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## Truffle Butter: Examining Heterosexual Anal Sex and Risk for Sexually Transmitted Infections Among Black Americans

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TRUFFLE BUTTER: EXAMINING HETEROSEXUAL ANAL SEX  
AND RISK FOR SEXUALLY TRANSMITTED INFECTIONS  
AMONG BLACK AMERICANS

by

EBONY TOWNSEND RESPRESS

Under the Direction of Tomeka Davis, PhD

ABSTRACT

Through heterosexual transmission, Black women, make up the second largest group affected by STIs. STI transmission via heterosexual anal sex has been overlooked due to underreporting of anal sex. A sample of Black Americans (n = 1548) were selected from the NSFG, 2013-2015 dataset to assess anal sex practices, risk for STIs, and condom use. Individuals who engaged in anal sex practices were at greater risk for an STI diagnosis. Most individuals who engaged in anal sex did not use condoms during their last anal sex encounter. Individuals who were more religious were less likely to engage in anal sex practices. Individuals who believed they were unlikely to marry in their lifetime were more likely to participate in anal sex. As anal sex practice places individuals at a higher risk for an STI diagnosis, public health professionals should consider extending sexual health messaging surrounding anal sex to include heterosexual individuals.

INDEX WORDS: Sexually Transmitted Infections, Black Americans, Anal Sex, Health Disparities, Sexual Health

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EBONY TOWNSEND RESPRESS

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2018

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Ebony Townsend Respress  
2018

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## 1 INTRODUCTION

### 1.1 Statement of the Problem

The music genre Hip-Hop has been found to both be impacted by and reflective of the current condition of the Black community. Lyrics often depict ongoing trends and themes occurring in the lives of Black Americans, but they can also influence shifts in cultural and behavioral patterns (Dimitriadis 2009). Hip-Hop artist Nicki Minaj's "Truffle Butter", released in 2014, is one such example. The title, truffle butter, refers to an urban term used to describe the tan substance, comprised of fecal matter and vaginal excretions, which accumulates within and around the vagina when transitioning immediately from anal sex to vaginal sex (Maybank 2015; Urban Dictionary 2014). The song highlights a very dangerous anal sex trend that has gained popularity within the Black community, as transitioning from unprotected anal sex to unprotected vaginal sex may have potentially dire consequences for sexual health.

Twenty million cases of sexually transmitted infections (STIs) are reported every year in the United States and the incidence for all STIs continues to rise (CDC 2016). Men who have sex with men (MSM) have been found to be at the greatest risk for contracting sexually transmitted infections, most notably HIV. However, Black women make up the next largest group affected by HIV and other STIs. Most of these Black women have contracted these diseases through modes of heterosexual transmission, including anally, orally, and vaginally (CDC 2016). This disparity in STIs among Black women is believed to be as a consequence of their Black sexual partners' undisclosed sexual intercourse with men (Millett et al. 2005; Varghese et al. 2002). However, there may be several mechanisms driving rates of STIs within the Black community.

Most of the current research examining anal sex focuses attention on the risk for acquiring the Human Immunodeficiency Virus (HIV) and mostly among MSM (Jenness et al. 2011; Padian et al. 1997; Risser et al. 2009; Schwandt et al. 2006). Although it was once believed that most heterosexual transmission of HIV occurs as a result of vaginal intercourse, some researchers believe that HIV transmission via heterosexual anal sex has been largely overlooked due to underreporting of anal sex behaviors (Baldwin and Baldwin 2000; Gross et al. 2000; Powers et al. 2008; Misegades et al. 2000). Women who participate in anal sex have largely been overlooked as a population of interest. This gap in the anal sex research is especially alarming, because women are anatomically at a higher risk of contracting sexually transmitted infections (STIs). The combined mucosal disruption of the vagina and trauma of the muscular anal sphincter creates a ripe environment for HIV and STI infection in women (Jenness et al. 2011).

Although HIV and STI rates have decreased among other races, Black women have maintained higher rates of STIs. Specifically, this disparity in sexual health is especially alarming because Black women have higher rates of all STIs, including syphilis, gonorrhea, and chlamydia, than women of all other ethnic backgrounds (CDC 2015). While rates of HIV transmission have decreased among Black women, rates of all other STIs have remained consistently higher in Black women when compared with other races (CDC 2015; CDC 2016). Black women report 5.7 times the rates of chlamydia than their white counterparts. Further, Black women account for 55.4% of all reported cases of gonorrhea, and over half of all cases of syphilis (CDC 2015). This is disconcerting because STIs have become increasingly difficult to treat. As STI rates and the use of available treatments have increased, the infections have strengthened. There are now antibiotic resistant strains of gonorrhea, and researchers fear other

treatable STIs will follow a similar pattern (CDC 2013, 2015). Additionally, although rates of anal sex may generally be underreported, the number of Black women who report participating in anal sex has increased (Carter et al. 2010; Champion and Roye 2014). Is it possible that an uptick in anal sex practices may further increase disease risk for an already STI- vulnerable population of Black women?

## **1.2 Specific Aims**

To date, there is very little research on heterosexual anal sex and there is even less research specifically on heterosexual anal sex among Black couples. In addition, most of the current research on anal sex focuses on HIV infections, but with the reduced risk for pregnancy associated with anal sex and established poor condom negotiation rates among Black women, it is important to examine heterosexual anal sex, condom use, and its relation to increases in all sexually transmitted infections within the Black community (Baeten et al. 2001; Caldwell and Mathews 2016; Kaestle and Halpern 2007; Chandler et al. 2016; Jenkins and Kennedy 2013; McLaurin-Jones, Lashley, and Marshall 2016; Sanders Hunter and Scott Tilley 2015; Woolf-King and Maisto 2015).

With the alarming STI rates within the Black community, it is imperative that research be devoted to the gaps that exist within sexual health literature. As previously indicated, lack of data on heterosexual anal sex has driven researchers to largely ignore this sexual practice as a mechanism for driving STIs. Given the disparity in sexual health for Black women, compared to women of other racial groups, this study aimed to explore heterosexual anal sex practices among Black men and women, condom use, and their risk for sexually transmitted infections. Utilizing the National Survey of Family Growth, data from 2013-2015, this study examined the following questions:

- Question 1: Are there any significant differences in the testing for sexually transmitted infections practices between individuals who report engaging in heterosexual anal sex and those who do not report having anal sex with an opposite sex partner?
- Question 2: Are individuals who report engaging in anal sex practices more likely to have received an STI diagnoses than individuals who report having not engaged in anal sex?
- Question 3: Are there differences in the condom usage of individuals who engage in anal sex and those who do not?
- Question 4: Are there differences in religiosity between individuals who engage in anal sex and those who do not engage in anal sex?
- Question 5: Are there differences in expectations to marry among individuals who report anal sex practices and those who do not participate in anal sex?
- Question 6: Are there differences in reporting of forced vaginal sex between individuals who report engaging in anal sex and those who do not report participating in anal sex?

This study was exploratory in nature. Because of the cross-sectional nature of the data, this study did not seek to make any statements about causality as it pertains to anal sex behaviors. Additionally, this study did not seek to make inferences about those who participate in anal sex. Instead, this study sought to explore whether a relationship existed between anal sex participation and the variables of interest.

## **2 LITERATURE REVIEW**

Examining unprotected heterosexual anal sex practices is important for sexual health research, as an uptick in anal sex may point to why sexually transmitted infections (STIs) have continued to impact Black women at alarming rates. Receptive anal sex refers to the penetration

of the anus with a penis. Research has shown that fecal bacteria from the anus can negatively impact the vagina through infection or by altering the pH of the vaginal flora. Fecal bacteria in the vagina can lead to infections, such as bacterial vaginosis and trichomonas (Alcaide et al. 2016; Fredricks, Fiedler, and Marrazzo 2005; Stamey et al. 1971). These bacterial infections of the vagina can cause abrasions and increase risk for other STIs, most notably pelvic inflammatory disease (PID) and human immunodeficiency virus (HIV) (Nillson et al. 1997; Atashili et al. 2008; Moodley et al. 2002; Ness et al. 2004; Sewankambo et al. 1997:1; Martin 1999). All unprotected sex acts increase an individual's risk for contracting an STI. However, the STI risk associated with unprotected vaginal intercourse is further compounded by receptive anal sex, specifically (Patel et al. 2014). Likewise, having other STIs can dramatically increase risk for contracting an HIV infection (Cohen 1998; Fleming and Wasserheit 1999).

Risk reduction is important in preventing STIs. Research has demonstrated that using condoms can drastically decrease individual risk for contracting an STI. Using condoms during and changing between anal sex and vaginal sex, avoiding the truffle butter effect, can reduce the risk for STIs (Holmes, Levine, and Weaver 2004; Weller and Davis-Beaty 2002). Despite this, many individuals do not use condoms during sexual activity, which has contributed to the rising rates of STIs (Reece et al. 2010). In addition, although using any form of contraception reduces risk of pregnancy, hormonal contraception, can increase risk of STI acquisition by offering a false sense of security against unplanned pregnancies. Because of the decreased likelihood of pregnancy associated with hormonal contraception, condom negotiation between sexual partners can be made even more difficult (Baeten et al. 2001; Caldwell and Mathews 2016; Kaestle and Halpern 2007). Furthermore, some women engage in anal sex specifically as a way to avoid pregnancy. Given this phenomenon, much like hormonal contraception, the practice of engaging

in anal sex as way to prevent pregnancy may lead to poorer condom use among anal sex participants (Maynard E et al. 2009; McBride and Fortenberry 2010).

## **2.1 Black Sexual Politics**

Black sexual politics (Collins 2004), or the ways in which the historical ramifications of slavery have impacted sexual formations and created present-day patterns of oppression, can be used to explain the increased risk for STIs among Black women, specifically. The historical contexts of slavery dictated rules and mores regarding sexuality to the Black community once they were brought to the Americas from Africa. During slavery, it is estimated that a third of Black women were raped or sexually assaulted by White men (Collins 2004; Davis 1983). However, these figures do not account for the forced sex between enslaved Black men and women. The economy of slavery necessitated exploitation – babies born into slavery created wealth for White plantation owners, so Black women had little control over their sexual and reproductive activities (Feagin 2013). In order to justify this brutality and greed, Whites created images of Black women as hypersexualized and domineering. The stigma of this image might compel Black women to avoid perpetuating racial stereotypes which frame Black men and women's sexuality as hypermasculine, hyperheterosexual, and aggressive. These historical and cultural frameworks directly affect how Black women approach and negotiate sex by impacting Black women's self and societal worth (Collins 2004; Watkins-Hayes 2014). Consequently, Black women's sexual agency is complex and often misunderstood.

Historical shifts in ideologies surrounding Black sexuality may have impacted anal sex practices among Black couples. Since the era of enslavement and Jim Crow ended, the sexual exploitation of Black people has continued. Although Black people have attempted to reclaim their sexual and personal agency, the image of Black sexuality has maintained a hypersexualized,

hypermasculine character (Staples 2006). Examples of these hypersexual images of Black sexuality could be seen in the portrayal the ebony genre of pornography, images of the Black video vixen, and the exotic dance culture of Black strip clubs. Although dominant cultural stereotypes portray Black women as domineering, research indicates that Black women have limited sexual agency with regard to their sexual relationships (Hammond 1999). Black women may feel that they would be emasculating their Black male partners by making requests for condom use or for declining sexual practices, like anal sex. A study by Kalichman found that 42% of Black women in their sample had been forced by their sexual partners to engage in unwanted sex acts (1998). This reduction in the sexual agency of Black women, to adhere to the desires of their sexual partners, may point to the increases in sexual risk behaviors, including anal sex without condoms.

## **2.2 Gender Ratio Imbalances: Homophily, Dense Sexual Networks, and MSM**

Racist ideologies of Black sexuality can greatly affect the sexual scripts between heterosexual couples. Researchers have found that Black women have great difficulty in sexual communication, including negotiating condom use with their sexual partners, which can have grave consequences for their sexual health. This often-failed negotiation process is likely to explain the high rates of STIs within this population (Chandler et al. 2016; Jenkins and Kennedy 2013; McLaurin-Jones, Lashley, and Marshall 2016; Sanders Hunter and Scott Tilley 2015; Woolf-King and Maisto 2015). Anal sex exacerbates this negotiation process. Although ideologies are shifting, anal sex has long been considered a deviant sex behavior. In fact, it has only been a little more than a decade since the Supreme Court struck down state laws banning sodomy (Lund 2004). Anal sex can also be a painful experience. These factors may cause women to be less inclined to engage in anal sex. However, Black women may not be making

their own decisions about which sex acts in which they participate. Fahs and colleagues (2015) found that sexual partners often coerced anal sex from young women. To make matters worse, with reduced risk of unwanted pregnancy, Black women may be even less able to negotiate condom use with their partners than with vaginal sex. Consequently, sexual compromises made by Black women for the sexual satisfaction of their partners may contribute to increased rates of anal sex among Black women (Carter et al. 2010; Champion and Roye 2014).

These compromises are driven by a number of factors, which have been found to influence Black women's sexual networks and behaviors and have been established as a likely cause for racial disparities in STIs within the Black community (Adimora and Schoenbach 2005). First, sexual homophily is especially strong among Black women. In other words, Black women are likely to have sexual networks confined to sexual partners of the same racial background (Jolly et al. 2016). This maintenance of racially homogenous sex partners creates dense sexual networks that facilitate the spread of STIs throughout the Black community and contributes to the higher rates of STIs for Black women (Reynolds, Fisher, and Rogala 2015). In addition, lower rates of long term romantic relationships among Blacks, spurred by disproportionate sex ratios also facilitates higher rates of STIs among Black women (Raley 2006).

Black women have been found to marry or cohabitate later in life, are less likely to marry at all, and have higher rates of relationship instability than any other demographic of women (Adimora and Schoenbach 2005). Relationship market characteristics refer to the quantity and quality of available partners with which to form romantic partnerships (Raley 1996). Inequity in the availability of Black men and subsequently the relationship markets of Black women has been linked back to slavery and racial segregation in previous eras (Pinderhughes 2002), and



more recently, to incarceration, higher death rates, and socioeconomic strains and increased interracial marriages by Black men (Adimora and Schoenbach 2005; Crowder and Tolnay 2000; Lichter, McLaughlin, Kephart, and Landry 1992). In addition, Black men living in urban centers must contend with negative structural economic conditions, such as joblessness. This lack of economic stability may further decrease the number of available men for Black women (Wilson 2012). In addition, the ratio imbalance is further widened by gendered educational disparities among Blacks, as Black women with a college education outnumber their male counterparts exponentially (Ronald 2001). Desires for homophily in educational attainment may further reduce male romantic prospects for Black women. Black women who have a desire for long term partnerships, like marriage, may be more sexually liberal, in hopes that it would increase their partnering opportunities.

The sex ratio of Black men to Black women has led to a higher prevalence of Black men with concurrent sexual partnerships. Conversely, Black women report fewer instances of multiple and simultaneous sex partners (Adimora and Schoenbach 2005; Ferguson, Quinn, Eng, and Sandelowski 2006). Black social-sexual networks may dictate that Black women, who often have lower sex partner ratios than their male counterparts and subsequently may be reluctant to challenge their partner's sexual desires, including anal sex and unprotected sex. A study conducted by Wingwood and DiClemente (1998) found that Black women had fewer sexual partners, were less sexually assertive, and were four times more likely to believe requesting a condom be worn by their partner would imply unfaithfulness of their partner. Not surprisingly, Black women were also three times more likely to engage with partners who resisted using condoms. The compromises made by Black women certainly do not end with condom use. Black women may also be reluctant to even acknowledge their own risk for STIs

because they want to believe that their male partners meet expectations of being strictly heterosexual and monogamous (Watkins-Hayes 2014).

Changes in the social perceptions of non-heterosexual partnering may have increased disclosure of same sex attraction and sexual practices among Black MSM (Dodge et al. 2008). As negative social ideologies about same sex relationships have begun to decline, more civil rights, including marriage, have been granted to queer identifying individuals. While there is no existing evidence to suggest the availability of monogamous, heterosexual, Black male partners is affected by the increased acceptance of same sex relationships, there is a small amount of evidence that points to Black women's concerns about losing "good Black men" to White women; so fewer available men could be a real concern for Black women (Crowder & Tolny 2000). In their qualitative study, Reynolds and colleagues (2015) found that women of color would still engage in anal sex with men who they knew or suspected were also having sex with MSM. This notion is important because research has demonstrated that men who do not disclose sex with men were more likely to have unprotected sex, increasing risk of HIV for themselves and their male and female sex partners (Dodge, Jeffries, and Sandfort 2008; Millett et al. 2005). This would challenge Black women's value of heterosexuality and monogamy in their Black male partners. Black women may feel that sex between Black men further decreases their pool of eligible Black male partners. This perceived reduction in available Black men, due to same-sex attraction between men, may lend Black women to be more sexually permissive to the desires of their partners for anal sex and/or unprotected sex.

In the early 2000s, several media outlets began to discuss the "down low (DL)" phenomenon in the Black community. The concept of being DL refers to men who present as, and may even consider themselves, strictly heterosexual, but have sex with men. Portrayals of

Black sexuality are often represented as excessive, deviant, and predatory. This sexual deviance is often perceived and portrayed as a lack of commitment to monogamous relationships by Black men - either real, in terms of the dense sexual networks and gender ratio imbalance in the Black community as well as in the racist stereotype of Black men (Phillips 2005) as hypersexual “dogs” (in the parlance of Black urban vernacular). Phillips (2005) argues the image of the DL Black man perpetuates racist stereotypes of Blacks and Black sexuality. She says:

The "Black predator" is evoked when DL men are linked with the spread of HIV/AIDS. DL men are portrayed as callous at best, nefarious as worst, as they slip in and out of presumably unprotected sexual liaisons with both women and men. It is assumed that the "DL predator" is spreading HIV/AIDS because he doesn't care enough about the woman in his life to protect her or because he feels spite about having contracted the virus himself. According to popular notions, this DL man is un-Christian (because he resists traditional Christian mores regarding monogamy and sexual orientation), narcissistic (because he places his own desires and needs ahead of his female mates'), and a coward (because he refuses to "come out of the closet"). On this basis, he is vilified and disciplined, as are most Black men in contemporary Western society (p. 9-10).

Like other researchers, Phillips also argues that these depictions contribute to the perception that DL men are driving the HIV epidemic among Black women (Dodge et al. 2008; Ford et al. 2007; Millett et al. 2005; Phillips 2005; Wolitski et al. 2006). However, researchers have challenged the notion that DL men are driving the HIV epidemic. Specifically, Phillips outlines that a man hiding his sexuality was not a new phenomenon and that Black men were not the only group of men to do so, as demonstrated by Humpreys' Tearoom Trade research (1999). Instead Phillips argues that the HIV epidemic is being driven by unprotected sex, which is not gender or sexuality specific (2005). But, these perceptions, fueled by popular media, may create a fear, for Black women, that they could be unknowingly having sex with MSM.

Given this underlying concern about their partners, Black women may be increasingly yielding to their partners' requests for anal sex to assuage anal sex practices between Black men.

By making these sexual concessions, Black women may intend to increase the number of partners available to them. The aforementioned sex ratio discrepancies may cause women to put more emphasis on maintaining their romantic relationships than their sexual agency or health.

### **2.3 Religiosity**

Another potential driver of the increase in anal sex and STIs among Black Americans may be a decline in religiosity. Researchers have found that Black Americans are the most religious demographic in the country. Black Americans are far more likely to have a higher level of religious affiliation, attendance at religious services, frequency of prayer, and feelings that religion is important to their daily lives than the U.S. population, as a whole (PRC 2009). Religiosity has been shown to impact sexuality, sexual practices, and sexual permissiveness (Ahrold et al. 2011; Hardy and Raffaelli 2003; Davidson et al. 1995; Lefkowitz et al. 2004). Women who identified as religious were less likely to have engaged in premarital sex, reported fewer sexual partners, and were less likely to engage in sexual risk-taking (Davidson et al. 2008). Given the relationship between sexuality and religiosity, in the past, Black women's sexuality and sexual scripts may have been deeply rooted in religious tenets. Arhold and colleagues found that religiosity was positively correlated with negative attitudes about anal sex or sodomy, as it is referred to in most religious contexts (2011). As the church has been an important institution in the Black community, Black Americans may have historically been less likely to engage in anal sex practices. Compared to previous historical eras, and despite strong levels of religiosity among some American communities, research indicates that fewer and fewer Americans are identifying as religious (PRC 2015). Consequently, fewer Black Americans are reporting participation in religious activities, like attending church regularly. Instead, more Americans, including Blacks, are identifying as spiritual, in that they believe in a "higher spiritual power",

although they may not participate in religious services or pray regularly (PRC 2015). This reduction in religious practices may point to a shift in the sexual permissiveness of Black couples, thereby increasing anal sex practices among this population.

### **3 METHODS**

#### **3.1 Study Design and Participants**

I utilized cross-sectional, publicly available, secondary data from the National Survey of Family Growth (NSFG). The NSFG is a multi-stage, probability-based, nationally representative sample of the American household population, aged 15-44. Data were collected from September 2013 until September 2015. The data collection was approved by the National Center for Health Statistics (NCHS) Research Ethics Review Board (protocol #2011-11). Data were obtained from in-person interviews, utilizing computer-assisted personal interviewing (CAPI).

The NSFG data were selected because it is one of the few data sources that examine heterosexual anal sex practices. The NSFG data provides the most recent, nationally representative, data detailing a variety of sex practices, including anal sex, which is available for public use. Since this dataset oversampled Black respondents, it provided a larger sample size for the study, thereby increasing the power of the analyses and reliability of the results. This helped to ensure that any findings from this study could be more generalizable to Black couples who engage in heterosexual anal sex.

During the data collection period, a total of 10,205 individuals, aged 15-44, provided informed consent to participate in the study. Of these individuals, 5,699 were women and 4,506 were men. Parental consent was obtained for all minors, aged 15-17. The sampling frame utilized Black participants who had previously reported having sex with an opposite sex partner and disclosed whether they had engaged in anal sex. These data oversampled Black respondents.

I excluded 8,020 participants who did not self-identify as Black or African-American (n = 2,185) from my final sample. I also excluded 281 respondents who did not report having sexual intercourse with a member of the opposite sex in their lifetime (n = 1,904). In addition, I excluded 23 participants who did not respond to the ‘Have you ever had anal sex with a [person of the opposite sex]?’ question (n = 1,881). An additional 333 individuals were excluded for incomplete data on variables of interest, including religiosity, expectations to marry, forced sexual acts, and STI history. Listwise deletion was used to account for missing data, because of its simplicity and because after examination, the data was determined to be missing at random (MAR). Additionally, the large sample size maintained sufficient power despite the loss of data. The resulting final sample size of Black, sexually active men and women who had complete anal sex data was 1,548 individuals.

The Institutional Review Board (IRB) of Georgia State University approved this study. Given the publicly available and de-identified nature of the dataset, this study qualified for “exempt” status.

## **3.2 Measures**

### ***3.2.1 Sexually Transmitted Infections***

The respondents were asked whether they had been tested for a sexually transmitted infection in the last year. Those respondents who answered ‘Yes’ were asked whether they received treatment following a positive STI test. Respondents were also asked whether they had received a positive gonorrhea diagnosis or positive chlamydia test, within the last year. Additionally, respondents were asked if they had ever received a syphilis, genital warts, or herpes diagnosis. From this information, an ordinal level score was created from the combined number of STI diagnoses a respondent had received (None, One, or  $\geq 2$ ). This ordinal variable

was created because the number of STI diagnoses was not normally distributed within the sample. Additionally, the literature indicates that having one STI diagnosis increases risk for subsequent STI diagnoses.

### ***3.2.2 Sexual Partnerships***

The respondents self-reported whether they had any sexual encounters in their lifetime (anal or vaginal). Respondents were asked whether they had had anal sex with a person of the opposite sex (yes or no response).’ If the respondents replied ‘yes’ to having anal sex with a person of the opposite sex, they were then asked subsequent questions about number of anal sex partners they had in the last 12 months. For the purposes of this study, anal sex behaviors were operationalized as the dichotomous yes/no response to having had anal sex with at least one sexual partner. Additionally, respondents were asked about the number of vaginal sex partners they had in the last 12 months.

### ***3.2.3 Condom Use***

The respondents self-reported whether they used a condom during their last sexual encounters, anal, oral, or vaginal. The respondents who reported ‘Yes’ to anal sex, with a person of the opposite sex, were then asked whether they had used a condom during their last anal sex encounter.

### ***3.2.4 Religiosity***

The respondents were asked about the importance of religion in their daily life and their current attendance of religious services. A ‘change in religiosity’ variable was created using the religious attendance during childhood and current religious attendance. If an individual was religious as a child, but was not religious at the time of the interview, they had a “decrease in

religiosity”. If the individual did not have a change from childhood to current status, they were categorized as “no change in religiosity.” If, however, they were not religious during their childhood, but indicated they were currently religious, they were categorized as “increased religiosity.”

### ***3.2.5 Expectations to Marry***

The respondents who were unmarried were asked, “How confident [they] were [that] they would be married or remarried within their lifetime.

### ***3.2.6 Non-Voluntary Intercourse***

The respondents were asked whether they had ever been forced to engage in vaginal sexual intercourse.

### ***3.2.7 Demographics***

The NSFG details demographic characteristics, including respondent age, marital status, education, health insurance status, and income. Age is a continuous measure of the number of years, since birth, at the time of the interview. Marital status was defined as current partnership status at the time of the interview and is operationalized as either single, cohabitating, married, and separated, divorced, or widowed. Education is a continuous measure of number of years of education completed, at the time of interview. The health insurance lapse variable was created from information about whether the respondent “had experienced a lapse in health insurance coverage in the last year.” Income is a categorical variable reported as the amount of revenue the respondent’s household incurred in the previous year.



### 3.3 Analysis

Univariate analyses were conducted to summarize the demographic characteristics, anal sex practices, condom use, religiosity, expectations to marry, and sexually transmitted infections testing and treatment among the participants. To determine whether there were significant differences in anal sex practices among the respondents, frequencies and percentages were calculated based on whether they have had anal sex and whether they have ever received an STI test and/or treatment. Chi-square or Fisher's exact tests were performed for categorical variables to obtain p-values.

Independent effects of demographic factors, anal sex practices, condom use, and sexually transmitted infection testing and treatment were estimated by constructing logistic regression models. Ordinal logistic regression models were used to assess predictors of the number of STI diagnoses. Binary logistic regressions were used to predict anal sex behavior among Black Americans. Odds ratios (ORs) and their corresponding 95% confidence intervals (CIs) were computed. Logistic regression was utilized because the data violated the assumption of a linear model because the outcome variable is categorical. The logistic regression equation is:  $P(Y) = \frac{1}{1 + e^{-(b_0 + b_1X_{1i} + b_2X_{2i} + \dots + b_nX_{ni})}}$ . All variables were assessed for multicollinearity, violation of complete separation, and overdispersion. No cell counts had less than 5 data points. All analyses were two tailed at an alpha level of  $p < 0.05$ . Data were analyzed using SAS Software, Version 9.4 (SAS Institute, Cary NC).

## 4 RESULTS

### 4.1 Descriptive Analysis

#### 4.1.1 Demographics

Age of the respondents was normally distributed. Participants ranged in age from 18 years of age to 45 years of age. The sample had a median age of 30.2 years ( $\pm 7.5$ ). At 59.8%, women made up most of the sample ( $n = 925$ ). Respondents averaged 13 years ( $\pm 2.3$ ) of education. Most of the participants, 54.1%, had never been married ( $n=837$ ). A total of 21.1% were in a heterosexual marriage ( $n=326$ ). Conversely, 16.2% were cohabitating ( $n=251$ ) and 8.7% reported that they were separated, divorced, or widowed ( $n = 134$ ). A large percentage of the sample, 45.4%, was low income, with a household income of less than \$25,000, yearly ( $n = 703$ ). Additionally, 32% of respondents reported having a lapse in their health insurance within the past year ( $n = 495$ ) (Table 1).

#### 4.1.2 Sexually Transmitted Infections

Most of the individuals in the sample, 86.2%, had not received an STI Diagnosis of gonorrhea or chlamydia, within the last year, nor had they ever received a diagnosis of syphilis, genital warts, or herpes ( $n=1334$ ). Of the individuals who had received a STI diagnosis ( $n=214$ ), less than 20% had been diagnosed with more than one STI ( $n = 42$ ) (Table 1).

#### 4.1.3 Sexual Partnerships

The number of vaginal partners, within the last year, ranged from 0 partners to 222 partners, with a mean of 2.4 partners ( $\pm 8.5$  SD). The average number of anal partners was 0.3 ( $\pm 0.8$ ) and ranged from 0 partners to 12 partners. More than half of the respondents, 59.8%, reported that they had not used a condom during their last vaginal sex encounter ( $n=926$ ). Most

of the sample, 65.4%, reported they had never engaged in anal sex, with an opposite sex partner (n =1013). Of the 535 individuals who reported engaging in anal sex, only 34.8% reported they had used a condom during their last anal sex encounter (n = 186). A total of 241 individuals reported that they had been forced by a partner to engage in forced vaginal sex (15.6%) (Table 1).

#### **4.1.4 Religiosity**

Most of the sample, 85.1%, reported that they were currently practicing some form of religion. (Table 1). This percentage is aligned with historical data on religiosity in the Black community, as the rate of religiosity is higher than religiosity in the general population. However, the rate is slightly lower than historical rates of religiosity among Black Americans (PRC 2015; 2009).

## **4.2 Bivariate Analysis**

### **4.2.1 Sexually Transmitted Infection Diagnoses**

There were statistically significant differences in sex ( $p = 0.004$ ), marital status ( $p = 0.005$ ), and anal sex practices ( $p = 0.000$ ), among those individuals who had received an STI diagnosis and those who had not received an STI diagnosis. Women were more likely to have been diagnosed with an STI (73.4%). Individuals who were single were more likely to have been diagnosed with an STI (65.4%). Importantly, consistent with my hypothesis, individuals who reported having participated in anal sex practices made up over half the STI diagnoses (53.3%) (Table 2).

#### **4.2.2 Anal Sex Practices**

Most of the participants who reported engaging in heterosexual anal sex were women (57.4%). Half of the individuals who reported participating in anal sex had never been married (50.1%). However, these differences were not statistically significant ( $p = 0.092, 0.059$ , respectively). There were significant differences in diagnoses of syphilis ( $p=.001$ ), genital warts ( $p=0.000$ ), and herpes ( $p=0.000$ ) between those individuals who reported engaging in anal sex and those who had not. However, there was not a statistically significant difference in gonorrhea and chlamydia diagnoses in the last year between the two groups ( $p=0.203, .374$ , respectively) (Table 3). Individuals who engaged in anal sex made up half of the individuals (50.2%) who reported having been forced to engage in vaginal sex, and this difference was statistically significant ( $p = 0.000$ ). Additionally, there was a statistically significant difference in religiosity ( $p = 0.000$ ) and expectations to marry ( $p =0.017$ ) of those individuals who had engaged in anal sex (Table 4).

#### **4.3 Multivariate Analysis**

Table 7 depicts the results of the ordered logistic regression of sexually transmitted infections diagnoses on anal sex practices. Consistent with predictions, Model 1 indicates a significant association between anal sex and predicting number of STI diagnoses ( $p = 0.000$ ). This model indicates that individuals who engage in anal sex may have a 2.325 greater chance (95%CI: 1.688, 3.204) for having one STI versus none and are 3.189 (95%CI: 1.704, 5.969) times more likely to have two or more STIs versus none (Table 7). In an effort to further improve the fit of the model and control for demographic and behavioral characteristics, I tested additional variables that had theoretical significance and for interaction effects that were consistent with my hypotheses. The interaction between using a condom during last vaginal

encounter and being married did not have a significant impact number of STI diagnoses for either one diagnosis or two or more diagnoses (  $B(SE) = -1.781 (1.080)$ ;  $OR = 0.169$ ;  $95\% CI = (0.065, 1.314)$  and  $B(SE) = -0.308 (1.293)$ ;  $OR = 0.735$ ;  $95\% CI = (0.058, 9.265)$  , respectively. The final model retained some non-significant variables that had theoretical importance (Table 8).

Model 2, depicted in Table 8, regressed number of STI diagnoses on anal sex and control variables. Being a woman significantly impacted the number of STI diagnoses. For women, holding all other control variables constant, the odds of having one STI diagnosis was 2.044 ( $95\% CI: 1.405, 2.974$ ) versus having no STI diagnoses, when compared to their male counterparts. Likewise, for women, holding all other variables constant, the odds of having two or more STIs was 2.182 ( $95\% CI: 1.054, 4.513$ ). The final model included: using a condom during vaginal sex, marital status, age, lapse in health insurance, years of education, and income. This model indicated that even when controlling for behavioral characteristics like using a condom during vaginal sex or demographic characteristics such as marital status and socioeconomic status, the relationship between heterosexual anal sex and risk for an STI diagnosis remained significant.

Table 9 was designed to assess whether religiosity could predict anal sex behaviors. The resulting model was statistically significant ( $p = 0.001$ ). Individuals who attended religious services were less likely to engage in anal sex practices ( $OR = .628$ ,  $95\% CI: .485, .813$ ). This may indicate that religiosity could serve as a buffer for participating in anal sex practices. In an effort to further improve the fit of the model and control for demographic and behavioral characteristics, I also tested additional variables that had theoretical significance.

In Table 10, only religiosity, forced vaginal sex, and age maintained statistical significance for predicting anal sex. These findings may point to the role religiosity continues to play in sexual decision-making. Additionally, using forced vaginal sex as a proxy for sexual coercion, these findings may point to a relationship between anal sex and sexual agency. This final model demonstrated that consistent with predictions, being more religious would decrease probability of participating in anal sex. Demographically, being older and having more education would increase probability of participating in anal sex. However, those individuals who had a low level of income were less likely to participate in anal sex. Being male would decrease the probability of participating in heterosexual anal sex, but having been forced to participate in vaginal sex increased the probability of engaging in heterosexual anal sex.

In Table 11, the regression model was designed to assess whether expectation to marry could predict anal sex behaviors. The resulting model was statistically significant ( $p=0.007$ ); indicating expectation to marry is a good predictor of anal sex behavior. Those who believed they would probably or definitely marry were less likely to participate in anal sex (OR =0.623, 95%CI: .443, .876). Despite the belief that expectation to marry would compel women to engage in anal sex, the findings show that expectation to marry reduced, rather than increased the likelihood of engaging in anal sex. In an effort to further improve the fit of the model, and control for demographic and behavioral characteristics, I tested additional variables that had theoretical significance. Additionally, I tested for interaction effects, but found no significant results, so statistics are not reported.

In Table 12, only expectation to marry, forced vaginal sex, and age maintained statistical significance for predicting anal sex (Table 12). These findings may point to the role gender ratio imbalances may play in sexual decision-making. It could mean that individuals who believe they

will not have a life partner may be engaging in particular sex behaviors in order to increase their partnership opportunities. Or it could mean that those individuals who believe they will marry are avoiding “riskier” sex behaviors. This final model demonstrated that consistent with predictions, those individuals who believed they were unlikely to marry, were more likely to participate in anal sex.

**Table 1. Descriptive Statistics of Respondents**

	N (%)		M (SD)
<b>Sex</b>			
Male	623	(40.2)	
Female	925	(59.8)	
<b>Age</b>			30.2 (7.5)
<b>Years of Education</b>			13.0 (2.3)
<b>Marital Status</b>			
Never Married	837	(54.1)	
Cohabiting	251	(16.2)	
Separated, Divorced, or Widowed	134	(8.7)	
Married (Heterosexual Marriage)	326	(21.1)	
<b>Household Family Income<sup>1</sup></b>			
Under \$25,000	703	(45.4)	
\$25,000 to \$49,999	432	(27.9)	
\$50,000 to \$74,999	218	(14.1)	
\$75,000 to \$99,999	66	(4.3)	
\$100,000 or Over	129	(8.3)	
<b>Health Insurance Lapse<sup>2</sup></b>			
No Lapse in Coverage	1053	(68.0)	
Lapse in Coverage	495	(32.0)	
<b>Received STI Diagnosis<sup>3</sup></b>			
No	1334	(86.2)	
Yes	214	(13.8)	
<b>Number of STI Diagnoses<sup>3</sup></b>			
None	1334	(86.2)	
One	172	(11.1)	
Two or more	42	(2.7)	
<b>Number of Vaginal Sex Partners<sup>2</sup></b>			2.4 (8.5)
<b>Condom During Last Vaginal Sex</b>			
No	926	(59.8)	
Yes	622	(40.2)	
<b>Had Heterosexual Anal Sex</b>			
No	1013	(65.4)	
Yes	535	(34.6)	
<b>Number of Anal Sex Partners<sup>3</sup></b>			0.3 (0.8)
<b>Condom During Last Anal Sex (n=535)</b>			
No	349	(65.2)	
Yes	186	(34.8)	
<b>Forced Vaginal Sex</b>			
No	1307	(84.4)	
Yes	241	(15.6)	
<b>Currently Religious</b>			
No	231	(14.9)	
Yes	1317	(85.1)	

Notes: N = 1548.

<sup>1</sup>Yearly Income<sup>2</sup>Within the last year<sup>3</sup> Combined Number of Gonorrhea or Chlamydia diagnoses, within the past year and of Syphilis, Genital Warts, or Herpes, Ever



**Table 2. Independent Variables by STI Diagnosis**

		Sexually Transmitted Infection Diagnosis			
		No (N = 1334) N (%)	Yes (N = 214) N (%)	X <sup>2</sup>	P-Value
<b>Sex</b>				19.127	0.004
	Male	566 (42.4)	57 (26.6)		
	Female	768 (57.6)	157 (73.4)		
<b>Marital Status</b>				13.394	0.005
	Never Married	697 (52.2)	140 (65.4)		
	Cohabiting	224 (16.8)	27 (12.6)		
	Separated, Divorced, or Widowed	118 (8.8)	16 (7.5)		
	Married (Heterosexual Marriage)	295 (22.2)	31 (14.5)		
<b>Household Family Income<sup>1</sup></b>				3.353	0.501
	Under \$25,000	615 (46.1)	88 (41.1)		
	\$25,000 to \$49,999	370 (27.7)	62 (29.0)		
	\$50,000 to \$74,999	187 (14.0)	31 (14.5)		
	\$75,000 to \$99,999	53 (4.0)	13 (6.1)		
	\$100,000 or Over	109 (8.2)	20 (9.3)		
<b>Health Insurance Lapse<sup>2</sup></b>				10.405	0.001
	No Lapse in Coverage	887 (66.5)	166 (77.6)		
	Lapse in Coverage	447 (33.5)	48 (22.4)		
<b>Anal Sex Practices</b>				38.439	0.000
	No	913 (68.4)	100 (46.7)		
	Yes	421 (31.6)	114 (52.3)		
<b>Condom During Last Vaginal Sex</b>				2.250	0.076
	No	788 (59.1)	138 (64.5)		
	Yes	546 (40.9)	76 (35.5)		
<b>Number of Vaginal Sex Partners<sup>2</sup></b>				18.244	0.000
	None or 1 Partner	929 (69.6)	121 (56.5)		
	2 Partners	201 (15.1)	37 (17.3)		
	3 or more partners	204 (15.3)	56 (26.2)		
<b>Number of Anal Sex Partners<sup>3</sup></b>				27.263	0.000
	None	1102 (82.6)	147 (68.7)		
	1 Partner	203 (15.2)	53 (24.8)		
	2 or more partners	29 (2.2)	14 (6.5)		
<b>Forced Vaginal Sex</b>				11.482	0.001
	No	1143 (85.7)	164 (76.6)		
	Yes	191 (14.3)	50 (23.4)		

Notes: N = 1548. <sup>1</sup>Yearly Income<sup>2</sup>Within the last year

**Table 3. Independent Variables by Anal Sex Practices**

		Anal Sex Practice		X <sup>2</sup>	P-Value
		No	Yes		
		(N = 1013) N (%)	(N = 535) N (%)		
<b>Sex</b>				1.912	0.092
	Male	395 (39.0)	228 (42.6)		
	Female	618 (61.0)	307 (57.4)		
<b>Marital Status</b>				7.434	0.059
	Never Married	569 (56.2)	268 (50.0)		
	Cohabiting	156 (15.4)	95 (17.8)		
	Separated, Divorced, or Widowed	77 (7.6)	57 (10.7)		
	Married (Heterosexual Marriage)	211 (20.8)	115 (21.5)		
<b>Household Family Income<sup>1</sup></b>				9.842	0.043
	Under \$25,000	487 (48.1)	216 (40.4)		
	\$25,000 to \$49,999	275 (27.2)	157 (29.3)		
	\$50,000 to \$74,999	130 (12.8)	88 (16.5)		
	\$75,000 to \$99,999	43 (4.2)	23 (4.3)		
	\$100,000 or Over	78 (7.6)	51 (9.5)		
<b>Tested for a Sexually Transmitted Infection<sup>2</sup></b>				.841	0.872
	No	475 (46.9)	248 (46.4)		
	Yes	538 (53.1)	287 (53.6)		
<b>Received STI Diagnosis<sup>2</sup></b>				38.439	0.000
	No	913 (90.1)	421 (78.7)		
	Yes	100 (9.9)	114 (21.3)		
<b>Gonorrhea Diagnosis<sup>3</sup></b>				1.041	.203
	No	996 (98.3)	522 (97.6)		
	Yes	17 (1.7)	13 (2.4)		
<b>Chlamydia Diagnosis<sup>3</sup></b>				0.202	.374
	No	976 (96.3)	513 (95.9)		
	Yes	37 (3.7)	22 (4.1)		
<b>Syphilis Diagnosis<sup>4</sup></b>				12.649	.001
	No	1006 (99.3)	519 (97.0)		
	Yes	7 (0.7)	16 (3.0)		
<b>Genital Warts Diagnosis<sup>4</sup></b>				12.706	0.000
	No	972 (96.0)	490 (91.6)		
	Yes	41 (4.0)	45 (8.4)		
<b>Herpes Diagnosis<sup>4</sup></b>				48.699	0.000
	No	991 (97.8)	480 (89.7)		
	Yes	22 (2.2)	55 (10.3)		

Notes: N = 1548.

<sup>1</sup>Yearly Income<sup>2</sup> Combined Number of Gonorrhea or Chlamydia diagnoses, within the past year and of syphilis, Genital Warts, or Herpes, Ever<sup>3</sup> Within the last year<sup>4</sup>Ever Received a Diagnosis

**Table 4. Independent Variables by Anal Sex Practices**

	Anal Sex Practice		X <sup>2</sup>	P-Value
	No	Yes		
	(N = 1013) N (%)	(N = 535) N (%)		
<b><i>Received STI Diagnosis</i></b>			38.439	0.000
No	913 (90.1)	421 (78.7)		
Yes	100 (9.9)	114 (11.3)		
<b><i>Number of STI Diagnoses<sup>3</sup></i></b>			39.342	0.000
None	913 (90.1)	421 (78.7)		
One	83 (8.2)	89 (16.6)		
Two or More	17 (1.7)	25 (4.7)		
<b><i>Forced Vaginal Sex</i></b>			30.899	0.000
No	893 (88.2)	414 (77.4)		
Yes	120 (11.8)	121 (22.6)		
<b><i>Attendance at Religious Services</i></b>			12.562	0.000
No	167 (16.5)	128 (24.0)		
Yes	846 (83.5)	407 (76.0)		
<b><i>Change in Religious Practices</i></b>			6.979	0.031
No Change	907 (89.5)	455 (85.0)		
Decrease in Religiosity	87 (8.6)	68 (12.7)		
Increase in Religiosity	19 (1.9)	12 (2.3)		
<b><i>Expectations to Marry or Remarry</i></b>			8.109	0.017
Probably or Definitely No	83 (8.2)	67 (12.5)		
Probably or Definitely Yes	719 (71.0)	353 (66.0)		
Expectation Fulfilled - Married	211 (20.8)	115 (21.5)		

Notes: N = 1548.

<sup>1</sup>Yearly Income<sup>2</sup>Within the last year<sup>3</sup> Combined Number of Gonorrhea or Chlamydia diagnoses, within the past year and of Syphilis, Genital Warts, or Herpes, Ever

**Table 5. Independent Variables Predicting Number of STIs**

		Number of STI Diagnoses Received <sup>1</sup>			
		M (SD)		T-Statistic	P-Value
<i>Sex</i>				67.759	0.000
	Male	0.109 (0.4)			
	Female	0.203 (0.5)			
<i>Marital Status</i>				1.638	0.201
	Not Legally Married	0.167 (0.4)			
	Married	0.142 (0.4)			
<i>Anal Sex Practices</i>				138.867	0.000
	No	0.115 (0.4)			
	Yes	0.259 (0.5)			
<i>Health Insurance Lapse<sup>2</sup></i>				37.847	0.000
	No Lapse in Coverage	0.189 (0.5)			
	Lapse in Coverage	0.115 (0.4)			
<i>Condom Used at Last Vaginal Sex</i>				3.526	0.061
	No	0.175 (0.4)			
	Yes	0.151 (0.4)			
<i>Forced Vaginal Sex</i>				28.859	0.000
	No	0.151 (0.4)			
	Yes	0.245 (0.5)			

Notes: N = 529

<sup>1</sup>Combined Number of Gonorrhea or Chlamydia diagnoses, within the past year and of Syphilis, Genital Warts, or Herpes, Ever <sup>2</sup>Within the last year

**Table 6. Kruskal-Wallis of Number of STI Diagnoses by IV**

	Number of STI Diagnoses Received <sup>1</sup>		
	Mean Rank	Chi-Square	P-Value
<b><i>Number of Vaginal Sex Partners<sup>1</sup></i></b>		18.755	0.000
None or 1 Partner	756.52		
Two Partners	787.26		
Three Partners	835.45		
		28.670	0.000
<b><i>Number of Anal Sex Partners<sup>3</sup></i></b>			
None	758.35		
1 Partner	827.57		
2 or more partners	927.59		
<b><i>Marital Status</i></b>		13.608	0.003
Never Married	797.16		
Cohabiting	751.06		
Separated, Divorced, or Widowed	759.81		
Married (Heterosexual Marriage)	740.42		
<b><i>Household Family Income<sup>2</sup></i></b>		3.230	0.520
Under \$25,000	764.80		
\$25,000 to \$49,999	778.05		
\$50,000 to \$74,999	776.54		
\$75,000 to \$99,999	819.06		
\$100,000 or Over	789.22		

Notes: N = 1548   <sup>1</sup>Within the last year   <sup>2</sup>Yearly Income

**Table 7. Anal Sex Regressed on Number of STI Diagnoses**

Model	-2 Log Likelihood	B (SE)	Odds Ratio	Confidence Intervals	
				Lower	Upper
	21.998				
One STI Diagnosis (Int.)		-2.398 (.115)***			
Anal Sex		.844 (.164)***	2.325	1.688	3.204
2+ STI Diagnoses (Int.)		-3.948 (.245)***			
Anal Sex		1.160 (.320)***	3.189	1.704	5.969

Notes: N = 529 \* Denotes  $p \leq 0.05$  \*\*Denotes  $p \leq 0.01$  \*\*\*Denotes  $p \leq 0.001$   
<sup>1</sup>Combined Number of Gonorrhea or Chlamydia diagnoses, within the past year and of Syphilis, Genital Warts, or Herpes, Ever  
<sup>2</sup> Reference Category is 0.00-No STI Diagnoses

**Table 8. Full Model: Anal Sex Regressed on Number of STI Diagnoses**

Model	-2 Log Likelihood	B (SE)	Odds Ratio	Confidence Intervals	
				Lower	Upper
	1300.391				
One STI Diagnosis (Int.)		-2.187 (.638)**			
Anal Sex		.828 (.169)***	2.289	1.645	3.186
Female		.715 (.191)***	2.044	1.405	2.974
Condom-Vaginal Sex		-1.64 (.177)	.849	.600	1.200
Married		-.354 (.314)	.702	.379	1.299
Age		-.026 (.012)*	.974	.951	.997
Health Insurance Lapse		-.491 (.198)*	.612	.415	.902
Years of Education		-.029 (.040)	.971	.898	1.050
Low Income (>\$25K) <sup>3</sup>		-.330 (.281)	.719	.415	1.246
Middle Income (\$25K-\$74,999) <sup>3</sup>		.001 (.261)	1.001	.600	1.670
2+ STI Diagnoses (Int.)		-2.944 (1.215)**			
Anal Sex		1.227 (.328)***	3.410	1.794	6.481
Female		.780 (.371)*	2.182	1.054	4.513
Condom-Vaginal Sex		.234 (.326)	1.264	.667	2.396
Married		-2.990 (.619)	.741	.220	2.493
Age		-.022 (.023)	.978	.936	1.022
Health Insurance Lapse		-.556 (.391)	.574	.267	1.234
Years of Education		-.080 (.078)	.923	.792	1.076
Low Income (>\$25K) <sup>3</sup>		-5.480 (.482)	.578	.225	1.488
Middle Income (\$25K-\$74,999) <sup>3</sup>		-6.700 (.474)	.512	.202	1.296

Notes: N = 1548 \* Denotes  $p \leq 0.05$  \*\*Denotes  $p \leq 0.01$  \*\*\*Denotes  $p \leq 0.001$   
<sup>1</sup>Combined Number of Gonorrhea or Chlamydia diagnoses, within the past year and of Syphilis, Genital Warts, or Herpes, Ever  
<sup>2</sup> Reference Category is 0.00-No STI Diagnoses  
<sup>3</sup> Income Reference Group = High SES ( $\geq$ \$75K)

**Table 9. Religiosity Regressed on Anal Sex Practice**

Model	-2 Log Likelihood	B (SE)	Odds Ratio	Confidence Intervals	
				Lower	Upper
	13.577				
Religiosity <sup>1</sup>		-.466 (.132)***	.628	.485	.813

Notes: N = 529 \* Denotes  $p \leq 0.05$  \*\*Denotes  $p \leq 0.01$  \*\*\*Denotes  $p \leq 0.001$

<sup>1</sup>Currently Attends Religious Services

**Table 10. Full Model: Religiosity Regressed on Anal Sex**

Model	-2 Log Likelihood	B (SE)	Odds Ratio	Confidence Intervals	
				Lower	Upper
	1927.617				
Religiosity <sup>1</sup>		-.518 (.136)***	.595	.456	.778
Female		-.204 (.116)	.816	.650	1.023
Forced Sex		.806 (.147)***	2.238	1.679	2.985
Married		.141 (.194)	1.151	.786	1.685
Age		.022 (.008)**	1.022	1.007	1.037
Years of Education		.040 (.026)	1.041	.989	1.096
Low Income (>\$25K) <sup>2</sup>		-.229 (.187)	.795	.551	1.147
Middle Income (\$25K-\$74,999) <sup>2</sup>		-.017 (.177)	.984	.696	1.390

Notes: N = 1548 \* Denotes  $p \leq 0.05$  \*\*Denotes  $p \leq 0.01$  \*\*\*Denotes  $p \leq 0.001$

<sup>1</sup>Currently Attends Religious Services

<sup>2</sup>Income Reference Group = High SES ( $\geq$ \$75K)

**Table 11. Expectation to Marry Regressed on Anal Sex Practice**

Model	-2 Log Likelihood	B (SE)	Odds Ratio	Confidence Intervals	
				Lower	Upper
	13.033				
Expectation to Marry <sup>1</sup>		-.473 (.174)**	.623	.443	.876

Notes: N = 1548 \* Denotes  $p \leq 0.05$  \*\*Denotes  $p \leq 0.01$  \*\*\*Denotes  $p \leq 0.001$

<sup>1</sup>Probably or Definitely Will (re)Marry or Married

**Table 12. Full Model: Expectation to Marry Regressed on Anal Sex Practice**

Model	-2 Log Likelihood	B (SE)	Odds Ratio	Confidence Intervals	
				Lower	Upper
	1934.485				
Expectation to Marry <sup>1</sup>		-.514 (.180)**	.598	.421	.851
Female		-.220 (.115)	.802	.640	1.006
Forced Sex		.817 (.146)***	2.265	1.702	3.014
Age		.020 (.007)**	1.020	1.005	1.035
Years of Education		.040 (.026)	1.042	.990	1.096
Low Income (>\$25K) <sup>2</sup>		-.240 (.186)	.787	.546	1.134
Middle Income (\$25K-\$74,999) <sup>2</sup>		-.005 (.175)	.995	.706	1.403

Notes: N = 1548 \* Denotes  $p \leq 0.05$  \*\*Denotes  $p \leq 0.01$  \*\*\*Denotes  $p \leq 0.001$

<sup>1</sup>Probably or Definitely Will (re)Marry or Married

<sup>2</sup>Income Reference Group = High SES ( $\geq$ \$75K)

## 5 CONCLUSIONS AND DISCUSSION

The purpose of this study was to explore the heterosexual anal sex practices among Black men and women, condom usage, and their risk for sexually transmitted infections (STI). The initial research questions were to assess whether there were any differences in STI testing and diagnoses between those individuals who engaged in heterosexual anal sex and those who did not. Individuals who participate in anal sex have similar STI testing rates to their counterparts. These findings are in line with the study hypotheses that there would be not be differences in STI testing for those individuals who participated in anal sex. Major findings of this study indicate that there are moderate differences in STI diagnoses among those individuals who participate in anal sex. While only 34.5% of the sample reported participating in anal sex, these individuals made up 53.5% of all STI diagnoses. Additionally, having more anal sex partners had a greater impact upon STI diagnoses than having more vaginal sex partners. This study indicates that participating in anal sex may increase odds for having at least one STI diagnosis by 2.289 times and may increase risk of having more than one STI diagnosis by 3.410 times.

This study also sought to assess whether there were differences in condom usage among those who engaged in anal sex and those who did not. Failure to use condoms during anal sex could explain an increase in risk for STI diagnoses. Individuals who participated in anal sex used condoms during vaginal sex at similar rates to their counterparts, even after adjusting for marital status. However, consistent with predictions, most of the individuals who reported participating in anal sex did not use a condom during their last anal sex encounter, even if they had used a condom during their last vaginal sex encounter.

Another important finding about heterosexual anal sex was that socioeconomic status (SES), including health insurance lapse, years of education, and household income did not have a



significant impact upon STI diagnoses for individuals who engaged in anal sex practices. These findings suggest that participating in anal sex may be a better predictor of STI diagnoses than SES related demographics, pointing to anal sex potentially being a greater STI risk factor than even low income.

Results of this study indicate that heterosexual anal sex practices could be a potential risk factor for STI rates in the black community, more specifically for Black women. Women, in the sample, were more likely to have engaged in anal sex and had more STI diagnoses than their male counterparts. As hypothesized, individuals were less likely to use condoms during anal sex, even if they use condoms during vaginal sex. If Black women are engaging in unprotected anal sex, this could potentially increase their risk for an STI diagnoses.

Additionally, individuals who reported that they had been previously forced to engage in vaginal sex were more likely to have participated in heterosexual anal sex. This may point to the possibility that within heterosexual partnerships, anal sex could be a coerced sexual behavior. This is important, because sexual coercion may be a risk factor for STIs. As expected, those individuals who had been forced to engage in vaginal sex were also more likely to have received an STI diagnosis.

Some of the traditional norms surrounding the sexual scripts of Black Americans could be based in religiosity. As the literature indicates, Black Americans have historically been especially religious. Despite this, as rates of overall religiosity decrease in the United States, religiosity among Black Americans may also be decreasing. As anticipated, religiosity proved to be a significant predictor of having anal sex, as individuals who reported attending religious services were less likely to participate in anal sex practices. As such, being more religious could prove to be a protective factor against anal sex related STIs, since religiosity may moderate the

relationship between anal sex and STI diagnoses. However, without qualitative data to assess the nuances of the relationship between religiosity and anal sex specific sexual scripts, we are left to speculate about whether those who are more religious are inherently less sexually restrictive. If the aforementioned is untrue, however, recent declines in religiosity, could lead to increases in the number of individuals who participate in anal sex practices, and potentially increase their risk for STIs.

In this sample, individuals who believed they would remain single were more likely to have participated in anal sex. While not aligned with the study hypothesis, this is an important finding. Having no expectation to marry resulted in participants being more likely to engage in anal sex. This finding could indicate that individuals, who believe that they will not have a life partner, may have less restrictive sexual scripts. Alternatively, it could mean that these individuals have an unmet desire (rather than expectation; the former implies a hope or wish that may or may not be realistic while the latter implies a stronger and more realistic likelihood) to marry and are engaging in anal sex in hopes it will improve their marriageability. However, without data on whether a desire to marry exists, this study is limited in that desire and expectation to marry are potentially inconsistent with one another. Therefore, the finding that expectation to marry was associated with a decrease rather than an increase in anal sex may be a function of the wording in the survey.

## **5.1 Implications**

While this study cannot make any causal inferences, this study did find an association between anal sex participation and STI diagnoses. Given this relationship, rates of STIs may be reduced within the Black community by including heterosexual couples in sexual health messaging surrounding the importance of the use of condoms during anal sex. Currently, most

sexual health messaging about anal sex is largely focused on anal sex between men who have sex with men. Additionally, reducing the stigma of anal sex may be important for reducing STI transmission, as this stigma may lead to reductions in needed dialogue surrounding safe anal sex between heterosexual couples. Including anal sex in sexual health questionnaires for self-identifying heterosexual individuals may also be an important step toward reducing STI diagnoses among Black Americans. By addressing heterosexual anal sex as a potential mechanism for driving STIs within the Black community, we could potentially reduce the incidence of new STIs.

## **5.2 Strengths and Limitations**

Strengths of this study include the oversampling of Black Americans in the NSFG dataset, which provides a substantial sample about which to explore Black individuals' engagement in heterosexual anal sex. In addition, the NSFG dataset provides the most extensive data available on heterosexual anal sex among this population. Limitations of this study include the cross-sectional study design, which does not allow for causal inferences to be made concerning heterosexual anal sex among Black Americans. Additionally, while women were found to have more STI diagnoses, this finding could be affected by women being more likely to visit a doctor to be tested for STIs than their male counterparts. In addition, the available quantitative data about heterosexual anal sex does not provide qualitative information about Black Americans' decisions to engage in heterosexual anal sex. More nuanced data would provide valuable insight on anal sex practice that could guide health communication efforts for public health professionals. There is no data available on the initiation of anal sex or the number of times an individual has engaged in anal sex with each sexual partner. This lack of nuanced data does not

allow us to make inferences about differences in anal sex behaviors, sexual partnerships, and the associated relative STI risk.

This study was necessary to address the sexual health of an especially vulnerable population of Black women, as heterosexual anal sex is understudied. This study has shed light on this sexual practice and the risk for STIs which may be attached to heterosexual anal sex. In addition, this research has expanded the existing, yet limited, literature about Black sexuality, which has largely been understudied, devalued, and misunderstood. This study has also helped elucidate the role that the relationship market and religiosity play in sexual decision-making for Black women, specifically. By examining these dynamics, we assert that current sexuality theories are not “one size fits all” for Black Americans and may hint at the need for sexuality theory development for this particular population. Consequently, this study may lend itself to encouraging further study of the nuances surrounding heterosexual anal sex practices and Black sexuality, as a whole. By garnering a better understanding of heterosexual anal sex among Black Americans, researchers can work to improve sexual health practices through interventions or sexual health messaging, specifically targeted towards heterosexual couples that participate in anal sex practices.

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