with other ethnic or racial populations. The disproportional impact of the HIV epidemic on African American men who have with men has created health inequalities that need to be addressed (CDC, 2020). MSM comprised 70% of the newly diagnosed HIV cases in the United States in 2014. They constituted less than 2% of the United States population (Cahill et al., 2018). More than 50% of affected MSM were African Americans. Pre-exposure HIV prophylaxis is 99% effective in some cases. It has the potential to stop transmission but adoption by African American MSM has been extremely poor (CDC, 2020).

The purpose of this cross-sectional quantitative study is to examine the association between HIV stigma, PrEP knowledge, and medical mistrust and the adoption of PrEP by Black gay and bisexual men in the state of Ohio.

### **Literature Review Strategy**

The research articles were selected from multiple electronic databases and all research articles were published between 2016 and 2022. These databases included Google Scholar, Thoreau Multi-Database, PubMed, Academic Journal, ProQuest, Science Direct, Allied Health Literature, EBSCOHost, and the CDC website.

The following keywords and phrases search strategy were utilized: PrEP, preexposure prophylaxis, African American MSM, Black MSM, Black gay men in Ohio, PrEP stigma, PrEP Knowledge, PrEP Mistrust, Black MSM mistrust, PrEP awareness,

The Boolean operator “AND” was utilized to combine and broaden the search terms whenever necessary.

### **Theoretical Foundation**

This work is grounded in the IMB, proposed and tested by Fisher and Fisher (1992). This theory was developed by building on existing theories concerning individual and social determinants of health behaviors. The theory is a general social and psychological conceptualization for promoting and for understanding health-related behaviors (Smith, L. R., Fisher, 2012). The theory helps us test and explain the social and psychological factors that influence health-related behavior such as the decision to use PrEP (Co). The theory posited that a well-informed individual who is motivated with the appropriate behavioral skills will likely initiate and maintain health promotion behavior

such as PrEP uptake (Suls, J., & Wallston, A. K., 2003). In contrast, an uninformed, unmotivated person lacking behavioral skills will likely disregard health-promoting behaviors. IBM has been found to effectively predict the adoption of condom use by MSM (Jian, H., & Chen X., 2019). It is also an effective theory for the prediction of female sex workers' uptake of STD screening. The IBM model conceptual constructs influence one another; therefore, components of the constructs are better tested together as is done in this work. However, it must be mentioned that other factors not within individual-level theoretical constructs may also modify behaviors at different ecological levels. The IMB model provides a useful framework for understanding factors that predict the uptake of PrEP among at-risk populations. Factors such as stigma associated with using PrEP, medical mistrust, and lack of knowledge about PrEP can hinder its uptake. By identifying predictors of PrEP uptake using the IMB model, interventions can be developed to increase PrEP uptake and adherence among at-risk populations. Dubov et al. (2018) applied the IMB model to conceptualize factors that influence PrEP uptake among MSM. The authors found that the IMB model was useful in predicting poor uptake of PrEP and developing interventions to maximize PrEP uptake and adherence. Quinn et al. (2020) examined how social networks can influence PrEP use among Black gay, bisexual, and other MSM. The researchers found that peers and social networks played a significant role in increasing PrEP use among this population.

PrEP stigma is a significant barrier to PrEP interest, uptake, and continuation that manifests at multiple levels (Calabrese, 2020) Stigma associated with using PrEP can lead to negative attitudes towards it, which can discourage people from seeking



information about it or initiating its use. Medical mistrust is another factor that can hinder PrEP uptake among at-risk populations. Medical mistrust can arise from past experiences of discrimination or mistreatment in healthcare settings, which can lead to a lack of trust in healthcare providers or institutions (Tekeste et al., 2019)

PrEP knowledge is an essential component of the IMB model. It is necessary for individuals to be well-informed about PrEP before they can act on their knowledge and initiate its use (Calabrese, 2020) A lack of knowledge about PrEP can lead to misconceptions or negative attitudes towards it, which can discourage people from seeking information about it or initiating its use. Other factors such as the education, income level, and age of the individual may also affect health-related decision-making processes. This explains why those factors are accounted for in this research as covariates.

**Table 1**            **Constructs and Variables**

*Construct and Variables*

Construct	Variables
Information/knowledge	PrEP knowledge
Motivation	HIV/ PrEP stigma
Behavioral skill	Medical mistrust

### **Literature Review of Key Variables**

Pre-exposure prophylaxis or PrEP, a metabolic approach for the prevention of HIV infection, was first approved by the United States Food and Drug Administration in 2012 (Mayer, H.K, & Agwu, A., 2020). The original medication consisted of a combination of two antiretrovirals; tenofovir disoproxil fumarate or TDF and emtricitabine. The rationale for the choice of the combination drugs was based on extensive animal studies and then, case-control human studies in humans which demonstrated the effectiveness of the combination drug called travuda to prevent rectal mucosal transmission of both simian and human immunodeficiency virus in macaques (Mayer, H.K, & Agwu, A., 2020). The early medication (Travuda) was a single daily dose of 300 mg of the combined drugs. Initial FDA approval was for patients at elevated risk of HIV infection, including MSM, heterosexual men and women with multiple partners, and injection drug users who shared equipment. There are new additions to Travuda which address some safety concerns and the frequency of dosing. Research is in progress to identify other drugs with more benefits. Approval came with some controversies which were concerned with the needed safety threshold for a longer time treatment for those who are otherwise healthy, costs, the possibility of the long-time treatment leading to the development of resistant strains, and the possibility of risk compensation regarding the abandonment of condom use. Today, none of the concerns has been an issue.

Two clinical trials formed the basis of the FDA approval. In one study, PrEP was shown to prevent HIV infection by upward of 98% (McCormack, S., & Dunn, TD, 2016).

The other study demonstrated the effective use of zidovudine as post-exposure prophylaxis in healthcare workers who are accidentally exposed to HIV infection.

Despite the demonstrated efficacy of PrEP, there were initial concerns about the longtime effects of exposure to the drugs. Some were concerned about the possible side effects, possibilities of eliciting resistant strains, and cost. However, good clinical practice of monitoring patients' renal function every three months has shown that the drugs are safe for long time use. To date, no proven HIV resistance strains have developed because of PrEP use. Finally, PrEP is covered as a preventative measure by most insurance companies (McCormack, S., & Dunn, TD, 2016).

Despite the apparent success of PrEP, uptake among those who needed it most; Black Gay and Bisexual men are lacking behind other racial/ethnic groups. Eaton and Mathew (2018) noted in their paper that between 2005 and 2014, newly acquired HIV infection rate decreased by 19% across the United States as a result of rigorous prevention of weaknesses. However, they noted that the decrease in the rate of infection was not uniformly distributed across all populations. During the same period, for example, the number of newly diagnosed African American males rose to 87%. This called for the need for other methods or strategies to combat HIV infection in this population. There is a need to examine the existing methods, such as the metabolic approach to prevention, and identify socioeconomic deficiencies in the current prevention messaging to African American men. In a literature review conducted by Mayer et al, (2020), both individual and systemic barriers to PrEP adoption in the United States were identified. Barriers such as PrEP knowledge/awareness, risk perception, stigma, access,

and cost, concerns for side effects, and medical mistrust in certain populations were identified. Mayers et al, (2020) advocated the need for research into the specific effects of these barriers in different populations.

### **Stigma**

Bird, J. D. et al (2013) described stigma as a discrediting attribute that marks an individual as both different and less desirable than the rest of the population without the attributes. Stigma is associated with labeling, stereotyping, loss of status, separation, and discrimination (Rodriquez-Hart C., & Musci, R., 2018). The ultimate effect of stigmatization is discrimination which may affect income, education, housing, status, medical treatment, and health. This review will focus on the health effect of stigmatization and the consequent effects of discrimination such as in HIV prevention with PrEP. According to Brent (2016), the pioneering work of Goffman in 1963 exposed researchers to the subject of stigma as a social construct. The characteristics that are easily stigmatized include physical characteristics, blemishes of character, and tribal stigma. HIV/AIDS/PrEP stigma has four elements or characteristics. First, the disease is seen as the bearer's responsibility. Two, the disease is unalterable or degenerative. Third, the disease is contagious, and fourth, the disease or condition is readily apparent to others (Babel A. R., & Wang P., 2021). Also, HIV/AIDS and homosexuality are associated with immorality and deviant behavior among African Americans because of their deep religiosity. Stigma as a social-psychological construct has four domains. One is called enacted stigma which refers to the experience of prejudice and discrimination that resulted from an individual member of a social category (e.g., gay). An anticipated

stigma is the fear or expectation of rejection as a result of membership in a social category. Perceived stigma refers to individual perception of how others might feel about them because they are members of a stigmatized group. According to Babel et al (2021), internalized stigma refers to the internalization of negative societal attitudes related to one's membership in a stigmatized group. Internalized stigma affects self-esteem and feeling of self-worth (Babel A. R., & Wang P., 2021). Stigmatization leads to ostracism, discrimination, social control, marginalization, and social domination (Chidrawi H. C., & Greeff M., 2016). Brooks et al (2020) in their qualitative inquiry reported that Black MSM on PrEP described multiple experiences of PrEP-related stigma which included the perception that PrEP users engage in increased sexual risk behaviors, have relationship conflicts related to PrEP use, they experience judgment from medical providers, the assumption by others that they are HIV positive, and gay stigma which limit PrEP disclosure (Brooks A. R., & Nieto O., 2020). Babel et al (2021) reviewed over 5794 studies on HIV treatment, prevention, and stigma and concluded that stigma is the most significant barrier to HIV prevention and treatment among black gay and bisexual men in the United States (Babel A. R., & Wang P., 2021). A quantitative inquiry by Manley, M.H (2021) showed that perceived PrEP stigma was directly associated with PrEP uptake ( $\beta = -.05$ ; 95% CI, [0.09 – 0.01]) ( $\beta = -.06$ ; 95% CI [ -0.11, 0.02]). Earlier research by Eaton et al. (2017) in the Southern States using bivariate and multivariate logistic regression analysis found that stigma was strongly associated with a lack of interest in PrEP. Stigma associated with using PrEP can lead to negative attitudes towards it, which can discourage people from seeking information about it or initiating its use. (Quinn et

al.,2020). Quinn et al. (2020) found that peers and social networks played a significant role in increasing PrEP use among Black gay, bisexual, and other MSM. Participants described the “movers and shakers” in Black LGBT communities who have been influential in educating others and advocating for PrEP. Well-respected vocal advocates for PrEP have emerged in the Black LGBT community as PrEP champions who have successfully influenced young Black GBM’s views on PrEP (Quinn et al., 2020).

Empirical studies show that black MSM are disproportionately affected by HIV infection and the consequences and in the absence of a cure, prevention is the best method to reduce the impact of HIV among BMSM. Therefore, understanding the impacts of stigma on HIV risk, prevention, and treatment among BMSM warrants further research.

### **PrEP Knowledge and Awareness**

Knowledge and awareness of PrEP are well-described cognitive barriers to PrEP adoption in the United States (Eaton A. L, & Mathews D.D., 2017). Despite the efficacy of PrEP and the high disparity of HIV infection rates among BMSM, PrEP knowledge, and awareness are poor among BMSM when compared to other races or ethnic groups. In his study, Kahle et al. (2018) found that African Americans with lower education have lower knowledge scores (adj OR .56, 95%, CI 0.34-0.84, p = .005) and willingness to use PrEP when compared to Whites. He found no relationship between PrEP knowledge and the age of the respondents (Kahle et al., 2018). In another study, Strauss et al (2017) conducted in large cities of Chicago, Atlanta, New York, and some others, found that 67% of the participants reported awareness but with demographic variability. Using

logistic regression, Kahle et al. identified the association between PrEP awareness and use. Among participants who had never used PrEP, 16.9% do not know about PrEP, and another 15.6% heard about PrEP but had no clue what it was. Thirty-two percent knew about it, but not much, and only 25.8% have a fair amount of knowledge of PrEP. Eaton et al. (2017) conducted quantitative research on PrEP awareness and uptake among black men and transgender women who have sex with men in a multicity assessment during a gay pride event (Eaton A. L, & Mathews D.D., 2017). In this classic study, the researchers found that 39% of the participants were aware of PrEP and only 4.6% were using PrEP at the time. A multivariate analysis conducted also demonstrated that PrEP awareness is positively associated with being in a relationship, testing for HIV within the last 6 months, and awareness of own sexuality. Level of education and condom use was found to be negatively associated with the use of PrEP despite the elevation of awareness in the two groups (Eaton A. L, & Mathews D.D., 2017). To understand the influence of peers and social networks on Black GBM's perceptions of and decisions about PrEP use, Quinn et al. (2020) conducted in-depth interviews with 46 Black GBM in Milwaukee, WI and Cleveland, OH. Results indicated that participants' primary source of information on PrEP was other Black GBM in their communities. Peers and social networks served three primary functions with regard to PrEP, (1) filling informational gaps left by healthcare providers, (2) increasing trust of PrEP, and (3) reducing PrEP stigma.

**Medical Mistrust**

Medical mistrust refers to a lack of confidence or distrust in the medical establishment or healthcare providers. Medical mistrust has been identified as a significant barrier to the adoption of PrEP by African American MSM.

Research has shown that African American MSM have lower PrEP awareness and uptake rates compared to other racial and ethnic groups. The authors of one study found that medical mistrust was a significant predictor of PrEP awareness and uptake among African American MSM, even after controlling for other factors such as age, income, and education (Eaton et al., 2015)

Several factors contribute to medical mistrust among African American MSM, including historical and ongoing experiences of discrimination and mistreatment in healthcare settings, lack of diversity among healthcare providers, and the perception of healthcare providers as being unsupportive or judgmental of their sexual behavior (.Eaton et al., 2015)

To address medical mistrust and improve PrEP uptake among African American MSM, healthcare providers, and public health campaigns must acknowledge and address the historical and ongoing mistreatment of African Americans in healthcare settings, increase diversity among healthcare providers, and prioritize culturally sensitive care and communication (Krakower DS, & Mimiaga MJ, 2012)



## **Confounders**

Age, education, and income play important roles in African American gay men's decision to use PrEP, as they may influence their awareness, access, and acceptance of this HIV prevention strategy (CDC, n-d).

**Awareness:** Age and education may affect how much African American gay men know about PrEP, its benefits, and its availability. Older gay men may have less exposure to PrEP information than younger gay men who use social media or online dating apps more frequently. Education may also influence how well African American gay men understand PrEP and its efficacy, as well as how to access and use it correctly (CDC, n-d).

**Access:** Age, education, and income may affect how easily African American gay men can obtain PrEP, as it may be related to their income, insurance, and healthcare utilization. Older and more educated gay men may have more financial resources and health coverage than younger and less educated gay men, which can facilitate their access to PrEP (Kay, E., & Pinto, R.M., 2020). However, older gay men may also face more barriers to PrEP access due to stigma, discrimination, or mistrust of the healthcare system.

**Acceptance:** Age and education may affect how willing African American gay men are to use PrEP, as they may shape their attitudes, beliefs, and norms about HIV prevention. Older gay men may have more negative perceptions of PrEP, such as seeing it as a sign of promiscuity, irresponsibility, or distrust in their partners (Hammack & Toolis, 2019). Education may also influence how African American gay men view PrEP,

as higher education may be associated with more positive attitudes and greater intention to use PrEP. Kay et al (2020) pointed out the significance of affordability for people without insurance. Poor black gay and bisexual men may not have access to transportation for the required doctor visits for PrEP prescription and follow-up.

### **Summary and Conclusion**

Adoption of PrEP by African American MSM has been a challenge due to several factors, including HIV/PrEP stigma, knowledge, and medical mistrust.

HIV/PrEP stigma, or the negative attitudes and beliefs surrounding HIV and PrEP use, has been identified as a significant barrier to PrEP adoption among African American MSM. Researchers found that perceived HIV stigma was associated with decreased PrEP awareness and intention to use among African American MSM (Eaton et al., 2015)

Lack of knowledge about PrEP is another barrier to adoption. Many African American MSM may not be aware of PrEP or may have misinformation about its effectiveness or side effects. Researchers found that lack of knowledge about PrEP was a significant barrier to PrEP uptake among African American MSM (Biello et al., 2017)

Medical mistrust, or distrust in healthcare providers and the medical establishment, is also a significant barrier to PrEP adoption among African American MSM. Studies have shown that medical mistrust is associated with lower PrEP awareness and uptake among African American MSM (Hussen et al., 2018).

To improve PrEP adoption among African American MSM, interventions must address HIV/PrEP stigma, improve knowledge about PrEP, and address medical mistrust

by providing culturally sensitive care and addressing the historical and ongoing mistreatment of African Americans in healthcare settings (Kerr, J., Ayangeakaa, S., 2021). Finally, age, education, and income level are identified confounders that will be accounted for in the statistical analysis.

A quantitative study such as this has the potential to elucidate the role played, if any, by each of the investigated factors in the determination of Black gay men's decision to use or not to use PrEP.

## Chapter 3: Research Method

### **Introduction**

Through this cross-sectional quantitative study, examined the association between PrEP stigma, PrEP knowledge, and medical mistrust and the adoption of PrEP by black gay and bisexual men in the state of Ohio. I utilized a cross-sectional quantitative research design to collect data from a sample of Black gay and bisexual men in Ohio. The data were analyzed using statistical methods to identify the predictors of PrEP uptake among this population. The findings of this study could contribute to the development of effective interventions to increase PrEP uptake among Black gay and bisexual men in Ohio and reduce the incidence of HIV among this population.

The first section of this chapter discusses the research design where the dependent and the independent variables will be presented. The next section looks at the methodology, data analysis plan, threats to both internal and external validities, and ethical procedures. The last section is devoted to the summary of the chapter.

### **Research Design**

#### **Study Variables**

##### **Dependent Variables**

The dependent variable for this research is the adoption of PrEP by the participants. There are two responses which would be YES or NO. The decision to adopt PrEP for the prevention of HIV is the final outcome following the exposure of participants to stigma, knowledge or lack of it, and medical mistrust.

## **Independent Variables**

There are three independent variables based on the literature research. They are knowledge of PrEP, PrEP stigma, and medical mistrust by the population under study. According to Sarah K. Calabrese (2020), PrEP stigma is a key factor that interferes with PrEP interest, uptake, and continuation among certain social groups, including African American MSM (Calabrese, S.K., 2020). The study highlights that PrEP users are commonly stereotyped as sexually irresponsible, promiscuous, and immoral. These stereotypes and associated prejudice manifested at multiple levels and discourage PrEP interest and uptake, disrupt PrEP adherence, and motivate PrEP discontinuation (Chittamuru, D., Frye, V., 2020)

PrEP knowledge is a key factor that influences PrEP uptake among African American MSM (Calabrese, S.K., 2020). The author noted that lack of knowledge about PrEP, its effectiveness, and its availability are significant barriers to PrEP uptake among African American MSM. She also found that African American MSM who were aware of PrEP were more likely to use it than those who were not aware of it (Calabrese, 2020). Chittamuru, et. al., (2020) found that African American MSM who had higher levels of PrEP knowledge were more likely to use PrEP than those with lower levels of knowledge. They also found that African American MSM who had higher levels of PrEP knowledge were more likely to have positive attitudes towards PrEP and perceive fewer barriers to its use.

Medical mistrust is a significant barrier to healthcare access and utilization among African Americans, including African American MSM (LaVeist, T. A., Nickerson, K. J.,

2000). Cuevas, A.G. et. al. (2016) found that African Americans perceive discrimination in healthcare settings, experience higher levels of medical mistrust compared with European Americans, and experience poorer communication with healthcare providers (Cuevas, A. G., O'Brien, K.,2016). The study also found that medical mistrust occurred when clinicians did not convey respect to patients, leaving patients to wonder whether their clinician's treatment was discriminatory or not. Poor communication arose when clinicians did not acknowledge patients' perspectives during interactions.

### **Covariates**

The identified covariates are the age of the participants, and their level of education measured as whether they completed high school, 2 years of college, completed some college courses, completed undergraduate degrees, and graduate degrees. The socioeconomic classification is based on household income. The research design selected to address the factors to predict PrEP uptake among African American gay and bisexual men in Ohio is a quantitative cross-sectional design that provides insight into the demographics of the population, the prevalence of PrEP utilization among the population, and the association between the uptake of PrEP and the predictor variables such as PrEP stigma, knowledge of PrEP, and medical mistrust within the population. The design also allows me to account for the roles of age, educational attainment, and socioeconomic level in the decision-making process. The choice of a quantitative cross-sectional design is considered most appropriate for a study of this nature where the topic of choice is not "perishable", where complete and adequate data is easily accessible, and there are no ethical or logistical barriers (Wang & Chen, 2020).

Also, the design is not too expensive for my dissertation budget. Data collection was between October 12<sup>th</sup>, 2023, and January 12<sup>th</sup>, 2024, a span of three months, in three major cities of Cincinnati, (South), Columbus (Center), and Cleveland. Data was collected with questionnaires and electronically, when necessary, with a scannable QR code. Participants were required to complete the questionnaires by themselves and ask for assistance from me whenever needed.

## **Methodology**

### **Study Population**

The study population is African American men who are older than 18 years and who identify as gay or bisexual and consider Ohio as their primary residence. They must have tested negative for HIV in the last 6 months. According to the 2020 census, the estimated percentage of Ohio residents who identified as Gay is approximately 0.3%. The William Institute estimated the percentage of African American LGBTQ men in Ohio at 4.3%. The US Community Survey of 2021 (US Census, 2021) suggests that about 615,000 black men are above the age of 18. Therefore,  $(4.3\% \times 615,000)$  approximately 2,795 could belong to the LGBTQ community.

### **Sampling Strategy**

The Institute of Medicine (NCBI, 2020) recommended venue-based, time-space sampling. This method involves identifying and selecting venues where the target population is likely to congregate, such as bars, clubs, or community centers, and then randomly sampling individuals who visit those venues during specified periods. This method can help overcome some of the challenges of accessing a hidden or stigmatized

population, such as low response rates, underrepresentation, or self-selection bias.

Identified venues will be visited across some Ohio cities for data collection.

### **Sampling Size**

Using the G-Power calculator, (Figure 1) the sample size was determined to be 104 participants at an alpha level of 0.05, an effect size of .3, and a power of .80 with logistic regression. The power of 0.80 was based solely on G-power calculation without consideration for prior studies.

### **Recruitment of Participants**

Using the venue-based, time-space sampling strategy, participants were recruited from identified gathering places for the Black gay community such as bars, events, bathhouses, and community-based organizations. Participants were asked to refer to friends and contacts who they believe will be likely to participate in the group. I visit identified places and introduce myself to organizers, leaders, or individuals. Each participant was approached by me and asked for their willingness to participate after the normal introductions. Upon agreement and following the discussion of confidentiality and privacy, each participant was required to sign the informed consent, which was incorporated into the QR code as part of the introductory page. Participants that preferred paper and pencil were allowed to do so and their responses were later transferred to the Google form.

**Demographic Information:** Participants were asked to provide information about the age group, race, sexual orientation, education level, and income.

**Sexual Behavior:** Participants will be asked about their sexual preferences.



PrEP Uptake: Participants will be asked about their use of PrEP or future acceptance of PrEP for the prevention of HIV infection.

Each participant signed an informed consent after explaining the purpose of the research, the implication, the voluntary nature of participation, their autonomy, assurance of privacy, and confidentiality as well as their right to withdraw at any time. The document provided by the Walden IRB was incorporated into the form verbatim as approved.

The purpose and study objective and the use of the data was explained to them. After completion of the survey, received a \$10 gift card and a warm thank you. My contact information was provided to each participant in case they have questions or concerns. They can also request a copy of the final findings and implications.

Finally, the data obtained are stored securely without any personal identifiers on my computer to which only I have access.

### **Instrumentation and Operational Constructs**

#### **PrEP Stigma Scale**

Siegler et al. (2020) developed and validated a PrEP stigma scale. The scale consists of 12 items that assess four dimensions of PrEP stigma: Anticipated stigma, Experienced stigma, Internalized stigma, and PrEP positivity. Items are rated using a 5-point Likert scale (Siegler & Wiatrek, 2020). The scale development was informed by a theoretical model and a literature review to enhance content validity. The researchers used a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) for

each item. The total score was calculated by summing the scores of all items. The scale demonstrated good internal consistency, test-retest reliability, and construct validity.

The scale also showed good discriminant validity, as it was able to distinguish between PrEP users and non-users, and between those who had high and low levels of PrEP knowledge, PrEP awareness, and PrEP willingness. The scale accounted for 16% of the variance in PrEP willingness and indicated the significant role of PrEP stigma in influencing PrEP uptake. I decided on 11 of the items that were most relevant to my research.

However, the scale has some limitations. First, it was developed and tested among a specific population of MSM in the United States, which may limit its applicability to other groups and settings. Second, it did not include items that measure stigma related to PrEP providers or PrEP delivery systems, which may also affect PrEP access and adherence. Third, it did not capture the potential positive aspects of PrEP use, such as empowerment, self-care, or community belonging.

Therefore, the validity and reliability of the HIV Pre-exposure Prophylaxis Stigma Scale may depend on the purpose and context of its use. It may be a useful tool for measuring and monitoring PrEP stigma among MSM in the United States, but it may not be adequate for assessing PrEP stigma among other populations or for evaluating PrEP stigma interventions.

### **PrEP Knowledge Scale**

The HIV and PrEP Knowledge Scale developed by Walsh (2018) is a brief instrument that measures factual knowledge about HIV transmission and prevention,

PrEP efficacy and safety, and PrEP access and use among healthcare providers. The scale consists of six items that are rated on a 7-point Likert scale, with higher scores indicating higher knowledge.

Walsh et al (2018) developed the scale based on the Centers for Disease Control and Prevention clinical guidelines for PrEP and previous literature on PrEP knowledge among providers. The scale was validated among a sample of 201 infectious disease specialists in the United States and showed good internal consistency and construct validity.

The scale also showed good criterion validity, as it was positively associated with PrEP prescribing practices and familiarity with PrEP guidelines among providers. The scale accounted for 16% of the variance in PrEP prescribing practices, indicating the significant role of knowledge in influencing PrEP uptake among providers.

### **Group-Based Medical Mistrust Scale**

The Group-Based Medical Mistrust Scale is a brief instrument that measures the tendency to distrust medical systems and healthcare personnel that are perceived to represent the dominant culture developed and validated by Valera et al (2018). Medical mistrust is a common barrier to healthcare access and utilization among racial and ethnic minorities, especially among those who have experienced discrimination, oppression, or historical injustices (Valera & Boyas, 2018). The scale was developed and validated by Valera et al. (2018) among a group of 279 formerly incarcerated Black and Latino men in New York City.

The scale consists of 10 items that assess two dimensions of medical mistrust: Discrimination and Suspicion. I selected seven of the most relevant items for this research.

Each variable in the Group-Based Medical Mistrust Scale was measured using a 5-item Likert-type response scale ranging from 1 (strongly disagree) to 5 (strongly agree), including a neutral response option. The scale has three subscales: (1) suspicion of providers; (2) perceived health care disparities; and (3) perceived lack of support from health care providers<sup>1</sup>. Item responses are summed to calculate a scale score ranging from 12 to 60, with higher scores indicating higher medical mistrust. The scale development was informed by a theoretical model and a literature review to enhance content validity. The scale demonstrated good internal consistency, test-retest reliability, and construct validity. The scale also showed good discriminant validity, as it was able to distinguish between Black and Latino men, and between those who had high and low levels of healthcare utilization, health literacy, and HIV knowledge. The scale accounted for 18% of the variance in healthcare utilization, indicating the significant role of medical mistrust in influencing healthcare behaviors among formerly incarcerated men.

### **Data Cleansing and Screening Procedure**

Data collected were screened for inconsistencies, errors, and completeness. All cases with missing and inconsistent data were removed and not included in the statistical estimates.

### **Data Analysis Plan**

Data analysis was conducted using SPSS version 28. Descriptive statistics were used to describe the demographic characteristics in the tables presented below.

Prevalence of PrEP uptake and the willingness to adopt PrEP for HIV prevention was also presented in tables.

### **Research Questions and Hypotheses**

RQ1: Is there an association between PrEP stigma and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H<sub>01</sub>*: There is no association between PrEP stigma and PrEP adoption by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H<sub>11</sub>*: There is an association between PrEP stigma and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

RQ2: Is there an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H<sub>02</sub>*: There is no association between knowledge of PrEP and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H<sub>12</sub>*: There is an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income.

RQ3: Is there an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H<sub>0</sub>3*: There is no association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H<sub>1</sub>3*: There is an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

Multiple logistic regression will be utilized for the analysis. Logistic regression allows me to control confounders such as the age and the level of education and it is highly suited for association between exposure and outcome variables when the outcome variable is a dichotomy YES/NO answer, and the exposure variables are either continuous or categorical. The odds ratio will be used to estimate the relative contributions of the predictor variables to the outcome variables. The odds ratio will determine the overall effect size or the magnitude of the effect. Also, the likelihood ratio and the parameter estimate with lower and upper bound for each of the independent variables will be interpreted. The correlation coefficient will be evaluated to ensure there is no multicollinearity of the independent variables. Finally, the correlation Chi-Square statistics will be evaluated for model fit and significant test. The Wald's Omnibus test of significance, Chi-Square model fit, as well as the Cox R2 were interpreted to ensure that assumptions are not violated.

I obtained approval from the Institutional Review Board (IRB) before data collection. Participants provided informed consent before completing the survey. All data collected will be kept confidential and anonymous. Participants were given the option to skip any questions they do not feel comfortable answering.

### **Threat to Validity**

#### **Threat to Internal Validity**

There are several threats to external validity in quantitative cross-sectional research. These include testing reactivity, selection effects, and interaction effects of selection and variables.

Testing reactivity is a threat to external validity that occurs when participants change their behavior due to being tested. This was avoided by allowing participants to answer all the questionnaire questions in their private time. Selection effects occur when the sample is not representative of the population being studied. The participants in this research were restricted to those who self-identified as African American gay or bisexual men. Interaction effects of selection and variables occur when the effect of the independent variable on the dependent variable is different for different groups of people.

There are several ways to counter threats to external validity. Replications counter almost all threats by enhancing generalizability to other settings, populations, and conditions. Finally, there is a risk of selection bias in cross-sectional studies. Participants may be more likely to participate if they have already taken PrEP or if they are more open about their sexual behaviors. This can lead to an overestimation of PrEP uptake among the LGBTQ community (Koppe, U., & Marcus, U.,2021)

### **Threat to Internal Validity**

According to Bhandari et al. (2021), there are several threats to internal validity in cross-sectional qualitative research. These include history, maturation, testing instrument, statistical regression, and selection-maturation interaction.

History refers to events that occur during the study that are not part of the treatment but can affect the outcome. Maturation refers to changes that occur naturally over time that can affect the outcome. Testing instrument refers to changes in the measurement tool used that can affect the outcome. Statistical regression refers to the tendency for extreme scores on a measure to move closer to the mean on subsequent measurements. Selection-maturation interaction refers to the interaction between selection bias and maturation. This research is a cross-sectional observational design that was least affected by the mentioned threats since subjects were not manipulated (Bhandari, P.,2023).

There are several ways to address threats to internal validity in cross-sectional qualitative experimental research. These include altering the experimental design by random assignment of participants to groups to counter selection bias and regression to the mean by making groups comparable at the start of the study. Blinding participants to the aim of the study counters the effects of social interaction (Bhandari, P., 2023)

There are several threats to constructing or statistical conclusions. These include low statistical power, violated assumptions of statistical tests, fishing, and the error rate problem, and mistaken acceptance of null hypothesis and reliability of measures (Garcia-Perez M.A, 2012).



There are several ways to address statistical conclusion validity. These include ensuring the use of adequate sampling procedures, appropriate statistical tests, and reliable measurement procedures (Garcia-Perez M. A, 2012). The sampling size was calculated using G\*Power for logistic regression to account for the effects of confounders. Both the outcome and predictor measures will be measured using standardized instruments.

### **Ethical Considerations**

This cross-sectional quantitative research requires primary data collection from the participants so ethical approval will be required from the Walden University IRB. Approval was applied for and obtained before data collection in line with the University ethical standards. All the required documents for the approval were fully executed and approval obtained following the ethical review by the IRB.

There are ethical concerns regarding confidentiality and privacy of participants. The use of questionnaires may reveal sensitive information about participants' sexual behaviors and HIV status. Therefore, I ensured that participants' privacy is protected by using anonymous surveys and secure data storage (Okeke, N.L., & McLaurin, T, 2021). Participants had to sign an informed consent that clearly defines the purpose of the research, possible outcome, and the fact that participation is voluntary. Participants are free to withdrawal at any time. Great measures were taken to respect participants' time and efforts and with appreciation. A \$10 gift certificate was given to all participants as appreciation for their time. I also provided participants with all the information they need to know about the study to make an informed decision about participating in the research.

Participants' privacy was protected by using anonymous surveys and secure data storage. I avoided or minimized anything that would cause physical or emotional harm to participants and made participants aware of any potential harm prior to their participation.

The best ways to treat the data collected in research depend on the research question and the type of data collected. Researchers should define the aim of their research and choose the data collection method that is best suited for their research (Okeke, N.L., McLaurin, T.,2021). In this case, data were collected using self-executed questionnaires. Once data were collected, they were stored securely to reduce the risk of data loss.

After collecting data, I cleaned and organized it to prepare it for analysis. This involves checking for errors and inconsistencies in the data and correcting them. Data destruction and access were in accordance with the IRB stipulation.

### **Summary**

This study is a quantitative, non-experimental research design that was used to test the association between stigma, knowledge, and medical mistrust and an uptake of PrEP among African American gay and bisexual men in the state of Ohio. The data was be collected from a sample of participants at a single point in time using a survey instrument that measures the variables of interest. The survey instrument includes validated scales to assess stigma, knowledge, and medical mistrust, as well as demographic and behavioral questions. The data were then analyzed using statistical methods to describe the characteristics of the sample, estimate the prevalence of PrEP

uptake, and examine the relationships between the exposure and outcome variables. I also compared subgroups within the sample based on factors such as age, education, and income to account for confounders. I aim to provide descriptive and inferential information about the population of interest and identify potential barriers and facilitators for PrEP uptake among African American gay and bisexual men in the state of Ohio.

As soon as ethical approval was given, I began the data collection. Data will be provided in Chapter 4 with results, interpretation, and outcome. Chapter 5 will be devoted to the study conclusion, implications for social change, and the recommendations for future actions.

## Chapter 4: Results

### Introduction

Through a cross-sectional quantitative study, I examined the association between PrEP stigma, PrEP knowledge, medical mistrust, and the likelihood of adoption of PrEP by black gay and bisexual men in the state of Ohio. I utilized a cross-sectional quantitative research design to collect data from a sample of Black gay and bisexual men in Ohio between October 12, 2023, and January 12, 2024. The data were analyzed using statistical methods to identify the predictors of PrEP uptake among this population. The findings of this study would contribute to the development of effective interventions to increase PrEP uptake among gay and bisexual men in Ohio and reduce the incidence of HIV among this population. There are quantitative research questions employed to explore the relationships between the independent and the outcome variables as outlined above.

### Research Questions and the Hypotheses

RQ1: Is there an association between PrEP stigma and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H<sub>0</sub>1*: There is no association between PrEP stigma and PrEP adoption by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H<sub>1</sub>1*: There is an association between PrEP stigma and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

RQ2: Is there an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H<sub>0</sub>2*: There is no association between knowledge of PrEP and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H<sub>1</sub>2*: There is an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income.

RQ3: Is there an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H<sub>0</sub>3*: There is no association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H<sub>1</sub>3*: There is an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

I started this chapter with a brief description of the research purpose. The next sections will be focused on describing the research questions, the presentation of the descriptive statistics findings and the results of the inferential statistics.

### **Data Collection**

I started collection as soon as I obtained the ethical approval on October 10th, 2023 (Approval #10-10-23-0252301). I collected from Columbus, Cleveland, and Dayton cities in Ohio, USA. Most data came from Cleveland where I worked with the AIDS Taskforce, with their written permission, to collect data during their outreach programs. Data was also collected from LGBTQ+ events such as Drag Queen shows. HIV Day celebration in December was another source of data. Most of the data was collected using a QR code. Data collection was between October 12, 2023, and January 12, 2024. I had initially planned just 2 weeks for data collection, but it was not possible. There were not enough events during the months of October and early November, unlike the month of December. Some participants preferred to complete paper instruments and they were provided and were completed in privacy. Like the QR Google forms, papers questionnaires contained no personal identifying information.

A total of (N) 123 participants, who self-identified as black, male, older than 18 years, gay or bisexual, voluntarily completed the questionnaire. Incomplete questionnaires and participants who identified as racial group other than African Americans were excluded. Questions regarding HIV testing within 6 months were omitted as advised by some participants. Some participants also advised me to replace Gay with same sex loving men to be culturally accepted. This new form was submitted and approved by the IRB before the commencement of data collection. Event organizers were informed before data collection.

## Descriptive Statistics

**Table 2**

*Age Group*

Age group	Frequency	Percentage	Valid percentage
18-24	69	56.1%	56.1%
25-34	38	30.9%	30.9
35-44	9	7.3%	7.3%
45-55	7	5.7%	5.7%
Total	123	100%	100%

**Table 3**

*Sexual Preferences*

Sexual preferences	Frequency	Percentage	Valid percentage
Gay	75	61%	61%
Bisexual	31	25.2%	25.2%
Queer	3	2.4%	2.4%
Asexual	8	6.5%	6.5%
Others	6	4.9%	4.9%
Total	123	100%	100%

**Table 4***Highest Level of Education Completed*

		Frequency	Percent	Valid percent
Valid	Less than high school diploma/	5	4.1	4.1
	High sch/GDE	59	48.0	48.0
	Associate degree	19	15.4	15.4
	Some college	14	11.4	11.4
	Bachelor	18	14.6	14.6
	Graduate/professionals	8	6.5	6.5
	Total	123	100.0	100.0

**Table 5***Participants' Annual Income*

Annual income	Frequency	Percentage	Valid percentage
Less than \$15,000	20	16.3%	16.3%
\$16,000 - \$29,000	31	25.2%	25.2%
\$30,000 - \$49,000	9	7.3%	7.3%
\$50,000 - \$69,000	60	48.8%	48.8%
\$70,000 and above	3	2.4%	2.4%
Total	123	100%	100%

**Table 6***PrEP Uptake*

PrEP Uptake	Yes	No	Total	Percentage Yes	Percentage No
Currently on PrEP	23	100	123	18.7%	81.3%
Willing to use PrEP for HIV prevention	82	41	123	66.7%	33.3%



**Table 7***Research Questions and Inferential Statistics Analysis Plan*

Dependent variables/construct	Independent variable	Data analysis plan
Stigma mean/ RQ 1	Willingness to take PrEP for HIV prevention	Binary logistic regression
PrEP knowledge mean/ RQ 2	Willingness to take PrEP for HIV prevention	Binary logistic regression
Medical mistrust/mean RQ 3	Willingness to take PrEP for HIV prevention	Binary logistic regression

The three research questions were explored using a binary logistic regression as earlier planned using IBM SPSS version 28 to evaluate the existence of associations between the dependent variable (Willingness to use PrEP for HIV prevention) and the three independent variables of PrEP stigma mean, PrEP knowledge mean, and the mean of the medical mistrust score. Population characteristics are described with numbers and percentages. A total of 123 (N=123) self-identified African American adult males who have sex with men completed the questionnaire. Data collection was by convenient sampling method which could be a threat to external validity. Cronbach's Alpha was computed with SPSS to determine the internal validity of the independent variables of PrEP stigma, knowledge, and medical mistrust measures. To examine the association between the dependent variable and the three independent variables and the hypothesis,

bivariate logistic regression was conducted before the multivariate logistic regression analysis which accounted for the confounders. Odds (OR) ratio at 95% Confidence Interval (CI). Results are presented in Tables below under each question.

### Analysis of Research Question 1

RQ1: Is there an association between PrEP stigma and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

$H_0$ 1: There is no association between PrEP stigma and PrEP adoption by Black gay and bisexual men when controlling for age, education, and income in Ohio.

$H_1$ 1: There is an association between PrEP stigma and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

**Table 8**

#### *Reliability Statistics*

Cronbach's Alpha	N of Items
.949	11

**Table 9**

#### *Omnibus Tests of Model Coefficients*

	Chi-square	df	Sig.
Step 1	12.387	4	.015
Block	12.387	4	.015
Mode	12.387	4	.015
1			

**Table 10***Hosmer and Lemeshow Test*

Step	Chi-square	df	Sig.
1	4.786	8	.780

**Table 11***Stigma Univariate Logistic Regression**Univariate Logistic Regression for Stigma*

Step	Stig	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
1 <sup>a</sup>	Mean	-.534	.204	6.851	1	.009	.586	.393	.874
	Constant	1.928	.523	13.571	1	<.001	6.877		

- a. Variable(s) entered on step 1: Stigma Mean. With significance of .009, I rejected the NULL hypothesis.

Table 11 shows that with every 1 unit increase in stigma, the odds of PrEP adoptions decreased by 0.586 (58.6%) at 95% CI ranging from 0.393 to 0.874.

**Table 12**

*Multivariate Logistic Regression for Stigma Accounting for Age, Income, and Education*

Step		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
1 <sup>a</sup>	Stigma	-.481	.211	5.177	1	.023	.618	.409	.936
	Mean								
	Age	.001	.242	.000	1	.996	1.001	.622	1.610
	Income	.419	.231	3.295	1	.070	1.520	.967	2.390
	Edu	.065	.162	.161	1	.688	1.067	.777	1.466
	Constant	.794	.789	1.013	1	.314	2.213		

a. Variable(s) entered on step 1: Stigma Mean, Age, Income, Edu.

With a significance of .023, the NULL hypothesis was rejected. For every unit increase in Stigma, the odds of adopting PrEP decreased by .618 OR (61.8%) with CI of .409 to .936.

### **Analysis of Research Question 2**

RQ2: Is there an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H*<sub>0</sub>2: There is no association between knowledge of PrEP and adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H*<sub>1</sub>2: There is an association between knowledge of PrEP and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income.

**Table 13***Reliability Test Knowledge Variables*

<i>Reliability Statistics</i>	
Cronbach's Alpha	N of Items
.697	7

**Table 14***Hosmer and Lemeshow Test*

Step	Chi-square	df	Sig.
1	2.628	8	.956

**Table 15***Univariate Logistics Regression for Knowledge*

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	Know Mean	1.104	.314	12.360	1	<.001	3.016	1.630	5.580
	Constant	-3.248	1.112	8.534	1	.003	.039		

a. Variable(s) entered on step 1: Know Mean.

Table 15 shows the significance of 0.001 and I rejected the NULL hypothesis. For every 1 unit increase in PrEP knowledge, the odds of PrEP adoption increased by 3.016 (302%) at 95% CI ranging from 1.630 to 5.580.

**Table 16***Summary of Result for Research Question 2*

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step	Know	.998	.328	9.238	1	.002	2.712	1.425	5.160
1 <sup>a</sup>	Mean								
	Age	-.081	.244	.110	1	.740	.922	.572	1.488
	Income	.381	.236	2.604	1	.107	1.464	.921	2.328
	Edu	-.024	.168	.021	1	.884	.976	.702	1.357
	Constant	-3.487	1.185	8.660	1	.003	.031		

- a. Variable(s) entered on step 1: Knowledge Mean, Age, Income, Edu.

There was association between PrEP knowledge and the adoption of PrEP by African American Gay and Bisexual men at Alpha level of .002 rejecting the NULL hypothesis.

For every unit increase in Knowledge measure the odds of adopting Prep increased by 2.712 OR with CI of 1.425 to 5.166.

**Analysis of Research Question 3**

RQ3: Is there an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio?

*H*<sub>03</sub>: There is no association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

*H*<sub>13</sub>: There is an association between medical mistrust and the adoption of PrEP by Black gay and bisexual men when controlling for age, education, and income in Ohio.

**Table 17***Reliability Test for Medical Mistrust*

<i>Reliability Statistics</i>	
Cronbach's Alpha	N of Items
.888	8

**Table 18***Fitness of Fit Chi Square*

<i>Hosmer and Lemeshow Test</i>			
Step	Chi- square	df	Sig.
1	4.380	8	.821

**Table 19***Univariate Logistics Regression for Medical Mistrust*

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	Mtrust-Mean	-.653	.246	7.044	1	.008	.520	.321	.843
	Constant	2.364	.672	12.370	1	<.001	10.635		

Variable(s) entered on step 1: Mistrust Mean.

Table 17 shows a significance at 0.008 rejecting the NULL hypothesis.

For every 1 unit increase in medical mistrust, the odds of adopting PrEP decreased by 0.520 (52%) at 95% CI ranging from 0.321 to 0.843

Table 20

*Binary Logistic Model for Outcome Dependent Variable and Medical Mistrust*

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	Mistrust Mean	-.641	.257	6.209	1	.013	.527	.318	.872
	Age	-.056	.238	.056	1	.813	.945	.593	1.507
	Income	.503	.229	4.828	1	.028	1.653	1.056	2.589
	Edu	.014	.163	.007	1	.932	1.014	.737	1.395
	Constant	1.343	.916	2.151	1	.143	3.830		

a. Variable(s) entered on step 1: Mistrust Mean, Age, Income, Edu.

At a significant level of .013 the NULL hypothesis is rejected. Therefore,

For every unit increase in Medical Mistrust measure the odds of adopting PrEP decreased by .527 OR with CI of .318 to .872

### Summary

The purpose of this chapter was to statically determine if there is a relation between PrEP stigma, knowledge, and medical mistrust in the adoption of PrEP as a



metabolic method of preventing HIV infection among African American gay and bisexual MSM. Basic demographic descriptive statistics of the participants were presented with tables and percentages using SPSS. Inferential statistics were conducted with Binary logistics regression. All the independent variables were tested to ensure all the assumptions of Logistics regression were met. Also, the variables were also tested for internal validity with Cronbach's Alpha. Goodness of fit or the independence of the variables was determined with Chi-square tests and reported. Odds ratios were reported for all the associations after accounting for the identified confounders of age, level of education attained, and the income of the participants.

The results indicated a significant association between stigma, knowledge, and medical mistrust and the willingness to use PrEP for HIV prevention by African American gay and bisexual men in Ohio. After controlling for age, income and education, the results are as follows; Stigma was negatively related,  $P=0.023$ ,  $OR=0.618$  (61.8%) at 95% CI [0.409-0.936], PrEP knowledge was positively related  $P=0.002$ ,  $OR=2.712$  at 95% CI [1.425-5.160], and medical mistrust was inversely related  $P=0.013$ ,  $OR=0.527$ , 95% CI [0.318-0.872]

The results of my hypothesis testing can easily be applied to the African American gay and bisexual population using the information-motivation-behavioral skill theory (IMB) model which explains the roles of social and psychological factors in health behavior. Stigma is seen as a powerful motivational factor. Those stigmatized may be motivated against adopting PrEP for HIV prevention. Lack of knowledge is a prelude to

misinformation which may hinder adoption. Similarly, medical mistrust affects behavioral skill as stated in the IMB theory in Chapter 2 of this dissertation.

The next chapter presents the interpretation of the test results, describes the study limitations, implications, and how the IMB theory can be utilized to promote positive social change within the African American gay and bisexual community in Ohio. Finally, I will make recommendations for further study, and with a conclusion.

## Chapter 5: Discussion, Conclusions, and Recommendations

### **Introduction**

This study was conducted to determine the if PrEP stigma, PrEP knowledge, and medical mistrusts (the independent variables) are related with adoption of PrEP for the prevention of HIV infection by African American Gay and Bisexual men in Ohio. The knowledge of the relationship between the independents variables and the decision to adopt PrEP adoption could help public health practitioners in Ohio to formulate effective messaging and create an effective social change within the community.

Analysis showed that only 18.7% of the participants (N =123) currently used PrEP, as a preventive method for HIV even though the finding shows 66.7% were willing to use PrEP as HIV prevention method. This difference was possibly driven by the three predictors analyzed as the interpretation below may provide some insight.

### **Interpretation of the Findings**

#### **Stigma and PrEP Adoption**

The coefficient for Stigma was 0.481 showing a negative correlation between stigma and the adoption of PrEP. The standard error (S.E.) was 0.211 and the Wald statistics was 5.177 with I degree of freedom. P-values of 0.023 which was significantly less than 0.05 is statistically significant with an odds ratio of 0.618 at 95% CI ranging from 0.409 to .936. This means for every one unit increase in Stigma measure there is a corresponding 0.618 (61.8%) decrease in the odds of willingness to use PrEP for the prevention of HIV. Age, income, and level of education attained have p-values above 0.05 and are therefore not statistically significant as contributors to stigma as a barrier in

PrEP adoption. My finding validated the work of researchers Eaton et al. (2017) who also found a strong but inverse relationship between stigma and PrEP adoption among a similar population in Atlanta, GA. Manley et al (2021) found that PrEP stigma was also inversely associated with PrEP adoption with education as a strong confounder. My analysis does not support that finding. Education was not a significant contributor to the overall effects of stigma on PrEP adoption. However, most researchers agreed that stigma operates at least two-levels on African American gay and bisexual men. One is the stigmatization of their skin color, and the other is the stigmatization of their sexual orientation. These two levels of stigmatization lead to the negative behavior towards HIV prevention reflecting the theoretical foundation of the research; the IMB model, which explains how stigma operates at individual the level to affect perceptions and attitudes toward an action such as PrEP adoption. Stigma also leads to fear and negative motivation towards the adoption of PrEP due to the fear of association with HIV, resulting in poor personal and social motivation (Kanny, D., Jeffries IV, 2019)

### **Knowledge and PrEP Adoption**

The coefficient for knowledge is .998, a positive correlation, with a standard error (S.E.) of .328 and Wald statistics value of 9.238 and 1 degree of freedom. The p-value is .002 which is less than .05 demonstrating a statistically significant association between PrEP knowledge and the adoption of PrEP for HIV prevention among the participants. The odds ratio of 2.712 with a 95% CI ranging from 1.425 to 5.160. This shows that one unit increase in PrEP knowledge increases the odds of adoption of PrEP by 2.712 or 271%. Statistically, age, income, and the level of education are not significant

contributors to the relationship between knowledge of PrEP and the decision to adopt PrEP for HIV prevention. My finding also indicated that the level of participants' education has no relation with their knowledge of PrEP. S Kahle (2018) found the relationship between knowledge and PrEP adoption to be significant among African American gay men with  $P=0.005$ ,  $OR=0.56$  at 95% CI [0.34-0.84] (Kahle M.E., 2018). However, he found that the participants with lower education have corresponding lower knowledge of PrEP. This finding may be explained by factors such as the time difference between the two research projects. A lot of awareness may have been created by PrEP makers who continuously advertise their products on news networks and social media, among others. Studies have consistently shown that individuals with higher levels of knowledge about PrEP are more likely to consider and adopt it as part of their HIV prevention strategy (Calabrese, S.K., 2020). The positive coefficient, substantial odds ratio, and statistical significance in the current study align with the broader understanding of the positive impact of knowledge on PrEP adoption. All the works I reviewed validated my finding of strong positive association between PrEP knowledge and adoption by the subject population, and in agreement with the IMB model which describe knowledge or lack of it to operates at interpersonal level affected by interaction with others such as peers, partners, and healthcare providers. PrEP knowledge operates at three different levels:

1. Access and Navigation: PrEP awareness helps individuals navigate the healthcare system. Knowing where to obtain PrEP, how to access it, and understanding the prescription process are essential skills.

2. Adherence: Awareness contributes to adherence. When African American gay men are aware of the importance of consistent PrEP use, they are more likely to adhere to the daily regimen.
3. Healthcare Engagement: PrEP awareness encourages regular healthcare visits. Discussions with healthcare providers about PrEP lead to informed decisions and adoption

### **Medical Mistrust and PrEP Adoption**

The coefficient for medical mistrust is  $-.641$  showing a negative association between the dependent and the independent variables. The Wald statistics is  $6.209$  and  $1$  degree of freedom. The p-value is  $.013$  which is less than  $.05$ , making the relationship significant. The odds ratio is  $.527$  with  $95\%$  CI ranging from  $.593$  to  $1.507$ . This can be interpreted as a  $1$  unit increase in medical distrust will lead to a corresponding decrease of PrEP adoption by  $.641$  or  $64.1\%$ . Similarly, annual income has a coefficient of  $0.503$ , S.E of  $.229$  and Wald statistics of  $4.828$  and  $1$  degree of freedom. The p-value is  $.028$  less than the standard  $0.05$  demonstrating statistically significant interaction between knowledge of PrEP and the willingness to use PrEP for HIV prevention by the studied population. However, levels of education attained, and their age are not statistically contributors to the interaction. My findings validated other research. For example, Eaton et al (2015) reported a significant association between medical mistrust and PrEP adoption among African American gay men after controlling for age, income, and education (Eaton L.A., & Griffin DD, 2015). According to the authors, medical mistrust has strong historical content deeply rooted in racism and slavery. Lack of trust affects the

behavioral skill of adopting PrEP because of inherent distrust among the subject population. Finally, the negative association between medical mistrust and PrEP adoption aligns with some previous research that has highlighted the impact of medical mistrust on healthcare utilization and preventive measures (Hostetter, M., & Klein S, 2021). African American MSM populations have been reported to face barriers and challenges in trusting healthcare systems, deeply rooted in history, which can influence their willingness to adopt preventive measures. The IMB model postulates that medical mistrust effect the behavioral skills of individual health promotion efforts by operating in one of three areas.

### **Limitations of the Study**

It's essential to consider potential limitations and nuances in the findings. This study has many limitations. First, the study selection of participants was not randomized which may affect the external validity of the results. Second, participants self-identification as African American and sexual preferences may be problematic with some concerns for trustworthiness. Third, factors such as the specific context, sample characteristics, and measurement of medical mistrust could contribute to variations in findings across studies. The findings may also underscore the broader social determinants of health, including historical and systemic factors that contribute to medical mistrust among marginalized populations. This study may also be limited to people less than 55 years since most of the participants are within that age group.

## **Recommendations**

Qualitative research can delve deeper into the factors influencing PrEP Stigma, knowledge, and medical mistrust including individual experiences, perceptions, and sources of information. Understanding the qualitative aspects can inform the development of more targeted educational interventions.

I suggest further research with a larger sample size that includes other racial and ethnic groups in Ohio for comparison for effective interpretation of results.

Randomization could also improve the external validity of such research.

Longitudinal studies can explore the dynamics of PrEP knowledge, Stigma, and medical mistrust and adoption over time. Tracking individuals' knowledge levels and adoption behaviors can provide a better understanding of the causal relationship between knowledge, stigma, and adoption.

Consideration of intersectionality in future research can explore how factors such as race, sexual orientation, and socioeconomic status intersect with PrEP knowledge and adoption (Bauer, G.R., & Churchill, S.M., 2021) This approach can highlight potential disparities and inform more tailored interventions.

## **Implications**

The implications of the finding are profound for HIV prevention efforts among African American MSM. Addressing and mitigating stigma and medical mistrust and improving PrEP education is crucial for enhancing PrEP uptake within this population. For example, interventions should be tailored by developing HIV prevention programs that specifically address and reduce not only stigma but also medical mistrust among



African American gay and bisexual men. Such interventions must include culturally competent strategies that address the challenges that are unique to the community in the content of stigma and medical mistrust.

I recommend HIV prevention programs be targeted interventions that specifically address and reduce stigma, and mistrust among African American MSM. Culturally competent strategies that acknowledge the unique challenges faced by this community in the context of stigma and mistrust are likely to be more effective (CDC-Nd).

Engaging the African American MSM community in the design and implementation of interventions is essential. Community involvement ensures that interventions are culturally sensitive, address specific concerns related to stigma, and are more likely to be accepted and embraced (CDC, 2021). Finally, promoting awareness and education about PrEP, its effectiveness, and dispelling myths related to stigma can contribute to a more informed and empowered community. Educational campaigns should incorporate cultural competency and sensitivity (Threats, M., & Brawner, B.M., 2021). Additionally, training healthcare providers to recognize and address stigma in their interactions with African American MSM is critical to creating social change among the African American gay and bisexual men in Ohio. At the community level, PrEP education should be intensified with the use of culturally appropriate languages and material among the African American gay and bisexual men.

By addressing stigma, medical mistrust, and knowledge gaps surrounding PrEP uptake, policymakers and public health practitioners can empower African American gay and bisexual men to take control of their sexual health and contribute to the reduction of

HIV transmission within their community. This social change statement serves as a call to action for individuals, organizations, and policymakers to work collaboratively towards creating an environment that supports the well-being and resilience of African American gay and bisexual men in Ohio, through collective efforts, we can achieve meaningful and sustainable change that promotes health equity and social justice for all.

### **Conclusion**

I employed a cross-sectional quantitative research design to examine the relationships between PrEP stigma, knowledge, and medical mistrust in the adoption of PrEP as a metabolic prevention method for HIV by African American gay and bisexual men in Ohio. I found that increasing knowledge of PrEP also increased the likelihood of PrEP adoption among the subject population and increasing stigma and medical mistrust have the opposite effect of decreasing the likelihood of adoption. This dissertation has helped me to recognize that stigma and medical mistrust have created significant barriers to the adoption of PrEP among African American gay and bisexual men in Ohio. These barriers not only compromise individual health outcomes but contribute to the broader public health challenge of HIV transmission within this community. It is crucial to acknowledge the historical context and systemic factors that have contributed to the development of these barriers.

However, to create effective social change, more tailored and effective strategy must be developed to address the specific needs of African American gay and bisexual men in Ohio. Such a strategy needs to include culturally effective strategies to reduce stigma associated with HIV and PrEP. Efforts must be made to increase the knowledge of

PrEP and the benefits to the population utilizing culturally accepted educational methods. Policy makers and public health leaders need to understand the historical root of medical mistrust to mitigate it. For this to be effective, I will propose the introduction specific training as part of Continue Education requirements for health providers. Such training must include many of the historical events that serve as drivers of the mistrust among African Americans. Efforts should also include reaching out to identified community leaders to make specific strategic efforts to mitigate their concerns and fears about healthcare. Today's healthcare delivery systems, and the policies introduced must be holistic, multifaceted, and simultaneously implemented to be able to effectively address the accumulated health disparity among African America gay and bisexual men.

I urge healthcare providers, community organizations, policymakers, and researchers to collaborate in addressing the multifaceted challenges faced by African American gay and bisexual men on Ohio. This includes advocating for policies that promote inclusivity, cultural competence, and equitable access to healthcare services, including PrEP.

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## Appendix A: Permission to use PrEP Stigma Scale

From: Siegler, Aaron J

Sent: Thursday, May 11, 2023 3:19 PM

To: Ade Elisha

Subject: Re: [External] Request for Permission to use PrEP Stigma Scale.

I approve your use of this scale. The scale is open access, and has no restrictions on its use.

Good luck with your research I

Aaron

Aaron Siegler, PhD

Associate Professor, Department of Epidemiology, Emory University

Co-Director, Prevention and Implementation Sciences Core, Emory CFAR

Request CFAR Services hfill

From: Ade Elisha

Date: Thursday, May 11, 2023 at 2:26 PM

To: Siegler, Aaron J <!::~i-~g\_l~.@~ffiQf.Y&~.1:1.>

Subject: [External] Request for Permission to use PrEP Stigma Scale.

Dear Dr. Siegler,

My name is Ade Elisha, a doctoral student at Walden University. I understand that

you are the copyright holder for an article titled "Validation of the HIV Pre-exposure



Prophylaxis Stigma Scale: Performance of Likert and Semantic Differential Scale

Versions. AIDS and

Behavior, 24(9), 2637-2649. 2020.

I would like to utilize your instrument for measuring Prep Stigma as part of my dissertation which will be submitted to Walden University as part of the fulfillment.

of the Ph.D. in public health program. Part or whole of the dissertation may be published in journals.

If you agree to provide me with permission, please sign both copies of this permission letter and return one copy to me by email (a scanned version is fine) or by regular mail.

I sincerely appreciate your consideration of our permissions request.

Best Regards,

Ade Elisha

## Appendix B: Permission for PrEP Knowledge/Awareness Scale

## Permission for PrEP Knowledge Scale

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ISAGE

Publishing

Gratis Reuse

A Validation of the Group-Based Medical Mistrust  
Scale in Formerly Incarcerated Black and Latino

Men

Author:

Pamela Valera, Javier F. Boyas, Camila Bernal, Victoria Briones  
Chiongbian, et al.

Publication: American Journal of Men's Health

Publisher: SAGE Publications

Date: 2018-07-01

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Appendix C: Permission for Group-Based Medical Mistrust Scale

Permission for Broup-Based Medical Mistrust Scale

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ISAGE

Publishing

Gratis Reuse

A Validation of the Group-Based Medical Mistrust

Scale in Formerly Incarcerated Black and Latino

Men

Author:

Pamela Valera, Javier F. Boyas, Camila Bernal, Victoria Briones

Chiongbian, et al.

Publication: American Journal of Men's Health

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Date: 2018-07-01

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## Appendix D: PrEP Stigma Scale

## Reference

Siegler, A.J., Wiatrek, S., Mouhanna, F., Amico, K.R., Dominquez, K., Jones, J., Patel, R.R., Mena. .L., & Mayer, H.K. (2020) Validation of the HIV Pre-exposure Prophylaxis Stigma Scale: Performance of Likert and Semantic Differential Scale Versions. *AIDS Behav* 24, 2637–2649 (2020). <https://doi.org/10.1007/s10461-020-02820-6>.

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
If I were to use PrEP, people would think I have HIV	1	2	3	4	5
My friends would think less of me if they found out I was using PrEP					
My family would think less of me if they found out I was using PrEP					
People would feel uncomfortable with me if they found out I was using PrEP					
If I used PrEP, I would worry that people would tell others that I am using PrEP					
If I were to use PrEP, people would think I have sex with a lot of different people.					
If I were to use PrEP, people would think that I like having strange types of sex					
PrEP is mostly meant for guys who can't use condoms.					
PrEP is sometimes used mostly by guys who don't have a lot of money.					
If I were to bring up the subject of PrEP with my partner, he/she would think that I am having risky sex with other people					
PrEP is only meant for guys who are 'bottoms' when they have sex.					

## Appendix E: Validated PrEP Knowledge/Awareness Scale

## Validated PrEP Knowledge Scale

## Reference

Mueses-Marín, H. F., Alvarado-Llano, B., Torres-Isasiga, J., Camargo-Plazas, P., Bolívar-Rocha, M. C., Galindo-Orrego, X., & Martínez-Cajas, J. L. (2021). Scales to Assess Knowledge, Motivation, and Self-Efficacy for HIV PrEP in Colombian MSM: PrEP-COL Study. *AIDS Research & Treatment*, 1–11.

<https://doi.org/10.1155/2021/478997>.

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
PrEP is a pill you can take to reduce your risk of becoming infected with HIV					
You should not use PrEP if you don't know your HIV Status					
If you don't take PrEP consistently, there may not be enough medicine in your bloodstream to block the virus					
PrEP can be used to prevent STIs like gonorrhea, chlamydia, syphilis, Herpes, and HPV					
If you start taking PrEP, you will have to do it for the rest of your life					
PrEP can be taken by people who already have HIV					
You must take an HIV test every 3 months while taking PrEP					

## Appendix F: Validated Group-Based Medical Mistrust Scale

## Reference

Eaton, L. A., Driffin, D. D., Kegler, C., Smith, H., Conway-Washington, C., White, D., & Cherry, C. (2015). The Role of Stigma and Medical Mistrust in the Routine Health Care Engagement of Black Men Who Have Sex with Men. *American Journal of Public Health*, 105(2), e75–e82. <https://doi.org/10.2105/AJPH.2014.302322>.

Quinn, K. G., Kelly, J. A., DiFranceisco, W. J., Tarima, S. S., Petroll, A. E., Sanders, C., Lawrence, J. S. S., & Amirkhanian, Y. A. (2018). The Health and Sociocultural Correlates of AIDS Genocidal Beliefs and Medical Mistrust Among African American MSM. *AIDS and Behavior*, 22(6), 1814–1825. <https://doi.org/10.1007/s10461-016-1657->

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Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
HIV was produced in a government laboratory					
People who take new medicine for HIV are human guinea pigs for the government					
People experience negative judgment because they take PrEP					
AIDS is a form of genocide against black people					
AIDS was created by the government to control the black population					
The medicine people take to control HIV is poison					
HIV was created and spread by the CIA					



Someone taking PrEP would be treated unfairly by their doctors					
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## Appendix G: Demographic Information

1. Which of the following describes you (Select one that applies)

Woman-----

Man-----

Non-binary-----

Agender-----

Gender fluid-----

Gender queer-----

Prefer not to say -----

2. Ethnicity

Do you identify as African American/ Black ..... Yes/NO

3. Sexual Identity

How do you identify your sexual orientation? (Select one or more options that best describe you)

Gay-----

Bisexual-----

Queer-----

Pansexual-----

Asexual-----

Other (please specify): \_\_\_\_\_

Prefer not to say -----

4. Are you 18 years or older----- YES/NO

If Yes, what is

Your Age -----

5. Education

What is the highest level of education that you have completed? (Select one option)

Less than a high school diploma

High school diploma or equivalent (e.g., GED)

Some colleges, no degree

Associate degree (e.g., AA, AS)

Bachelor's degree (e.g., BA, BS)

Graduate or Professional degree( e.g MD, JD, DDS, PhD?)

Other (please specify): \_\_\_\_\_

Prefer not to say.....

6. Income

What was your total personal income before taxes in the past 12 months? (Select one option)

Less than \$10,000

\$10,000 to \$19,999

\$20,000 to \$29,999

\$30,000 to \$39,999

\$40,000 to \$49,999

\$50,000 to \$59,999

\$60,000 to \$69,999

\$70,000+

Prefer not to say

**Figure 1**

*G\*Power Output for Sample Size Calculation*

