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Examination of the Association between Discussion of HIV Status and High-Risk Sexual Behaviors of MSM in Atlanta

Auntre' Dojuan Hamp

EXAMINATION OF THE ASSOCIATION BETWEEN THE DISCUSSION OF HIV STATUS AND HIGH-RISK SEXUAL BEHAVIORS OF MSM IN ATLANTA

by

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B.A., UNIVERSITY OF ARIZONA

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ABSTRACT

AUNTRE DOJUAN HAMP
Examination of the Association between Discussion of HIV Status and High-Risk Sexual Behaviors of MSM in Atlanta
(Under the direction of RICHARD ROTHENBERG, M.D., M.P.H..
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As the HIV/AIDS epidemic in the United States nears the end of it's third decade, stakeholders have begun to sift through the previous experiences in prevention in order to assess progress as well as plan the next steps in this fight. The purpose of this study is aimed at understanding the factors which may affect unprotected intercourse. It is hypothesized that for men who have sex with men (MSM) there is an association between having a discussion about their HIV status and high-risk sexual behaviors. A secondary analysis was conducted using data from the National HIV Behavioral Surveillance (NHBS) System. Binary logistic regression was conducted to determine the degree of association of the dependent variables; unprotected receptive anal intercourse (URAI) with a main partner, URAI with a non-main partner, unprotected insertive anal intercourse (UIAI) with a main partner and UIAI with a non-main partner, with the independent variables of discussion of HIV status, age, race, educational attainment, number of partners and HIV status. When assessing the association between the discussion of HIV status with both URAI and UAIA it was found that discussion of HIV status was a non-significant factor. Despite the non-significant findings in relations to the hypotheses, being Black was found to be a significant predictor of URAI and UAIA with main partners in the logistic regression models. Having a positive serostatus and having 5 or more sexual partners proved to be significant risk factors for URAI and UIAI with a non-main partner, while being Black was found to be a protective factor.

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- Conducted client recruitment and engagement activities for youth program for young African-American MSM
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- Provided therapeutic counseling to men dealing with issues surrounding substance abuse and HIV
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Arizona State University, Counseling Training Center, Tempe AZ *05/05 to 05/06*

Counselor in Training, Doctoral Practicum/Master's Practicum

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- Assumed full responsibility of supervising graduate-level teaching assistants
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- Created and modified the curriculum to meet the needs of the course and assisted instructors in the development of course lesson plans

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Chapter I

Introduction

As the HIV/AIDS epidemic in the United States nears the end of it's third decade, researchers, public health officials, community organizers, advocacy groups, service organizations as well as many other stakeholders have begun to sift through the previous experiences in prevention in order to assess progress as well as plan the next steps in this fight. In many ways the epidemic has been exemplified by its ever-changing complexity. What initially began as a grassroots fight against a "mysterious" disease affecting homosexual men, has evolved into national campaigns targeting various high-risk groups. Many of the changes that have occurred in the last several decades in the fight against HIV infection have revolved around the changing demographics of who is becoming infected. It is a constellation of issues and concerns that face our society as a whole, which set the background for the future of HIV prevention efforts.

The severity of the HIV/AIDS epidemic has changed dramatically since its onset. It is estimated that during the 1980s approximately 150,000 people in the United States were infected with HIV each year. It is now evident that there are approximately 56,000 individuals in the United States infected with HIV in a year's time (CDC, 2001; CDC, 2006; CDC, 2008). The late 1990's brought significant gains in the fight against this epidemic through the advent of highly active anti-retroviral therapy (HAART). The increase in successful medicine regimes served as one of the momentous turning points in combating

HIV/AIDS (CDC, 2001; CDC, 2006; Bhavan et al, 2008). HIV/AIDS changed from what effectively was a “death sentence” to what is now often looked at as a chronic disease.

Public health is now faced with new challenges in curtailing the spread of the disease, such as tailoring prevention methods to various communities facing high HIV infection burdens. Racial and ethnic minorities, women and youth are now groups that are experiencing increasing infection rates. Between 2002 and 2006, African-Americans accounted for approximately 49% of the new HIV cases, while they make up only 13% of the United States population (CDC, 2006). The demographics of who is being infected have changed, creating a great need for the prevention messages to be modified as well (Jones et al, 2008).

Given many of the risk factors for HIV, individuals in the Southern United States have been more affected by HIV/AIDS than in any other region in the country. This particular region is plagued with many of the synergistic conditions that are thought to have a profound impact on HIV rates. Poverty, racism, lack of education, as well as many institutional barriers are thought to have significant impact on the fact that the disease disproportionately affects this region. (Tillerson, 2008; Doherty et al, 2007, Pence et al, 2007). The epidemiological data highlight the fact that HIV infection is not randomly distributed through the population as a whole, causing us to take a closer look at the risk factors for HIV transmission and who is primarily affected.

The issues facing the Southern region of the United States are most evident in the state of Georgia. In 2006, Georgia ranked 8th for total number of HIV infections and it ranked 6th in AIDS cases (CDC, 2007). The numbers of ethnic minorities within the state who are affected by HIV/AIDS is substantial. African-Americans accounted for 77% of AIDS

diagnosis in the state and as well as 84% of all new HIV infections in the same time period (GDPH, 2006). This ethnic group is disproportionately affected by the disease—they were more then nine times more likely than white to be diagnosed with AIDS in 2005 (CDC, 2006; GDPH, 2006). In order to effectively tackle the HIV/AIDS crisis we must take an increasingly critical look at the efficacy of the prevention messages that are being utilized, as well as gain further understanding about factors that effect high risk sexual behaviors.

Purpose of Study

The purpose of this study is aimed at understanding the factors which may affect unprotected intercourse. Understanding the factors which influence high risk sexual behaviors will provide significant information regarding areas in which prevention methods may be needed. It is thought that many individuals filter sexual behaviors that they may or may not be willing to engage in based on discussion that they have regarding their status prior to the sexual encounter (Eaton et al, 2007). There are many inherent issues with this sort of negotiating. Often this sort of negotiation creates misconception of reduced risk. This study looks at the association between the discussion of HIV status prior to sexual intercourse as a form of serosorting and subsequent high-risk sexual behaviors. The main question is whether or not there is an association between discussing HIV status prior to engaging sex and engaging in subsequent high-risk sexual behavior.

Hypotheses

Based on the research questions aforementioned, the following hypotheses were created:

1. H_0= MSM who discuss their HIV status prior to sex are no more likely than MSM who do not discuss their status to report unprotected receptive anal intercourse (URAI).

H_A= MSM who discuss their HIV status prior to sex are more likely than MSM who do not discuss their status to report unprotected receptive anal intercourse.

2. H_0= MSM who discuss their HIV status prior to sex are no more likely than MSM who do not discuss their status to report unprotected insertive anal intercourse (UIAI).

H_A= MSM who discuss their HIV status prior to sex are more likely than MSM who do not discuss their status to report unprotected insertive anal intercourse.

Chapter II

Literature Review

In recent years HIV prevention has faced complex issues in the fight to curtail HIV infections. Issues surrounding condom use, HIV status disclosure and risk reduction tools have all contributed to the multi-layered HIV epidemic in the United States. It is imperative that these issues are understood in order to provide substantive HIV prevention messages that tackle many of the underlying issues. The complexity of these issues create a significant task for those looking to understand sexual negotiation practices. Fully understanding these issues will help provide the foundation for future inquires into the behavioral aspects that contribute to HIV transmission.

Condom Use

While safer sex remains the main HIV prevention message, contrary anti-safe sex movements have seemed to advance as well. In a study aimed at analyzing the explanations for unprotected sexual intercourse. Halkitis, Parsons & Wilton (2003) found that there were a variety of explanations that participants cited for having unprotected sex. When assessing individuals beliefs as to why there has been an increase in unprotected intercourse approximately 49% of participants reported feeling that the emergence of intentional unprotected sex resulted from a lack of effective condom campaigns. In addition, 48% reported that the rise in unprotected sex was due to advances in anti-retroviral medicine, while 56% of participants felt that it was due to fatigue from the HIV/AIDS epidemic. Also, those in the study who reported engaging in unprotected intercourse were significantly more

likely then those who did not, to report significant benefits of unprotected intercourse. Participants cited increased emotional connection, increased intimacy and the notion that it affirms love between men, as benefits of unprotected sex. Such findings shed light on areas in which HIV prevention can tailor messages to tackle issues such as emotional fatigue, beliefs surrounding advancement in medicine regimes and the perceived benefits of unprotected sex.

The message of safer sex has been pervasive for decades, yet surveillance research continues to reveal that consistent condom use is still a difficult proposition for many individuals. One of the most commonly named barriers to the use of condoms is that of pleasure. Scott-Sheldon et al, (2006) explored the importance of the message of pleasure in condom-use campaigns. Participants in this study were asked to identity the thoughts and feelings that they had surrounding condom use. It was found that a significant number of MSM participants stated that they had regarding the sensuality aspects of condom use. Only 10% percent of the sample had elicited thoughts of disease prevention. Such research provides significant insight into thoughts regarding condoms. Given such findings it may be more effective to address such issues through the eroticizing of condom-use. Many prevention messages aim at focusing on the disease prevention aspect of condom use, but it seems that these messages do not filter into the primary thoughts and feelings of condom users (Bowers, 2007).

Condom use is ultimately a decision made at the individual level, yet there may be social implications which may affect condom use as well. Social networks not only play a role in the number of individuals within which one may have sexual contact, but they also provide social norms that network members share. These norms may be both positive and

negative. Some researchers have found that these social norms may have association with risk behaviors (Albarracin et al, 2004; Walter et al, 1992; Billy & Udry,1986). Peterson et al. (2008) utilized social networks to look at the association of high risk behaviors with perceived norms. In the group of MSM sampled there was little report of high-risk behavior. Most participants reported that their peers were supportive of them using condoms. Despite members of the dyads reporting supportive peer norms about condom use, when asked about their perception of their peers' use of condoms, participants reported that they did not agree that their peers would use condoms in certain situations. There is no denying the influence of social norms on behaviors; the question, rather, is how to utilize the influence of social norms to promote condom use and other safer sex messages.

General prevention messages attempt to educate the population about the implications of unprotected sex. These messages have undoubtedly benefited many who are now informed of the importance of safer sex practices; however there still remains a group of individuals who prefer to engage in unprotected sex, colloquially identified as "barebackers". The prevalence of barebackers in the MSM community differs in research studies, but their influence is critical. Parsons & Bimbi (2007) conducted research in New York City to assess the prevalence of barebacking within their sample. Researchers reported that 12% of the men in their sample self-identified as barebackers. Through further analysis it was found that that men who were HIV-positive were significantly more likely to identify as a barebacker then those who where HIV-negative, an obvious issue for HIV prevention.

Despite the likelihood that some HIV- positive men are "barebacking," most HIV-positive men report using protection during anal intercourse (Halkitis & Parsons, 2003). Much of the research on intentional unprotected sex has focused on the issues of "super

infection" between couples, both of whom are HIV- positive. For those in serodiscordant relationships who self-identify as barebackers, negotiation regarding disclosure of HIV status is a significant issue (Eaton et al, 2007; Poudel et al, 2007).

Disclosure of HIV Status

Despite the effort to de-stigmatize HIV, there is still a significant amount of discrimination that one may face in disclosing their HIV status. This may cause significant anxiety when choosing whether or not to disclose their status to a sexual partner. Issues of rejection and alienation are among the main reasons that individuals are reluctant to disclose their serostatus (Shoen & Crosby, 2004; Gorbach et al., 2004). Disclosure of HIV status is a complex negotiation. Data suggest that many variables, including perceived partner status, type of sexual activity, and viral load may be involved in deciding whether or not to disclose status (Kiltzman et al., 2007; Guzman et. al., 2006). Though disclosure of one's serostatus may be difficult, it is a crucial component of risk negotiation. Research looking at the relationship between disclosure and high-risk sexual behavior has provided mixed results. Kalichman & Nachimson (1999) found that disclosure was related to a decrease in high-risk sexual behaviors. Contradictory research has found that the perceived status of one's partner is associated with a decrease in safer sex (Eaton et al, 2007). Despite the contradictory research, it is still understood that the serostatus disclosure is an important component of understanding sexual risk negotiation.

Serostatus disclosure is different for everyone facing it. Timing, tone, context, and situation all play a significant role in if, and when, this disclosure is made (Stirratt, 2005). While many HIV-positive individuals have become incrementally more comfortable with

disclosing their status, the process is often anxiety provoking. Gorbach et al, (2004) utilized a cohort of HIV- positive men in Seattle, WA and Los Angeles, CA to assess themes of disclosure in these men. Men who were more likely not to disclose their status cited reasons such as it being nobody's business or having a low viral load. Participants in this study often asserted that their encounters were just sex, and therefore, there was no need to disclose status. While many individuals seem to have adopted a "don't ask, don't tell" policy regarding disclosing their HIV status, others have reported a sense of responsibility. This sense of responsibility to their partner is thought to be a motivating factor for disclosure (Moskowitz & Roloff, 2008). Serostatus disclosure is ultimately a complex issue and personal motivation is merely one variable that may influence this task.

The context of serostatus disclosure may play an integral part in the ultimate decision of how and when this disclosure may take place. With the advent of the Internet, communication between MSM has become increasingly connected to social and sexual networking websites. In an assessment of the disclosure patterns among MSM who utilize Internet sites to meet potential sexual partners, it has been found that individuals are more likely to disclose their serostatus via the Internet than in person. It is thought that this may decrease some of the inhibitors to disclosing such as rejection and alienation. In a study by Carballo-Di´eguez et al, (2004) in a cohort of Latino MSM, it was found that 62.8% of HIV-negative men disclosed their serostatus and 61.6% found out their partners' status. HIV-negative men were significantly more likely to disclose their status and learn the status of their potential partners than were their HIV-positive counterparts. HIV-positive men in this study were significantly more likely to disclose their status on the phone and over the Internet than in person. Understanding the influence of the Internet on the process of

disclosing serostatus is important due to the increased influence the Internet has had on sexual networking.

In addition to understand some of the personal complexities of serostatus disclosure, it is imperative that we understand the contextual cues which may influence this process as well. One of the contextual cues which may influence how and when serostatus disclosure takes place is that of drug use. Drug use is thought to have significant effects on cognitive abilities such as decision-making (Larkins et al, 2005; Frosch et al, 1996). Drugs such as methamphetamines are likely to inhibit social cognitive functioning, which is a crucial component in negotiating condom use. In a qualitative study looking at serostatus disclosure and drug use, it was found that those who had consistent strategies of disclosure were more likely to disclose their status prior to sexual contact than those who did not. Individuals who used club drugs prior to, or during sexual contact are more likely not to disclose their status (McCready & Halkitis, 2008). The use of club drugs and the stigma surrounding serostatus disclosure may be synergistic, putting more MSM at risk for HIV transmission.

Though disclosure of serostatus can be seen as a positive behavior which could lead to more discussion and responsibility around knowing ones status, the mere discussion of serostatus is not enough to curtail HIV infection rates. When utilizing disclosure as a determinant of what sexual behaviors to engage in, there are several assumptions that are being made. The first assumption is the individual's awareness of their status is current. Due to the average three-month lag identifying HIV via testing, many individuals may conclude that their status is negative when they may, in fact, be in the window in which the standard test is not yet positive. Another major assumption is the notion that everyone is telling the truth in his disclosure. A false sense of comfort or security can be garnered when someone

deceitfully discloses his serostatus as negative. Significant research has been done on MSM who are vengeful after contracting HIV. Moskowitz & Roloff (2008) delved deep into the associations of vengeance and disclosure behaviors and found that individuals who scored high on the vengeful measure were less likely to disclose their serostatus to their partner. In addition, some within this category were inclined to falsely disclose their status. Those who were found to be vengeful were less likely to use condoms.

Risk Reduction Tools

HIV prevention has evolved as the epidemic has changed. Many individuals within high-risk communities use risk reduction tools in order to reduce their risk of infection (Suarez & Miller, 2001). HIV prevention strategies must take a look closer look at the ways in which individuals choose to reduce their risk. Serosorting and strategic positioning are both risk reduction tools utilized by the MSM community. Parsons et al (2005) ascertains that the use of risk reduction tools may be a contributing factor to the rise in HIV infection rates. Individuals who base their sexual behaviors on perception of risk may use a multitude of risk reduction tools, which they think are likely to reduce their risk of contracting HIV. Utilizing risk perceptions as a means of negotiating sexual behavior may have negative effects based on the differences between perceived risk and actual risk.

Strategic positioning is a risk reduction tool in which individuals chose whether to be the insertive or receptive partner based on the status of each partner. In the case of sero-discordant partners, those who are HIV-positive would take on the receptive role in anal intercourse. Strategic positioning utilizes the knowledge that individuals who are the insertive partners are at less risk for HIV transmission than receptive partners (Vittinghoff et

al, 1999). Insertive anal intercourse is less risky than receptive, but it is not risk-free. Individuals who believe that being the insertive partner is less risky, are more likely to engage in unprotected insertive intercourse than those who don't (Van de Ven et al, 2002; Gold & Skinner, 2001). Strategic positioning is often utilized by discordant couples. Van de Ven et al (2002) conducted a study looking at the prevalence of strategic positioning in San Francisco and New York City and found that of those who were in sero-discordant relationships, approximately 50% of the couples used strategic positioning in which the insertive partner was HIV-negative and the receptive partner was HIV-positive. While the rationales for strategic positioning may be supported by epidemiological evidence, there are still other factors that may influence HIV transmission such has STD infection (McClelland et al, 2005).

Serosorting is a risk reduction tool which many individuals utilize in lieu of practicing safer sex (Eaton et al, 2007; Jin et al, 2007). Serosorting involves engaging in sexual risk behaviors such as unprotected sexual intercourse with individuals whom they know or believe to be of the same serostatus as themselves. This sorting process is typically facilitated through discussion of one's status prior to engaging in intercourse, or is based on the assumption of concordant status. Given the fact that many individuals have an unknown status, this can be very risky. Many studies have shown that perception of HIV risk has significant effects on whether or not individuals engage in high-risk behaviors. Understanding serosorting must play a crucial role in future HIV prevention measures (Eaton et al, 2007; Halkitis & Parsons 2003; Jin et al, 2007).

Eaton et. al., (2007) conducted a large study to assess serosorting and high-risk sexual behavior. It was found that 36% of the sample reported engaging in serosorting. Men who

reported serosorting were more likely than those who didn't serosort to perceive that serosorting offered protection from HIV. In addition, among those who reported serosorting there were also higher levels of unprotected intercourse. In this study, men who reported serosorting were also more likely to report having barriers against using condoms. Despite the limitations of serosorting, it remains a means of risk reduction for many individuals. Approximately 88% of the sample reported testing yearly or less than yearly, while the sexual behaviors that were reported took place within the last 6 months. It is likely that many of the men disclosed their status to a partner without having had a recent HIV test.

The limitations and ramifications of serosorting are significant. One of the limitations to sero-sorting is related to acute HIV infection. Acute HIV infection occurs in the 3-4 weeks after inoculation, during which HIV is typically not detectable through the HIV antibody test. Given that the estimate of HIV incidence in the MSM population is approximately 1%, there may be a substantial number of individuals who are in the acute phase of their infection. During this phase individuals are highly infectious and are often unaware of their infection (Rapatski et al, 2005). The success of serosorting is dependent on the accuracy of the information that is being presented. Given the gap in HIV detection for many, the information used by individuals to serosort may in fact be inaccurate causing concern for the risk of HIV transmission. Despite knowledge of this information, individuals continue the practice of serosorting, and many use this as a prevention method. In order to put forth a united front against HIV transmission, understanding risk reduction tools such as serosorting is imperative.

Chapter III

Methods and Procedures

Primary Data Collection

Participants

Participants in this study were recruited in the Atlanta-Sandy Springs-Marietta (Georgia) Metropolitan Statistical Area (MSA) as a part of the National HIV Behavioral Surveillance (NHBS) system which is supported by the federal Center for Disease Control and Prevention (CDC). The NHBS conducts data collection in three rotating cycles, in which each cycle focuses on groups that are deemed high-risk for HIV transmission. These three cycles include: men who have sex with men (MSM), high-risk heterosexuals, and intravenous drug users (IDU). Eligibility requirements include being a resident of the Atlanta MSA, over the age of 18 and not a former participant in the study. During the MSM cycle, of the 1145 men who met the eligibility criteria, 1006 men ultimately participated in the study. Of the 1006 men who participated, 974 were incorporated into the final data set.

Procedure

Local NHBS staff at Emory University collected data from October 2003 to October 2004. Recruitment took place at various venues in the Atlanta area. Researchers utilized time/space random sampling methods to recruit the sample. A comprehensive list of venues which catered to MSM was compiled by staff for sampling purposes. Venues were then randomly selected from this list. Day/time frames were randomly selected as well. During recruitment, men were systematically approached and screened for possible participation. For

those who chose to participate, interviews were conducted on-site in a private area. Interviews were administered using hand held computer devices and lasted approximately 20-30 minutes. All procedures were conducted by trained NHBS staff, and were approved ny the appropriate Institutional Review Board (IRB).

Measure

The interview instrument for this study was a standardized questionnaire created as a part of the NHBS system. The questionnaire requested comprehensive information regarding the participant's age, location, education level, race, ethnicity, HIV status and sexual behavior within the last 12 months, drug use, and other medical conditions.

Secondary Data Analysis

The data for this case-control study, gathered from the MSM cycle of the NHBS system, were provided by the Georgia Department of Human Resources, Division of Public Health. In order to gain access to these data, a confidentiality agreement was signed with the HIV/AIDS Epidemiology Section of the Georgia Division of Public Health. Due to the confidential nature of HIV information, all data were de-identified through the removal of identifiers such as date of birth and zip code. This study was approved by the Georgia State University IRB.

Eligibility

As stated, 974 participants were incorporated into the final data set. Of those 974 participants, 888 were utilized for this study. Individuals who reported not engaging in sexual

intercourse over the last 12 months were omitted due to the fact that there was no data present regarding their sexual behavior.

Study Variables

The case-control study utilized four dependent variables: unprotected receptive anal intercourse (URAI) with a main partner, URAI with a non-main partner, unprotected insertive anal intercourse (UIAI) with a main partner, UIAI with a non-main partner. Cases were characterized as participants who engaged in URAI or UIAI, while controls were participants who did not engaged in UIAI or URAI with their most recent partner. For each of these variables, the data collected was regarding their most recent sexual partner. The primary independent variable was whether or not participants discussed their HIV status with their partner prior to engaging in intercourse. Other independent variables included the demographic factors of age, race/ethnicity, educational attainment, HIV status and number of partners in the past 12 months.

Data Management

SPSS Version 15.0 was utilized for data management and statistical analysis purposes. Race/ethnicity was recoded as White, Black, and Hispanic/Other. Number of partners was recoded from a continuous variable to a dichotomous outcome variable of “1-4” and “5 or more” partners. Educational attainment was recoded as “beyond High School” and “High School or less”. HIV status was recoded as “Negative/Unknown” and “Positive” (i.e., individuals with unknown or indeterminate HIV status were included in the Negative/Unknown category). Age was recoded from a continuous variable to the categorical variables of “18 to 34” and “35 and older”.

Statistical Analysis

Descriptive analysis was conducted on the demographic variables such as; age, race, educational attainment, number of partners and HIV status. The mean and standard deviations (SD) were computed for the continuous variable of age while frequencies and percentages were computed for all other categorical variables. Additional descriptive analyses were conducted to compare cases and controls on various variables. Odds ratios were computed to assess the association between discussion of HIV status with the four dependant variables of URAI with a main partner, URAI with a non-main partner, UIAI with a main partner and UIAI with a non-main partner. P-values were calculated to asses the significance of the association of these variables. In order to assess the possible effects of confounding and effect modification, further analysis was conducted using the Mantel-Haenszel procedure. Effect modification was noted as present when there was a difference in the associations of each of the strata. Confounding was found to be present when the association provided by the Mantel-Haenszel differed from the crude association prior to stratification. The association between discussion of HIV status and the four dependent variables was examined by stratifying by the each of the demographic variables.

Logistic Regression

Binary logistic regression was conducted to determine the degree of association of the dependent variables, (i.e., URAI with a main partner, URAI with a non-main partner, UIAI with a main partner and UIAI with a non-main partner) with the independent variables of age, race, educational attainment, number of partners and HIV status. Odds ratios (OR) and 95% confidence intervals (CI) were computed for each dependent variable.

Chapter IV

Results

Cross-tabulations was utilized to examine the descriptive variables, as well as to assess the association between discussion of HIV status and URAI and UIAI. This analysis provided significant information about the sample. As seen in Table 1a, approximately 53% of the overall sample was 35 years of age or older (M = 35.43, SD = 9.98). Participants represented various racial/ethnic groups. Whites represented 56% of the sample while Black and Hispanic/Other represented 31% and 14% respectively. Participants were considerably educated with 80.5% of the sample reporting having some education beyond a High School degree. Almost a fifth (17.0%) of the sample reported having a positive serostatus. Slightly less than half (43.2%) of the sample reported having more than 5 sexual partners within the last 12 months, though a majority of respondents reported having 1 to 4 partners during that time period.

Participants were allowed to respond in both the main partner and non-main partners categories. Table 1b displays that slightly over two-thirds (69%) of the sample reported having at least one main partner. Of those who had a main partner, almost three-forth (73.2%) reported having a discussion with their most recent partner about their HIV status prior to engaging in sex. Seventy-four percent of the sample reported having at least one non-main partner over the last 12 months. Of those who had a non-main partner, 60% reported that they did not have a discussion with their last partners about each of their HIV status.

A relatively small portion (26%) of the sample reported engaging in receptive anal intercourse (RAI) with a main partner. Of those who engaged in RAI with a main partner,

slightly over half (57%) reported having unprotected intercourse. A slightly smaller portion (20%) of the overall sample reported having RAI with a non-main partner. An opposite trend for condom-use was found among those who had non-main partners. Seventy-five percent of that group reported having protected intercourse with their last non-main partner. Participants reported engaging in insertive anal intercourse (IAI) with a main or non-main partner, more than RAI with IAI with rates of 35% and 29% respectively. When looking at those who reported IAI with a main partner, almost half (49%) reported having engaged in unprotected intercourse. For those with a non-main partner, a different trend was found: a substantial portion of the sample (74%) reported using protection during sex.

In order to assess the relationship between discussing HIV status prior to intercourse and subsequent high-risk sexual behavior, odds ratios (OR) were computed. As seen in Table 2a, a significant association was found between engaging in unprotected receptive anal intercourse (URAI) with a main partner and discussion of HIV status prior to sex, OR=1.953 (CI=1.047 to 3.643, p=.025). A higher percentage of those who reported that they had a discussion regarding their HIV status also engaged in URAI with their main partner. Similar results were found with non-main partners, OR=2.420 (CI=1.189 to 4.926), p=.011 (Table 2b). A higher percentage of those who reported that they had a discussion regarding their HIV status also engaged in URAI with their non-main partner. Table 2c shows that significant results were not found when looking at the association between the discussion of HIV status and unprotected insertive anal intercourse (UIAI) among main partners, OR=1.205 (CI=.728 to 1.995), p=.275. The percentage of individuals who engaged in UIAI with a main partner did not differ by whether or not they had a discussion about their status. Similar results are shown in Table 2d for non-main partners, OR=1.005 (CI=.573 to 1.763),

p=.549. The percentage of participants who engaged in UIAI with a non-main partner did not differ by whether or not they discussed their HIV status prior to engaging in intercourse.

In order to further understand the association between the discussion of HIV status and unprotected anal intercourse, various demographic variables were stratified in order to assess confounding and effect modification. The demographic variables which were stratified were age, education, HIV status, race/ethnicity, and number of partners. The Mantel-Haenszel procedure was utilized to assess confounding and effect modification within these stratified groups.

When looking at the association between the URAI with a main partner, the age variable was stratified into two categories; those who were 18 to 34 years old and those where were 35 years or over. Approximately 57% of the sample was between the ages of 18 and 34, while 43% were over 35 years of age. Table 3a shows that the percentage of participants 18 to 34 years old who engaged in URAI with a main partner differed by whether or not they had a discussion about their HIV status, OR=2.444 (CI=1.088 to 5.409), p=.023. Those who discussed their HIV status with their partner also tended to engage in URAI. This association was not found within the 35 and older age group, OR=1.185 (CI=.415 to 3.355), p=.475. The overall association was found to be significant, OR=1.953 (CI=1.047 to 3.643), p=.025. The Mantel-Haenszel test was marginally significant, OR^{MH}=1.874 (CI 0.998 to 3.521), p=.051. Although confounding was found to be marginally present, there was significant effect modification.

The education variable was stratified into two categories; beyond High School education and High School or less. Slightly more than three-fourths (77%) of the sample had an education beyond High School. Table 3b shows that the percentage of participants with an

education beyond High School who had URAI with a main partner differed by whether or not they had a discussion about their HIV status, OR=2.179 (CI=1.080 to 4.397), p=.022. Those who discussed their HIV status with their partner also tended to engage in URAI. This association was not found within the High School or less group, OR= 1.316 (CI=.332 to 5.207), p=.481. The overall association was found to be significant, OR=1.953 (CI=1.047 to 3.643, p=.025). The Mantel-Haenszel results showed, OR^{MH}=1.962 (CI=1.052 to 3.660), p=.034. Marginal confounding was found to be present, but there was significant effect modification.

Participants whose HIV status was negative or unknown represented 78% of the sample of those who had RAI with a main partner. Table 3c shows that the percentage of those with a negative or unknown status and who had URAI with a main partner differed by whether or not they discussed their HIV status with their partner, OR=2.379 (1.181 to 4.793), p=.011. Those who discussed their HIV status with their partner also tended to engage in URAI. Significant results were not found for those with a positive serostatus, OR=.765 (CI=.168 to 3.478), p=.519. The overall association was found to be significant, OR=1.953 (CI=1.047 to 3.643, p=.025). The Mantel-Haenszel results showed, OR^{MH}=1.929 (CI=1.034 to 3.599), p=.039. Confounding was found to be present as well as there was significant effect modification.

The number of partners was dichotomized into those who had 1 to 4 partners and those who had 5 or more partners. Participants who had 1 to 4 partners constituted 64% of those who had had RAI with a main partner. It is seen in Table 3d that the percentage of participants who had 1 to 4 partners and had URAI with a main partner differed by whether or not they discussed their HIV status with their partner, OR=3.039 (CI=1.314 to 7.030),

p=.007. Those who discussed their HIV status with their partner also tended to engage in URAI. There was no association found with participants with 5 or more partners, OR=1.011 (CI=.387 to 2.642), p=.587. The overall association was found to be significant, OR=1.953 (CI=1.047 to 3.643, p=.025). The Mantel-Haenszel results showed, OR^{MH}=1.879 (CI=1.011 to 3.495), p=.046. Confounding was found to be present, as well as there was significant effect modification.

The last variable that was stratified was that of race/ethnicity. There were three different race/ethnicity categories which were stratified; White, Black and Hispanic/Other. Whites represented 54% of those who had RAI with a main partner. Blacks and Hispanic/Other represented 31% and 15% respectfully. Table 3e shows that the percentage of participants who were Hispanic/Other who had RAI with a main partner differed by whether or not they had a discussed their HIV status with their partner, OR=7.600 (CI=1.609 to 35.906), p=.010. Those who discussed their HIV status with their partner also tended to engage in URAI. Significant results were not found with White or Black participants, OR=1.228 (CI=.488 to 3.367), p=.437; and OR=1.235 (CI=.405 to 3.763), p=.469. The overall association was found to be significant, OR=1.953 (CI=1.047 to 3.643, p=.025). The Mantel-Haenszel results showed, OR^{MH}=1.758 (CI=.916 to 3.376), p=.090. In the case of race/ethnicity it is likely that there is some confounding occurring as well as significant effect modification.

Similar analysis was conducted assess data regarding RAI with non-main partners. Approximately 53% of that sample was between the age of 18 and 34, while 47% were over 35 years of age. Table 4a shows that the percentage of participants 18 to 34 who engaged in URAI with a non-main partner differed by whether or not they had a discussion about their

HIV status, OR=3.360 (CI=1.088 to 8.975), p=.012. Those who discussed their HIV status with their partner also tended to engage in URAI. This association was not found within the 35 and older age group, OR=1.670 (CI=.591 to 4.719), p=.239. The overall association was found to be significant, OR=2.420 (CI=1.189 to 4.926), p=.011. The Mantel-Haenszel results showed, OR^{MH}=2.418 (CI=1.190 to 4.912), p=.015. Although confounding was not found to be present, there was significant effect modification.

Almost four-fifths (79%) of the non-main partner sample had an education beyond High School. Table 4b shows that the percentage of participants with an education beyond High School and who had URAI with a non-main partner differed by whether or not they had a discussion about their HIV status, OR=2.500 (CI=1.110 to 5.628), p=.020. Those who discussed their HIV status with their partner also tended to engage in URAI. This association was not found within the High School or less group, OR= 2.182 (CI=.497 to 9.583), p=.251. The overall association was found to be significant, OR=2.420 (CI=1.189 to 4.926), p=.011. The Mantel-Haenszel results showed, OR^{MH}=2.423 (CI=1.190 to 4.935), p=.015. Confounding was not found to be present, but there was slight effect modification

Participants whose status was negative or unknown represented over three-fourths (77%) of the sample of those who had RAI with a non-main partner. Table 4c shows that the percentage of those with a negative or unknown status who had URAI with a main partner differed by whether or not they discussed their HIV status with their partner, OR=2.684 (CI=1.139 to 6.234), p=.019. Those who discussed their HIV status with their partner also tended to engage in URAI. Significant results were not found for those with a positive serostatus, OR=1.333 (CI=.350 to 5.087), p=.469. The overall association was found to be significant, OR=2.420 (CI=1.189 to 4.926). The Mantel-Haenszel results showed, OR^{MH}=

2.182 (CI=1.062 to 4.482), p=.034. Slight confounding was found to be present, but there was significant effect modification.

Participants who had 5 or more partners constituted 60% of those who had had RAI with a non-main partner. It is seen in Table 4d that the percentage of participants who had 5 or more partners and who had URAI with a non-main partner differed by whether or not they discussed their HIV status with their partner, OR=2.778 (CI=1.175 to 6.565), p=.016. Those who discussed their HIV status with their partner also tended to engage in URAI. This was contrary to the results found in Table 3d when looking at main partners. There was no association found with participants with 1 to 4 partners and who had URAI with a non-main partner, OR=2.087 (CI=.549 to 7.925), p=.222. The overall association was found to be significant, OR=2.420 (CI=1.189 to 4.926), p=.011. The Mantel-Haenszel results showed, OR^{MH}=2.550 (CI=1.238 to 5.255), p=.011. Confounding was not found to be present, but there was significant effect modification.

Lastly, Whites represented 59% of those who had RAI with a non-main partner. Blacks and Hispanic/Other represented 26% and 15% respectfully. Table 4e shows that the percentage of participants who were White who had RAI with a non-main partner differed by whether or not they had a discussed their HIV status with their partner, OR=4.553 (CI=1.743 to 11.891), p=.001. Those who discussed their HIV status with their partner also tended to engage in URAI. Significant results were not found with Black participants, OR=.320 (CI=.034 to 3.011), p=.292. OR=N/A for Hispanic/Other due to lack of subjects in one cell. The overall association was found to be significant, OR=2.420 (CI=1.189 to 4.926), p=.011. The Mantel-Haenszel results showed, OR_{MH}= 2.080 (CI=1.000 to 4.324), p=.050. In the case

of race/ethnicity it is likely that confounding is occurring as well as significant effect modification.

Following the initial analysis conducted using the epidemiological model, variables that were deemed important were utilized in the logistic regression models. Based on the results of the Mantel-Haenszel procedure and literature review findings, the following variables were included in each of the four logistic regression models; age, race/ethnicity, education, number of partner and HIV status and discussion of HIV status. Each of the variables were utilized as independent variables, with URAI with a main partner, URAI with a non-main partner, UIAI with a main partner and UIAI with a non-main partner serving as the dependent variables. Independent variables were entered into the logistic regression models simultaneously to assess the significance of each variable. Backwards-stepwise regression was then conducted in which variables were omitted from the logistic regression model as they became non-significant at the .05 level.

Table 5 shows the Odds Ratios for the association of URAI with the independent variables among main partners. Only one variable was found to have significance: Being Black proved to be a protective factor for URAI (OR=.22), which showed that Blacks were .78 times as likely as Whites to have URAI with a main partner, (CI=.111-.417, $p<.001$). Other variables were found to be non-significant. These results were confirmed through a logistic regression model produced though backwards stepwise method.

Odds ratios that depicts the association of URAI with a non-main partner are displayed in Table 6. Results showed that both being HIV- positive and having 5 or more partners were significant risk factors. Those who were reported positive serostaus were 2.4 times more likely than those who were negative to engage in URAI with a non-main partner,

(CI=1.036 -5.787, p =.041). Participants who reported 5 or more partners were also 2.4 times more likely then those with 1 to 4 partners to have URAI with a non-main partner, (CI=1.049 – 5.384, p=.038). Being Black proved to be the only protective factor for URAI (OR=.35), which showed that Blacks were .65 times as likely as Whites to engage in URAI with a non-main partner. Other variables were found to be non-significant. These results were confirmed through a logistic regression model produced though backwards stepwise method.

From Table 7, which shows the Odds Ratios for the association of UIAI with variables with main partners, only one variable was found to have significance. Similar to the results found in URAI with a main partner, being Black was demonstrated to be a protective factor for UIAI (OR=.31), which showed that Blacks were .69 times as likely as Whites to have UIAI with a main partner, (CI=.182-.520, p<.001). Other variables were found to be insignificant. These results were confirmed through a logistic regression model produced though backwards stepwise method.

Odds ratios (Table 8), showed that both being HIV- positive and having more 5 or more partners were significant risk factors with non-main partners having UIAI. Those who were reported positive serostatus were approximately 2.8 times more likely then those who were negative to engage in UIAI with a non-main partner, (CI=1.311- 5.777, p =.007). Participants who reported 5 or more partners were approximately 2.5 times more likely than those with 1 to 4 partners to have UIAI with a non-main partner, (CI=1.246 – 4.892, p=.010). Being Black proved to be the only protective factor for UIAI (OR=.77), which showed that Blacks were .23 times as likely as Whites to engage in UIAI with a non-main partner. Other variables were found to be insignificant. These results were confirmed through a logistic regression model produced though backwards stepwise method.

Table 1a: Descriptive characteristics of the study population (Demographic)

Characteristic	Number (%)
Age (Mean)	35.43 (SD = 9.98)
18-34 years	418 (47.1)
35+ years	470 (52.9)
Race/Ethnicity	
White	495 (55.7)
Black	272 (30.6)
Hispanic/Other	121 (13.6)
Education	
Beyond High School	716 (80.5)
High School and Less	172 (19.3)
HIV Status	
HIV- Negative/Unknown	737 (83.0)
HIV - Positive	151 (17.0)
Number of Sexual Partners	
within the past 12 months	
1-4	504 (56.8)
5+	384 (43.2)

Table 1b: Descriptive characteristics of the study population (Sexual Characteristics)

Characteristic	Number (%)
Total Sample	888
Discussion (Main Partner)	
Total Number	612 (68.9)
Yes	448 (73.2)
No	164 (26.8)
Discussion (Non-Main)	
Total Number	663 (74.6)
Yes	262 (39.5)
No	401 (60.5)
URAI (Main Partner)	
Total Number	233 (26.2)
Yes	133 (57.1)
No	100 (26.8)
URAI (Non-Main)	
Total Number	174 (19.6)
Yes	43 (24.7)
No	131 (75.3)
UIAI (Main Partner)	
Total Number	312 (35.1)
Yes	154 (49.4)
No	158 (50.6)
UIAI (Non-Main)	
Total Number	259(29.2)
Yes	67 (25.9)
No	192 (74.1)

Table 2a: Association between Discussion of HIV Status and URAI (Main Partner)

	Discussion	No Discussion
URAI	**110 (82.8%)**	**23 (17.2%)**
No URAI	**71 (71.0%)**	**29 (29.0%)**

OR = 1.953 (CI= 1.047 to 3.643), p=.025

Table 2b: Association between Discussion of HIV Status and URAI (Non-Main Partner)

	Discussion	No Discussion
URAI	**27 (62.7%)**	**16 (37.2%)**
No URAI	**53 (41.9%)**	**76 (58.9%)**

OR = 2.420 (CI= 1.189 to 4.926), p=.011

Table 2c: Association between Discussion of HIV Status and UIAI (Main Partner)

	Discussion	No Discussion
UIAI	**115 (75.2%)**	**38 (24.8%)**
No UIAI	**113 (71.5%)**	**45 (28.5%)**

OR = 1.205 (CI= .728 to 1.995), p=.275

Table 2d: Association between Discussion of HIV Status and UIAI (Non-Main Partner)

	Discussion	No Discussion
UIAI	**29 (43.3%)**	**38 (56.7%)**
No UIAI	**82 (43.2%)**	**108 (56.8%)**

OR = 1.005 (CI=.573 to 1.763), p=.549

Table 3a: Association between Discussion of HIV Status and URAI stratified by Age (Main Partner)

	Discussion	No Discussion
URAI	**110 (82.8%)**	**23 (17.2%)**
No URAI	**71 (71.0%)**	**29 (29.0%)**

OR = 1.953 (CI= 1.047 to 3.643), p=.025

18-34 years old

(56.7%)

	Discussion	No Discussion
URAI	**56 (82.4%)**	**12 (17.6%)**
No URAI	**42 (65.6%)**	**22 (34.4%)**

OR = 2.444 (CI=1.088 to 5.409), p=.023

35+ years old

(43.3%)

	Discussion	No Discussion
URAI	**54 (83.1%)**	**11 (16.9%)**
No URAI	**29 (80.5%)**	**7 (19.4%)**

OR = 1.185 (CI=.415 to 3.355), p=.475

OR_{MH} = 1.874 (CI=.998 to 3.521), p=.051

Table 3b: Association between Discussion of HIV Status and URAI stratified by Education (Main Partner)

	Discussion	No Discussion
URAI	110 (82.8%)	23 (17.2%)
No URAI	71 (71.0%)	29 (29.0%)

OR = 1.953 (CI= 1.047 to 3.643), p=.025

Beyond High School

(76.8%)

	Discussion	No Discussion
URAI	85 (82.5%)	18 (17.5%)
No URAI	52 (68.4%)	24 (31.6%)

OR = 2.179 (CI=1.080 to 4.397), p=.022

Less Than High School

(23.2%)

	Discussion	No Discussion
URAI	25 (83.3%)	5 (16.7%)
No URAI	19 (79.2%)	5 (20.8%)

OR = 1.316 (CI= .332 to 5.207), p=.481

OR^{MH} = 1.962 (CI=1.052 to 3.660), p=.034

Table 3c: Association between Discussion of HIV Status and URAI stratified by HIV Status (Main Partner)

	Discussion	No Discussion
URAI	**110 (82.8%)**	**23 (17.2%)**
No URAI	**71 (71.0%)**	**29 (29.0%)**

OR = 1.953 (CI= 1.047 to 3.643), p=.025

Negative/Unknown

(77.7%)

	Discussion	No Discussion
URAI	**84 (83.2%)**	**17 (16.8%)**
No URAI	**54 (67.5%)**	**26 (32.5%)**

OR = 2.379 (CI=1.181 to 4.793), p=.011

Positive

(22.3%)

	Discussion	No Discussion
URAI	**26 (81.2%)**	**6 (18.8%)**
No URAI	**17 (85.0%)**	**3 (15.0%)**

OR = .765 (CI=.168 to 3.478), p=.519

OR^{MH}= 1.929 (CI=1.034 to 3.599), p=.039

Table 3d: Association between Discussion of HIV Status and URAI stratified by Number of Partners (Main Partner)

	Discussion	No Discussion
URAI	**110 (82.8%)**	**23 (17.2%)**
No URAI	**71 (71.0%)**	**29 (29.0%)**

OR = 1.953 (CI= 1.047 to 3.643), p=.025

1-4 partners **(63.9%)**

	Discussion	No Discussion
URAI	**78 (87.6%)**	**11 (12.4%)**
No URAI	**42 (70.0%)**	**18 (30.0%)**

OR= 3.039 (CI= 1.317 to 7.030), p=.007

5+ partners **(36.1%)**

	Discussion	No Discussion
URAI	**32 (72.4%)**	**12 (27.3%)**
No URAI	**29 (72.5%)**	**11 (27.5%)**

OR= 1.011 (CI=.387 to 2.642), p=.587

OR^{MH}= 1.879 (CI= 1.011 to 3.495), p=.046

Table 3e: Association between Discussion of HIV Status and URAI stratified by Race/Ethnicity (Main Partner)

	Discussion	No Discussion
URAI	**110 (82.8%)**	**23 (17.2%)**
No URAI	**71 (71.0%)**	**29 (29.0%)**

OR = 1.953 (CI= 1.047 to 3.643), p=.025

White

(53.6%)

	Discussion	No Discussion
URAI	**73 (84.9%)**	**13 (15.1%)**
No URAI	**32 (82.1%)**	**7 (17.9%)**

OR = 1.228 (CI=.448 to 3.367), p=.437

Black

(30.9%)

	Discussion	No Discussion
URAI	**18 (75.0%)**	**6 (25.0%)**
No URAI	**34 (70.8%)**	**14 (29.2%)**

OR= 1.235 (CI=.405 to 3.763), p=.469

Hispanic/Other

(15.5%)

	Discussion	No Discussion
URAI	**19 (82.6%)**	**4 (17.4%)**
No URAI	**5 (38.5%)**	**8 (61.5%)**

OR= 7.600 (CI=1.609 to 35.906), p=.010

OR^{MH}= 1.758 (CI=.916 to 3.376), p=.090

Table 4a: Association between Discussion of HIV Status and URAI stratified by Age (Non-Main Partner)

	Discussion	No Discussion
URAI	**27 (62.7%)**	**16 (37.2%)**
No URAI	**53 (41.1%)**	**76 (58.9%)**

OR = 2.420 (CI= 1.189 to 4.926), p=.011

18-34 years old

(52.9%)

	Discussion	No Discussion
URAI	**16 (66.7%)**	**8 (33.3%)**
No URAI	**25 (37.3%)**	**42 (62.3%)**

OR = 3.360 (CI=1.088 to 8.975), p=.012

35+ years old

(47.1%)

	Discussion	No Discussion
URAI	**11 (57.9%)**	**8 (42.1%)**
No URAI	**28 (45.2%)**	**34 (54.8%)**

OR = 1.670 (CI=.591 to 4.719), p=.239

OR^{MH} = 2.418 (CI=1.190 to 4.912), p=.015

Table 4b: Association between Discussion of HIV Status and URAI stratified by Education (Non-Main Partner)

	Discussion	No Discussion
URAI	27 (62.7%)	16 (37.2%)
No URAI	53 (41.1%)	76 (58.9%)

OR = 2.420 (CI= 1.189 to 4.926), p=.011

Beyond High School

(78.5%)

	Discussion	No Discussion
URAI	21 (63.3%)	12 (36.4%)
No URAI	42 (41.2%)	60 (58.8%)

OR = 2.500 (CI=1.110 to 5.628), p=.020

Less Than High School

(21.5%)

	Discussion	No Discussion
URAI	6 (60.0%)	4 (40.0%)
No URAI	11 (40.7%)	16 (59.3%)

OR = 2.182 (CI= .497 to 9.583), p=.251

OR^{MH} = 2.423 (CI=1.190 to 4.935), p=.015

Table 4c: Association between Discussion of HIV Status and URAI stratified by HIV Status (Non-Main Partner)

	Discussion	No Discussion
URAI	**27 (62.7%)**	**16 (37.2%)**
No URAI	**53 (41.1%)**	**76 (58.9%)**

OR = 2.420 (CI= 1.189 to 4.926), p=.011

Negative/Unknown

(76.7%)

	Discussion	No Discussion
URAI	**17 (60.7%)**	**11 (39.8%)**
No URAI	**38 (36.5%)**	**66 (63.5%)**

OR = 2.684 (CI=1.139 to 6.324), p=.019

Positive

(23.3%)

	Discussion	No Discussion
URAI	**10 (66.7%)**	**5 (33.3%)**
No URAI	**15 (60.0%)**	**10 (40.0%)**

OR = 1.333 (CI=.350 to 5.087), p=.469

OR^{MH}= 2.182 (CI=1.062 to 4.482), p=.034

Table 4d: Association between Discussion of HIV Status and URAI stratified by Number of Partners (Non-Main Partner)

	Discussion	No Discussion
URAI	**27 (62.7%)**	**16 (37.2%)**
No URAI	**53 (41.1%)**	**76 (58.9%)**

OR = 2.420 (CI= 1.189 to 4.926), p=.011

1-4 partners

(39.5%)

	Discussion	No Discussion
URAI	**7 (63.6%)**	**4 (36.4%)**
No URAI	**26 (45.6%)**	**31 (54.4%)**

OR= 2.087 (CI=.549 to 7.925), p=.222

5+ partners

(60.5%)

	Discussion	No Discussion
URAI	**20 (62.5%)**	**12 (37.5%)**
No URAI	**27 (37.5%)**	**45 (62.5%)**

OR= 2.778 (CI=1.175 to 6.565), p=.016

OR^{MH}= 2.550 (CI= 1.238 to 5.255), p=.011

Table 4e: Association between Discussion of HIV Status and URAI stratified by Race/Ethnicity (Non-Main Partner)

	Discussion	No Discussion
URAI	27 (62.7%)	16 (17.2%)
No URAI	53 (41.1%)	76 (58.9%)

OR = 2.420 (CI= 1.189 to 4.926), p=.011

White

(59.3%)

	Discussion	No Discussion
URAI	26 (78.8%)	7 (21.2%)
No URAI	31 (44.9%)	38 (55.1%)

OR = 4.553 (CI=1.743 to 11.891), p=.001

Black

(26.2%)

	Discussion	No Discussion
URAI	1 (16.7%)	5 (83.3%)
No URAI	15 (38.5%)	24 (61.5%)

OR= .320 (CI=.034 to 3.011), p=.292

Hispanic/Other

(14.5%)

	Discussion	No Discussion
URAI	0 (0.0%)	4 (100.0%)
No URAI	7 (33.3%)	14 (66.7%)

OR= N/A

OR^{MH}= 2.080 (CI=1.000 to 4.324), p=.050

Table 5: Odds Ratios depicting the association of URAI with Independent Variables (Main Partner)

Variable	OR	95% CI	P value
Discussion			
No	Reference	Reference	Reference
Yes	1.603	.813 – 3.163	.173
Age			
18-34 years	Reference	Reference	Reference
35+ years	1.563	.852 – 2.867	.149
Race/Ethnicity			
White	Reference	Reference	Reference
Black	.215	.111 - .417	< .001
Hispanic/Other	.886	.388 – 2.026	.775
Education			
Beyond High School	Reference	Reference	Reference
High School or Less	1.274	.638 – 2.543	.492
HIV Status			
HIV- Negative/Unknown	Reference	Reference	Reference
HIV - Positive	1.227	.598 – 2.517	.577
Number of Sexual Partners			
1-4	Reference	Reference	Reference
5+	.636	.349 – 1.157	.138

Table 6: Odds Ratios depicting the association of URAI with Independent Variables (Non-Main Partner)

Variable	OR	95% CI	P value
Discussion			
No	Reference	Reference	Reference
Yes	1.898	.872 - 4.131	.106
Age			
18-34 years	Reference	Reference	Reference
35+ years	.678	.310 – 1.482	.330
Race/Ethnicity			
White	Reference	Reference	Reference
Black	.353	.130 - .959	.041
Hispanic/Other	.467	.136 – 1.606	.227
Education			
Beyond High School	Reference	Reference	Reference
High School or Less	1.272	.518 – 3.125	.599
HIV Status			
HIV- Negative/Unknown	Reference	Reference	Reference
HIV - Positive	2.449	1.036 – 5.787	.041
Number of Sexual Partners			
1-4	Reference	Reference	Reference
5+	2.377	1.049 – 5.384	.038

Table 7: Odds Ratios depicting the association of UIAI with Independent Variables (Main Partner)

Variable	OR	95% CI	P value
Discussion			
No	Reference	Reference	Reference
Yes	1.059	.620 – 1.807	.835
Age			
18-34 years	Reference	Reference	Reference
35+ years	1.346	.815 – 2.224	.246
Race/Ethnicity			
White	Reference	Reference	Reference
Black	.308	.182 -.520	< .001
Hispanic/Other	.574	.283 – 1.164	.124
Education			
Beyond High School	Reference	Reference	Reference
High School or Less	.973	.534 – 1.771	.928
HIV Status			
HIV- Negative/Unknown	Reference	Reference	Reference
HIV - Positive	1.452	.688 – 3.067	.328
Number of Sexual Partners			
1-4	Reference	Reference	Reference
5+	.879	.534 – 1.448	.613

Table 8: Odds Ratios depicting the association of UIAI with Independent Variables (Non-Main Partner)

Variable	OR	95% CI	P value
Discussion			
No	Reference	Reference	Reference
Yes	.767	.401 – 1.468	.424
Age			
18-34 years	Reference	Reference	Reference
35+ years	1.307	.695 – 2.457	.406
Race/Ethnicity			
White	Reference	Reference	Reference
Black	.771	.399 – 1.487	.023
Hispanic/Other	.170	.037 - .782	.437
Education			
Beyond High School	Reference	Reference	Reference
High School or Less	1.833	.867 – 3.877	.113
HIV Status			
HIV- Negative/Unknown	Reference	Reference	Reference
HIV - Positive	2.752	1.311 – 5.777	.007
Number of Sexual Partners			
1-4	Reference	Reference	Reference
5+	2.469	1.246 – 4.892	.010

Chapter V

Discussion & Conclusion

Discussion

Despite the bombardment of HIV prevention messages and campaigns, HIV infection rates are thought to be on the rise. The CDC recently released new findings showing that, in fact yearly HIV infection estimates have increased (CDC, 2008). This may be an artifact of increased ability to detect recent infections however it may also be a sign of larger issues in HIV prevention. Among the groups most affected by this sharp rise in infection rates, MSM were disproportionately affected. MSM made up approximately 53% of new infections in 2006. Disparity was further found in the Black MSM community. Among MSM 13-29 years olds, Blacks accounted for approximately 48% of new infection (CDC, 2008). These findings have ultimately resulted in an increased need for understanding the efficacy of the current prevention messages and programs that are available.

In order to fully assess the issue at hand, it is imperative that we understand the population of interest. Descriptive analysis of the data provides a greater understanding of the sample of MSM. Self-reported responses regarding sexual positioning were not distributed evenly over the sample. Respondents reported engaging in insertive intercourse more than receptive intercourse. Additionally more participants reported having a main-partner than non-main partners. Differences were also found when looking at unprotected sex with main partners and non-main partners. Respondents overwhelmingly reported using protection during insertive and receptive intercourse with non-main partners. These results are in concurrence with the results of other studies which showed that condom use is more common

with casual partners than with main partners (Tawk, 2004). While this may seem like an intuitive assessment, it is important to understand the dynamic of the negotiation of condom use as it may be dependent on the type of partner.

Last, the distinction between disclosure of HIV status and discussion of HIV status should be emphasized. The importance of HIV disclosure was discussed throughout the literature (Kalichman & Nachimson, 1999). Although disclosure was identified as being as important factor in reducing HIV infection, disclosure of HIV status could not be assessed in this study. Participants were asked whether or not they discussed their HIV status with their partner, but it is not to be automatically assumed that their status was disclosed in that discussion. The content of such discussions regarding of the HIV status is of importance and is an area in which future behavioral research should be conducted. The nuance of discussion versus disclosure is one that must be taken into account when synthesizing this study.

Main Partners

It was hypothesized that there was a relationship between the discussion of HIV status and unprotected sexual intercourse. We found that this relationship was a non-significant factor for both URAI and UIAI with main partners. Despite the non-significant findings in relations to the hypotheses, when assessing the relationship between URAI and UIAI with other variables, race/ethnicity was found to be a predictive factor for URAI and UAIA with main partners in the logistic regression models. Being Black in the study proved to be a protective factor for both URAI and UIAI with a main partner when compared to Whites. Such findings seem elicit cognitive dissonance due to the high HIV infection rates found in this population. While these findings indicate that their may be a need to identify

other factors leading to the high rates of HIV infections, it must also must be recognized that the sample of this study was predominately White. Given the high proportion of Whites in the study, it may be that these findings are more of an indication of high-risk behaviors within the White MSM populations. It may be that in relation to the Whites, Blacks are engaging in less risk behaviors, but in fact both groups are engaging in high levels of unprotected receptive anal intercourse. These findings may be more indicative to the need for the increased prevention efforts in the White MSM community then that in the Black MSM community.

Although the finding regarding Black MSM are only in relation to White MSM, the quandary regarding implications of race and HIV infection rates remains. Despite this exhibited protective factor, Blacks continue to make a disproportionately high percentage of HIV infection in the United States (CDC, 2008). Research in the area of HIV disparity has repeatedly shown that in comparison to other groups Blacks generally report significantly less risk behaviors (Crosby et al, 2007; Millet et al, 2007). Through this ascertainment, it is difficult to pinpoint why such disparities exist.

There are many different hypotheses concerning why Blacks are experiencing an increase in HIV incidence despite the lower rates of high-risk sexual behavior. Many posit that the sexual networks that Blacks belong to play a role in increased HIV transmission in this group. Blacks are more likely than other groups to have sexual contact with both high-risk and low-risk individuals, creating sexual networks with great chance for new infections. It is thought that these patterns in Black sexual networks are conducive to increasing the current levels of the disease within the community (Berry et al., 2007; Millet et. al, 2007). Blacks are also more likely than their counterparts to maintain concurrent relationships.

Given the patterns of both high-risk and low-risk partners within networks, the intermingling of high and low-risk individuals may increase the likelihood of transmission from one individual to another (Friedman & Aral, 2001).

Additional issues regarding access to care and anti-retroviral medicine are also thought to influence the high incidence rates in Black MSM, despite reporting lower high-risk behaviors. Black MSM, are more likely to be diagnosed at a later disease stage and go without treatment. The lack of treatment makes individuals more infectious. It is well known that the use of anti-retroviral medicines effectively treats the disease through curtailing the replication of the virus in one's body, without treatment viral loads typically remain high. Black MSM, are less likely to receive treatment and therefore are more likely to have higher viral loads and infectiousness. This disparity in treatment is thought to occur for a multitude of reasons in which access to care plays a crucial role. Overall, Blacks are less likely to be insured by private health insurance and are more likely to rely on Medicare and Medicaid (Halkitis et al, 2003; Reif et al, 2007). These social determinants are thought to have significant influence on HIV rates within this community.

Non-Main Partners

When looking at non-main partners, it was hypothesized that there was a relationship between discussion of HIV status and unprotected sexual intercourse. This relationship was found to be non-significant. Though this relationship a was non-significant factor, three variables were found to be significant . Having a positive serostatus and having 5 or more sexual partners were both shown to be significant risk factors, while being Black was found to be a significant protective factor. Individuals who were HIV-positive and who had 5 or

more partners were more likely than their reference group to engage in URAI or UIAI with a non-main partner. These results indicate that further research is needed in order to understand the complexities of high-risk behaviors. This information must be used to inform prevention programs.

Researchers have provided many differing explanation for why unprotected intercourse may occur among those who are HIV- positive. Condom fatigue, bareback identity and decrease in emotional and physical intimacy are among the many reason why individuals chose not to use protection during intercourse (Halkitis et al, 2003; Scott-Sheldon et al., 2006). These results indicate that further research is needed in order to understand the complexities of high-risk behaviors. This information must be used to inform prevention programs. Results of this study showed that being HIV-positive was a non-significant risk factor for URAI or UIAI with a main partner but was a significant factor with a non-main partner. This further deepens the questions regarding the specific needs of prevention programs aimed at reducing HIV transmission. While the number of HIV- positive individuals engaging in UAI is relatively low (Halkitis & Parsons, 2003), there are still many people who engage in these risky behaviors. Adoption of bareback culture and identity may play a large role in the heighten risk behaviors in this group. Research by Parsons & Bimbi (2007) showed that those who are HIV- positive are much more likely to identity as a barebacker. This phenomenon has been documented as being on the rise during the post-HARRT era and may have an influence in the high-risk behaviors found in this study (Parsons & Bimbi, 2007).

When looking at the number of partners as a risk factor, other research has found similar results to this study (Hays et al, 1997; Wolitski & Branson, 2008). Much of the

previous research conducted in this area did not differentiate between main partners or non-main partners. Our findings show that individuals who consider their partner to be a main partner are more likely to engage in safer sex. This is regardless of how many main partners the individual may have. Addressing casual sex with multiple partners may be an issue in need of further implementation in prevention programs. Research in this area must look at both the type of partner as well as the number of partners. In order to produce effective prevention programs in the future, it is imperative that the differentiation between main partners and non-main partners is added to the prevention arsenal.

Limitations

There were several limitations to this study. Due to the cross-sectional nature of the data, causality was not ascertained from this study and only association could be concluded through the analysis conducted. Additionally, given the fact that this study used population-based data from a large metropolitan area, it could only be generalized to such settings. Overall generalizabilty is questionable due to the sampling technique used. The specific time-space venue sampling was likely to only recruit a portion of the overall population. The randomization needed for the external generalizability would be difficult to obtain given the nature of the study. Additional issues of generalizability may be contributed to the venue-based sampling. Given this sampling method, there are limitations to the generalizability to the MSM population. In essence, this study only examined MSM who were likely to visit gay-themed venues. Although this is important group to understand, individuals who attend such venues only represent a segment of MSM population. Other segments which may have been excluded given this sampling method include: men who don’t identity as homosexual,

men in long-term relationships as well as any individuals who do not partake in the club/bar scene. Although these segments of the MSM population were likely not to be included in this study, it is imperative that research is conducted on these sub-populations as well.
While the interview was confidential there is the potential for bias due to the fact that the data are self-reported. Despite these limitations, the analysis was robust and provides significant insight into the population and issues being discussed.

Conclusion

Public health practitioners, researchers and educators face the daunting task of fighting a disease that has many layers and many determinants. During the 1990s, prevention programs were utilized as the primary front against the progression of this disease. The primary objective of most prevention programs was aimed at reducing HIV transmission through increasing the use of condoms and educating individuals about a disease that was fairly new and unknown. As the face of the disease has changed, new programs have attempted to meet these same objectives as well as take on new issues that face specific populations. New programs are needed to address specific issues that are relevant to new frameworks of understanding disease transmission in the mist of the “new” epidemic.

Increased efforts must be concentrated within the bareback community regarding the importance of risk reduction and condom use. This community may be difficult to reach, as it is very much a non-mainstream scene. This population is one of grave concern and must be researched further. Additionally, much emphasis is put on those deemed to be high-risk HIV-negative individuals regarding condom-use, but there must also be more emphasis put in the HIV-positive community regarding the importance of safer-sex. Programs tailored to the

HIV- positive community are imperative to fighting the disease. Prevention efforts must be able to shift their narrow area of focus to encompass additionally groups which play a role in the epidemic.

Recent reports and research find that Black MSM, are at the core of the new wave of HIV infection rates (CDC, 2008). Prevention practitioners must utilize this new information to adapt programs to meet the specific needs of this population. Programs must consider utilizing components that address sexual networking, concurrent partnering, and condom use to effectively combat the propagation of the disease. Investing in research that looks at a multitude of issues that affect the Black MSM community from access to care as well as many other social determinants is needed. It is well understood and mirrored in the findings of this study that the increase in infection rates in the Black MSM community is not solely due to their engagement of high-risk sexual behaviors.

Stakeholders must be willing to take a holistic approach to solving a multifaceted problem. In all, public health professionals must be prepared to usher in a new era in the fight against HIV/AIDS. Families, communities, churches, and many other social networks must be included in the discussion in order to curb the effects that this disease is having in America.

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