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The Effect of HIV Knowledge and HIV Attitudes on African American Women's Decision to HIV Test

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Abstract

Centers for Disease Control (2011a) Surveillance report revealed African American women comprised 63% of new HIV cases among women; 65% of African American women were infected with HIV transmitted by heterosexual sex; yet represent 13% of the female population in the United States. An existing data set was examined from a sample of 761 African American women with a history of drug use at high risk to acquire or transmit HIV and/or STDs to determine 751 women's knowledge and attitudes about risky sexual behaviors, factors influencing a decision to HIV test, and the influence of sex trading on the decision to HIV test.

Binary logistic regression predicted a small percentage of women's decision to HIV test was influenced by knowledge of risky sexual behaviors (Naegelkerke R^2, = .100). There were significant difference in the number HIV tests for women who reported cheating on a steady sex partner (M = 4.25, SD =7.49) versus women who did not cheat (M = 3.28, SD = 4.67), $t(747) = -2.19$, $p = .03$. Binary logistic regression predicted a minor percentage of women's decision to HIV test was influenced by women's attitudes about risky sexual behavior (Nagelkerke R^2 = .043). Women who agreed with the statement, I have risk drug behaviors that need changing were predicted to be twice as likely to HIV teste Exp [B] = 1.829, 95% CI [1.018, 3.288]. Binary logistic regression predicted an increased 15.3% variation in the decision to HIV test is influenced by women's knowledge to prevent HIV and attitudes about risky sexual behavior (Nagelkerke R^2 = .153). Women who agreed with the knowledge item, asked their partner if they were HIV positive, were 1.3 times more likely, and women who agree with the knowledge statement, I have risky drug behaviors that need changing, increased

to 1.9 times more likely to HIV test. There were significant differences in number of HIV tests for women who engaged in sex-trading versus women who do not engage in sex-trading. Tailored strategies that determine unique needs of African American women to reduce risky sex an increase HIV testing are recommended.

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Chapter I

Background

The human immunodeficiency virus (HIV) infection is responsible for causing Acquired Immune Deficiency Syndrome (AIDS). According to the Centers for Disease Control and Prevention (CDC) Human Surveillance Report 2011 published in 2013, "At the end of 2010, an estimated 872,990 persons in the United States (U.S.) were living with diagnosed HIV infection and an estimated 487,692 persons in the U.S. were living with infection classified as stage 3 AIDS" (CDC, 2013a, p.9, 10). In 2011, there were 50,007 new cases of HIV diagnosed in the U.S., adult and adolescent women accounted for 10,512 (21%) of the reported cases and adult and adolescent women prevalence rate was 165.2 per 100,000 population (CDC, 2013a).

The CDC HIV Surveillance Report 2011 published in 2013 revealed that heterosexual contact has accounted for 9,026 (85.9%) of all women diagnosed with HIV. Intravenous drug use (IDU) is the second mode of transmission of HIV among all women who are currently HIV positive and newly diagnosed with HIV; IDU accounted for 1,471 (14%) of all women diagnosed with HIV in 2011 (CDC, 2013a).

Initially, HIV was thought to be an infection affecting only gay men who participated in homosexual behavior or individuals who used intravenous drugs (CDC, 1981). Women were not thought to be a population at risk for HIV, and heterosexual behavior was not considered a high risk behavior or a mode for the transmission of HIV (CDC, 1981, 1982). The CDC (1982) did allude at this point in time that there may be unknown risk factors present for HIV; because, there were a small percentage of reported HIV cases that presented with none of the known HIV risk factors. Between April 1981 and April 1982, five women previously considered healthy presented at New York City

hospitals with Pneumocystis carinii pneumonia and decreased cellular immune function resulting in hospital admissions (Masur et al., 1982). Masur et al. questioned each of the women about their sexual history. Four of the five women were heterosexual and one was bisexual with a concurrent relationship with a man and woman during the12 months prior to hospitalization (Masur et al.). History of drug use among the five women showed (a) three of the women had IDU of cocaine and heroin, (b) one woman admitted to using non-intravenous drugs, (c) the fifth woman denied drug use, but disclosed her sexual partner used intravenous heroin, and (d) all five of the women denied participation in sex-trade or being promiscuous (Masur et al.). In 1982, Masur et al. reported the first women with HIV.

In 1983, transmission of HIV to women from HIV infected male partners was recognized as an identifiable HIV risk factor (CDC, 1983a). The initial HIV/AIDS research and clinical trials focused on the male population. In 1986, women and minorities were recognized as the most rapidly emerging population with HIV in the U.S. (CDC, 1986). In 1986, the National Institute of Health (NIH) amended research guidelines to include women in HIV/AIDS clinical trials; in 1987 the guidelines are amended to include minorities. Likewise in 1990 the CDC identified an increased incidence of HIV/AIDS among women, yet research studies failed to include women. In 1990 the National Institutes of Health (NIH) provided testimony recognizing the poor adherence to including women and minorities in HIV clinical trials because of inconsistent guidelines, awareness, and adoption (Kass, Taylor, & King, 1996). Women were included in the 1991 HIV/AIDS epidemiology studies as a result of the 1990 NIH mandates for inclusion of women in HIV/AIDS research.

In 1990, the NIH (1990) acknowledged "the underrepresentation of women in such studies resulted in significant gaps in knowledge" (p.2). According to Kass et al. (1996), the concern of teratogen effect was a key reason women were not included in HIV/AIDS clinical trials; the researchers feared clinical trial drugs could trigger abnormal prenatal development or interfere with a woman's fertility. In 1994, the NIH provided supplemental guidelines to the NIH Revitalized Act of 1993 directing research to include women, minorities, and sup-populations.

Researchers were slow to address the health care of women with HIV (CDC 1986; NIH 1990, 1994). This resulted in the NIH increasing directives to include women in HIV clinical trials (NIH 1986, 1990, 1994). The U.S. Department of Health and Human Services (HHS) was also slow to disseminate public information regarding women and HIV. *A Guide to the Clinical Care of Women with HIV,* was the first gender specific manual addressing the needs and care of women with HIV (Anderson, 2001).

Significance of the Problem

According to the CDC (2013b), in 2011, there were 136,690 African American women living with HIV infection and 5,311 African American women with initial test results classified as AIDS. African American women accounted for 6,623 (63%) of new female HIV cases reported in 2011 (CDC, 2013a). In 2010, AIDS was ranked among the top 10 causes of mortality for African American women aged 25 to 64 years (CDC, 2013c).

There is a disproportion of HIV and AIDS among African American women. African American women represent 64% of the HIV/AIDS cases among women (CDC, 2008); yet African American women represent 13% of the female population in the

United States (U.S.) (U.S. Census Bureau, 2003). In 2011, the CDC also reported that again the majority of women diagnosed with HIV were African American women 5,882 (65.2%), 1,522 (16.9%) were Caucasian women, and 1,522 (16.9%) were Hispanic/Latina women (CDC, 2011a). Additionally, African American women are disproportionally being diagnosed with HIV in comparison to other races/ethnicities. African American women are diagnosed with HIV at a rate 20 times higher than Caucasian women and five times higher than Latina woman **(**CDC, 2014a). According to CDC (2013b) published report, it is estimated that 1 in 32 African American women will be diagnosed with HIV during their lifetime compared to 1 in 106 Hispanic/Latina women, and 1 in 526 Caucasian women (2013b). The CDC reported that in 2011 there were 10,512 cases of HIV among women by race/ethnic background: (a) 63% Black/African American, (b) 17% Hispanic/Latina, (c) 17% Caucasian, (d) 1% Asian, (e)1% multiple races, (f) < 1% American Indian/Alaska Native, and (g) < 1% Native Hawaiian/ Pacific Islander (CDC, 2013a).

Statement of the Problem

Women are more susceptible to be infected with HIV due to: (a) larger surface area of the genital tract for exposure to the virus, (b) the length of time infectious fluids are in the genital track during intercourse, and (c) a dark moist genital tract provides an optimum environment for viral and bacterial growth (Higgins, Hoffman, & Dworkin, 2010; HHS Office of Women's Health, 2009; Moench, Chipato, & Padian, 2001). The biological reason women are susceptible to HIV is related to cervical function, which protects the uterus from infection. The cervix houses an abundance of CD4 cells to fight infection, and peristalsis promotes the sperm advancing forward to the uterus (Galan,

2010; Higgins et al.; 2010; Moench et al., 2001). This is an important factor because the lifecycle of HIV proliferates by binding with a CD4 cell and targets the CD4 cells of the cervix (Green, 2007; Moench et al., 2001). The viral load in the semen has been found to be much higher initially than the serum blood viral load, which increases the HIV risk for women (HHS Office of Women's Health, 2009). Additionally if women have an inflamed vagina and/or cervix, there is breakdown of the mucous membrane that can increase women's susceptibility to HIV (Higgins et al., 2010; Moench, et al. 2001; HHS Office of Women's Health, 2009). It follows that women with risky sexual behaviors have a greater chance of contracting HIV and STDs (HHS Office of Women's Health, 2009).

The CDC (2010a) reported that a person infected with an STD is two to five times more likely to contract HIV than a person who does not have an STD. CDC (1998) reported that biological plausibility of an established STD can promote the body's susceptibility to HIV and transmission of HIV. In addition, the presence of a venereal genital ulcer caused by STDs such as genital herpes, syphilis, genital warts and others creates a physical vulnerability providing a port of entry for the HIV as result of the breakdown in the skin and mucous membrane; because, this ulcerative or non-ulcerative STD triggers an inflammatory process that increases the presence of CD4 count that attracts the HIV infection (CDC, 2010a; Spinola et al., 1996).

The human immunodeficiency virus (HIV) can be a manageable chronic illness if detected. HIV management with the most current antiretroviral drug regime can diminish the viral load to almost non-detectable levels, which reduces the risk of transmission (HHS, 2011; Donnell et al., 2010). If HIV is detected before the immune system is

compromised, effective management can thwart opportunistic infections (HHS, 2011). Additionally if HIV is detected, the management of the disease can impede the progression to acquired immune deficiency syndrome (AIDS) and death (HHS, 2011). Early identification and management of HIV can improve patient outcomes (CDC, 2006). Thus, it is important that individuals with high risk behaviors be tested for HIV.

At the end of 2010, an estimated 223,045 adolescent and adult women were living with HIV; African American adolescent and adult women accounted for 60% (133,827) living with HIV (CDC, 2013a). Historically, in 2004, AIDS was the primary cause of death for African American women between the ages of 25 to 34 years, ranked third as cause of mortality for African American women ages 35 to 44 years, and a ranked fourth as cause of mortality for African American women ages 45-54 years (CDC, 2008). However, the latest estimates in 2010 revealed more women living with HIV, but a decrease in deaths related to AIDS (CDC, 2013a, 2010b). In 2010 AIDS was the fifth leading cause of death for African American women between the ages of 25 to 34 years, ranked fourth as cause of mortality for African American women ages 35 to 44 years, and ranked sixth as cause of mortality for African American women ages 45-54 years. Although deaths related to AIDS have decreased, African Americans accounted for 49% of the deaths in 2011 with mortality rate of 25 per 100,000 (CDC, 2013a).

High risk heterosexual behavior accounted for 74% of the HIV/AIDS cases among African American women (CDC, 2008). Routine HIV testing may provide for earlier recognition of the virus, and referral for disease management that may prevent the acceleration of the HIV disease to AIDS. With the rising numbers of African American women testing positive for HIV, additional research is needed to determine factors that

will influence African American women to seek HIV testing. Therefore, it is important to study if African American women's knowledge of risk behaviors can influence early HIV testing.

Purpose of the Study

The purposes of this investigation are to determine if knowledge and attitudes about risky sexual behaviors and HIV/AIDS influence the decision to participate in HIV testing, and if sex trading influences the decision to participate in HIV testing among women with a history of drug use.

This study is designed to answer the following research questions:

1. What knowledge do women have about actions before and after sex to prevent acquiring HIV or STDs?
2. What are women's attitudes about risky sexual behaviors?
3. Will women's knowledge about risky sexual behavior influence her decision to have HIV testing?
4. Will women's attitudes about risky sexual behavior influence her decision to have HIV testing?
5. Are there interactions between women's knowledge to prevent HIV, attitudes about risky sexual behavior, and the women's decision to have HIV testing?
6. Is there difference in women who engage in sex-trading versus women who do not engage in sex-trading and their decision to have HIV testing?

Definition of Terms

Human Immunodeficiency Virus (HIV). The HIV is a retrovirus belonging to the "Lentivirus subfamily" (Green, 2007). This retrovirus is replicated through the transcription of the ribonucleic acid's (RNA) genetic viral code into the deoxyribonucleic acid (DNA) of the host cell by the enzyme, reverse transcriptase (Green, 2007). The HIV merges into the CD4 cell provoking a dysfunctional immune system (Green, 2007).

Acquired Immune Deficiency Syndrome (AIDS). Acquired Immune Deficiency Syndrome (AIDS) is the continuous replication of the HIV virus, the reduction of the CD4 count, and the gross deterioration of the immune system. As the viral load increases, the CD4 count continues to diminish < 200/mm^3 (Department of Health and Human Services, 2011; Maceda Lan, 2003).

CD4. The CD4 is frequently identified as a T helper cell. The T lymphocyte is a type of white blood cell produced from the thymus that is part of immune system (Mosby Dictionary, 2008). The CD 4 cell is a protein attribute on the surface of the helper T4 lymphocyte, which alerts the immune system to activate the body's immune response to bacterial or viral invasion (Mosby Dictionary, 2008).

Viral load. Viral load is the measurement of the circulating of HIV RNA counted in the plasma. Viral load is determined by using one of the following tests: (a) the branched DNA (bDNA) assay, (b) polymerase chain reaction (PCR), and (c) the nucleic acid sequence based amplification ([NASBA]; Green, 2007).

Early HIV detection: Early HIV detection is the ability to detect the presence of HIV RNA and p24 antigen found in serum and plasma (usually up to six months after

infection) before detectable HIV antibodies can be measured (Department of Health and Human Services [HHS], 2013).

Sexually Transmitted Disease (STD). An STD is an infectious pathogen transmitted through sexual activity (CDC, 2010c). The HIV is also considered to be an STD since one of the modes of transmission is through sexual activity (CDC, 2010c).

Chapter II

Review of the Literature

This chapter presents a review of the literature and the conceptual model based on this review. The review of the literature is discussed and summarized as it relates to factors that influence HIV testing among African American women and their risk for HIV.

Conceptual Model

The conceptual model is based on the review of the literature and is designed to identify factors that influence HIV testing among African American women with a history of drug use (see Figure 1). The model includes the following concepts: African American women with a history of drug use, drug use behaviors, trading sex behaviors, risky sexual behaviors, attitudes about HIV/AIDs and risky sexual behaviors, knowledge about actions to prevent getting HIV or STDs, and HIV testing.

Conceptual Definitions

The conceptual definitions related to the conceptual model intended to guide this study include:

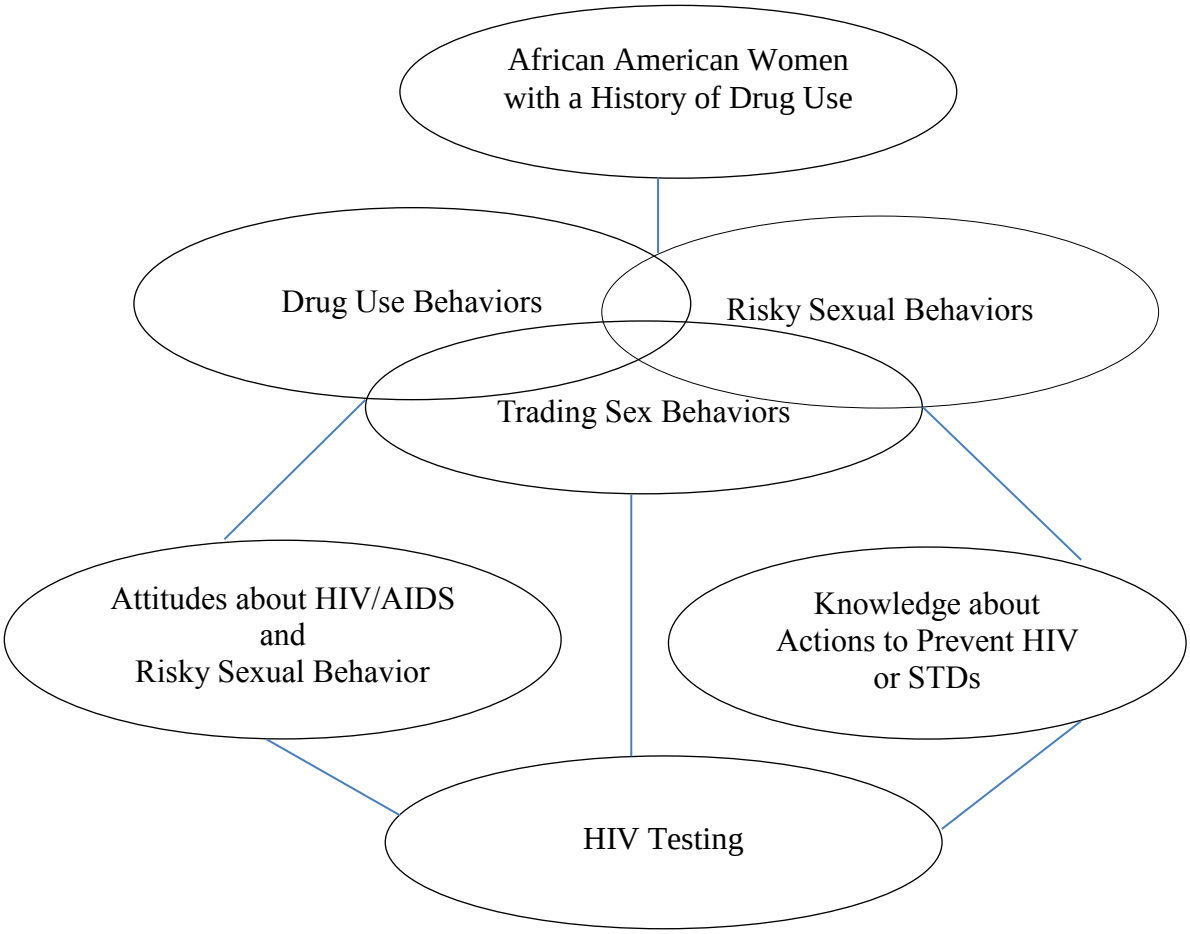
African American Women with a History of Drug Use

African American women with a history of drug use is defined as a positive urine drug test for cocaine, amphetamines, or opiates; and/or physical presence of track marks from recent intravenous drug use (Cottler, 2006).

Drug Use Behaviors

Drug use behaviors are defined as persons who use commonly abused drugs: alcohol, marijuana or hashish, K2Spice (synthetic marijuana) heroin, heroin or cocaine mixed together (speedball), bath salts, amphetamines, ecstasy/Molly (GHB or other club drugs), hallucinogens, inhalants, or other drugs such as prescription drugs (CDC, 2011b).

Figure 1. African American Women with Drug Use and HIV Testing



Risky Sexual Behaviors

Risky sexual behaviors are defined as engaging in the act of sex without considering the known risks of sexual activity, engaging in sex without considering personal or partner's risks, and misperception or lack of knowledge of the risk behaviors

that constitute risky sexual behavior (CDC, 2008). Risky sexual behavior is characterized by unprotected sex, trading sex, STD, having multiple sex partners, unaware of sex partner's risk factors, or intravenous drug using sex partner (CDC, 2008).

Trading Sex Behaviors

Trading sex behaviors are defined as illegal transactions based on a verbal agreement to provide a sexual service for a commission of money, drugs, acquisition of temporary residence or necessities of food and clothing (Cottler, 2006).

Attitudes about HIV/AIDS and Risky Sexual Behavior

Attitudes about HIV/AIDS and risky sexual behavior is defined as a person's personal belief or perspective about HIV/AIDs risk present when engaging in sex and may be influenced by cultural background resulting in engaging in risky sex even though risk is known (Duvall et al., 2013).

Knowledge about Actions to Prevent HIV or STDs

Knowledge about actions to prevent HIV or STDs is defined as the persons understanding of behaviors to take before and after sex to keep from getting HIV or STDs (Cottler, 2006).

HIV Testing

HIV testing is defined as person having an HIV test that detects presence of circulating HIV antibodies (CDC, 2014b).

African American Women with a History of Drug Use

Women who are drug addicted are more likely to act, not contemplate behavior risks or the consequences to their health (National Institute of Drug Abuse [NIDA], 2012). In general, drug use alters thinking processes, promotes impulsivity, and distorts

judgment (NIDA, 2012). Among women who are drug addicted, African American women compared to Latina and Caucasian women are more likely to have unprotected sex, more than one sex partner, and sex with high risk partners, or trade sex for money or drugs (Jenness et al., 2010). Drug use can lead to a plethora of health issues but the major health issue for this population with a drug use history is that drug use predisposes the body to infection such as HIV or Hepatitis C (NIDA, 2012). This risk for infection, coupled with having sex with high risk partners, places these women at high risk for HIV and STDs (NIDA).

According to the CDC (2013a), HIV transmission by intravenous drug use among women accounted for 14% of the overall female HIV cases; African American women accounted for almost half (48.7%) of the HIV cases by IDU. The CDC recognized early on that the use of intravenous drugs places individuals at risk for HIV (CDC, 1982). In general, women who use injectable drugs and other substances are at risk for HIV due to either sharing needles or engaging in high risk behaviors for HIV (CDC, 2014a). In an earlier descriptive case-control study of HIV positive African Americans in North Carolina, of the 276 women in the sample (128 HIV positive and 148 HIV negative), the researchers found over a three month period that 38 (30%) of the HIV positive women reported illicit drug use with their three most recent sex partners and 61 (48%) reported partners using illicit drugs (Doherty, Schoenbach, & Adimora, 2009). In contrast, 7 (5%) of HIV negative women reported illicit drug use with their three most recent partners and 25 (17%) reported partners using illicit drugs (Doherty et al.).

Schönnesson et al. (2008) used a cross sectional design to study 258 HIV positive African Americans (120 [47%] men, 138 [53%] women, median age 44) who engaged in

crack cocaine smoking in the past 30 days, self-identified as heterosexual, smoked crack cocaine in the previous 48 hours, had vaginal sex in the past 30 days, and showed proof of positive HIV test or HIV prescription medications. The researchers explored HIV risk behaviors among crack cocaine smokers by creating three clusters of risk behaviors: highest risk, consistent condom use meaning a condom is used always, and inconsistent condom use meaning condom is used less than always (Schönnesson et al.). The cluster with the highest risk (52 [58%] men, 59 [53%] women) were participants, who self - reported: (a) more than one time a day crack cocaine smoking, (b) more than two partners, (c) traded sex for money or drugs, and (d) inconsistent condom use. The cluster of participants who had used condoms consistently included 29 (53%) men and 25 (47%) women; and the cluster of inconsistent condom users' had 39 (42%) men and 54 (58%) women (Schönnesson et al.).

Schönnesson et al. (2008) delineated behaviors by clusters not gender and found the mean use of crack in past 30 days per (a) highest risk cluster 56.77 times (range 1 to 300), (b) consistent condom use cluster 44.63 times (range 1 to 300), and (c) inconsistent condom use cluster 27.47 (range 2 to 300). There were 44 (47%) participants in the inconsistent condom use cluster had identified no condom use ever compared to 18 (16%) participants of the highest risk group. When asked about the number of sex partners in the last 30 days, the highest risk cluster had an average of six sex partners compared to consistent condom use group who had an average of two to three sex partners, and the inconsistent condom use group had an average of one sex partner. The highest risk group reported trading sex for drugs an average of five times in the last 30 days (Schönnesson et al.). The highest risk group and inconsistent condom use group

reported having multiple sex partners and engaging in sex trade for drugs expose a high probability of transmitting HIV by sex (Schönnesson et al.).

Moreover, Schönnesson et al. defined serodiscordant as HIV positive participants who had unprotected sex with a HIV negative partner. The highest risk group of 49 (24%) participants identified their partners as serodiscordant; in contrast the inconsistent condom use group identified 44 (35%) of partners as serodiscordant; and the consistent condom use group identified 64 (14%) of partners as serodiscordant. Schönnesson et al. concluded that crack cocaine smokers with HIV had a higher probability of transmitting HIV by sex.

Drug Use Behaviors

Drug users describe drug use behavior as a hobby, pastime, or diversion to cope with anxieties, which may result in friendships with other drug users who are described as a trusted relationship because of mutual interest in using drugs (Foster & Spencer, 2013). Moshier et al. (2012) suggest that drug use behaviors stem from the user's perception of belonging to a subculture of drug users who distinguish themselves as alienated from mainstream society and have a social connectedness because of bonds forged with other drug users. These bonds include a shared adventure and pleasure from using drugs or a feeling of purpose to procure drugs, provide drugs to others, make money, and avoid legal detention (Moshier et al.).

Risky Sexual Behaviors

In the conceptual model, a major factor in HIV transmission is engaging in risky sexual behaviors. Among African American women, the risk of being infected with HIV through heterosexual exposure is related to: (a) known risk behaviors and (b) unknown

risk behaviors (Jarama, Belgrave, Bradford, Young & Honnold, 2007). Known behavioral risks include trading sex, intravenous drug use, more than one sex partner in a year, diagnosis of STD, sexual partner with a history of incarceration, and sexual partner(s) not wearing condoms (University California San Francisco Centers for AIDS Studies, 2009). Unknown risks can be characterized as a misperception of HIV risk behaviors; a woman's perception is being in a monogamous heterosexual relationship but her sex partner is having outside sexual relationships (CDC, 2014; Jarama et al.). The woman may be unaware of her sex partner's risk factors and may not perceive the need to use a condom or discuss sexual history with her partner (CDC, 2014). Although health departments have worked to educate the public about HIV risks, many African American women perceive themselves as low risk, especially if African American women believe they are in a monogamous relationship (Hobfoll, Jackson, Lavin, Britton, Shepherd, 1993; Mallory, 2008; McNair & Prather, 2004).

Jarama, Belgrave, Bradford, Young, and Honnold (2007) reported the unknown risk behavior among African American women is the result of trust in their partner. African American women are acculturated to not inquire about a partner's sex history, negotiate condom use, or discuss sex in general (Harris et al., 2013; Jarama et al., 2007; Whyte, Whyte, & Cormier, 2008). Whyte et al. (2008) qualitative study illustrated the harm of poor communication about sexual history and unwavering trust in a relationship; African American women in this study describe their belief they were in monogamous relationship and found out differently after testing HIV positive, were "stunned by the diagnosis and its source" (p429); and reported husbands or partners were participating in down low sex meaning secret homosexual or bisexual sex. This lack of communication

regarding sexual history coupled with need to show trust, put African American women at unknown risk for contracting HIV infection (Corneille, Zyznieski, & Belgrave, 2008).

There is evidence that men in general as well as African American men prefer to not use condoms related to the perception of: (a) diminished sexual pleasure, (b) lack of trust in the relationship, and (c) the impact on sense of male self (Dodge, Jeffries, & Sanfort, 2008; Jarama et al.). African American women's inability to talk about sexual history, safe sex practices, or HIV testing with a partner prior to a sexual relationship puts the African American woman in a high risk category to become HIV infected (Harris, Mallory, & Stampley, 2010; Jarama et al.).

For this investigation, having sex includes vaginal, oral, or anal sex. Based on this review of the literature, risky sexual behaviors include: number of sex partners, partner intravenous drug use, ever having a STD, and condom use.

Number of Sex Partners

African American women are reported to have more lifetime sexual partners with increasing the risk of HIV infection and STDs than Latina women (Moreno, EI-Bassel, & Morrill, 2011). A comparative study of HIV/AIDS risk factors among Latina and African American women revealed African American women were 2.5 times more likely to report a STD than Latina women, and were 1.5 times more likely to report five or more sex partners in a lifetime (Moreno, El-Bassel, & Morrill, 2011). Senn, Carey, Vanable, Urban, and Sliwinski (2010) explored African American relationships and predicted men will have more female sex partners as the male female ratio decreases in the census. In addition, Wright et al. (2007) reported in a longitudinal study that African Americans

were twice as likely than Caucasians to report multiple sex partners in past 30 days (OR = 2.5).

Atkinson, Williams, Timpson, and Schönnesson (2007) studied the number of sex partners of African American males (n = 497) and females (n = 195) who had participated in vaginal sex within seven days prior to screening. The average number of sex partners of the study participants for the past 30 days was 9.7 (*SD* = 16.9, *Mdn* = 5) and women had significantly more sex partners than men (Atkinson et al.). Atkinson et al. also reported that 33 (17%) of African American women reported new sex partners prior to the study.

Partner Intravenous Drug Use

A woman's sex partner, who uses intravenous drugs, is engaging in risky sexual behavior (CDC, 2014). Intravenous drug use (IDU) among African Americans is reported to be the cause of almost half of the HIV cases (CDC, 2013c). Additionally, the 2011 HIV surveillance statistics report that IDU accounts for 46% of African American male cases (CDC, 2013e).

Doherty, Schoenbach, and Admira (2009) used a cross-sectional design to describe the characteristics of African Americans in North Carolina infected with HIV classified as heterosexual transmission. Of the 276 women in the study, 78 were HIV positive and 148 were HIV negative; HIV positive women revealed 48% of their partners used illicit drugs compared to HIV negative women who reported 17% of their partners used illicit drugs (Doherty et al.). In another descriptive study, Jenness, Neaigus, Hagan, Murrill, and Wendell (2010) examined the prevalence of relationships among non IDU having a sex partner that is an IDU. The sample included 601 subjects (256 men, 345

women) who had predominantly identified themselves as African American ([n = 472, 78.5%]; Jenness et al.). Overall, 13.8% of the sample had a sex partner that was IDU; 10.2% of the men and 16.5% of the women confirmed having sex with IDU (Jenness et al.). Of the 472 African American, 13.6% confirmed having sex with IDU. Although gender was not differentiated by race or ethnicity, the important finding related to this investigation was that women were two times more likely than men in the study to have an IDU partner (Jenness et al.).

Ever Having a Sexually Transmitted Disease

In a comparative study of African American women and Latina women ever having a sexually transmitted disease (STD) as a risk factor for HIV, Moreno, Bassel, and Morrill (2007) reported African American women were two and half times more likely to report an STD compared to Latina women. Among the women (N = 1,128) who had sexual relations with a principal partner defined as main partner, African American women were more than twice as likely to have a partner with history of a STD and 1.6 times more likely to perceive the principal partner's sex behavior as risky (Moreno et al.).

In Cavazo-Rehg et al. (2009) study of cocaine dependent individuals revealed 25.6 % of African American women (n = 125) who traded sex identified as having ten sexual partners in past year and 55% of the women had past STD history, in comparison 35.6% of the Caucasian women (n = 118) who had 10 sexual partners in the past year and 35.3% had past history of an STD diagnosis (Cavazo-Rheg et al.). Decker et al. (2012) also noted that women who had a history of trading sex showed approximately one in a half the risk of ever having an STD; and in the last three months showed over twice the risk of having an STD (Decker et al.).

Condom Use

According to the CDC (2013f, 2013g), use of latex condoms consistently and correctly is considered a reliable and effective measure in preventing HIV transmission as well as transmission of STDs. Condom use is when the male partner uses a condom when engaging in vaginal, anal, or oral sex with a female partner (CDC, 2013f, 2013g). Although African American women are knowledgeable about the transmission modes of HIV, their perception of actual risk is poor, for example, African American women's knowledge of condom use to prevent HIV infection is good, but evidence has shown inconsistent use of condoms (Nunn et al., 2011; Mallory, Harris, & Stampley, 2009).

Corneille, Zyzniewski, and Belgrave (2008) performed a cross-sectional study on initial data collected from African American unmarried heterosexual women (N = 325) aged 18 to 61 years who participated in the five week Sistas Informing Sistas about the Topic of AIDS (SISTA) program. Multiple regression and logistic regression analysis were used to detect the influence of age and length of relationship on (a) condom use, (b) intention of condom use, and (c) attitudes towards condom use (Corneille et al.). The findings suggest older African American women may be at greater risk for HIV because they perceived their principal partner as being opposed to condom use (Corneille et al.). Younger African American women were more likely to use condoms in current or past relationships; yet all women reported they were less likely to use condoms with their principal partner (Corneille et al.).

Moreno et al. (2007) reported in a comparative study of the HIV risks among African American women and Latina women (n = 1,298) who had sexual intercourse with their principal partner in the past 30 days; 359 (65%) of African American women

replied no to condom use and 197 (35%) replied yes. African American women responded to the frequency of condom use was 108 (55%) as some of time and 88 (45%) all the time (Monroe et al.). Although African American were twice as likely as Latina women to use condoms with their principal partner (OR = 1.78, 95% CI [1.32, 2.40]), African American women were twice as likely as Latina women to perceive their principal partner as having risk factor for HIV (OR = 1.59, 95% CI [1.15, 2.20]; Moreno et al.).

Trading Sex Behaviors

Sex trading for this investigation is defined as trading sex for money, drugs, alcohol, food, or a place to stay. Dolwick-Grieb, Davey-Rothwell, and Lakin (2012), in a study sample of 567 African American women, reported that over the past 90 days 375 (66.1%) of the women traded sex to obtain drugs.

Millay et al. (2009) studied women who traded sex, had identified selves as "hooker, hustler, working girl, and street walker (p. 813)". The women negotiated for money from male customers who requested sex, commonly agreed to vaginal or oral sex. They described receptive anal sex as a least desirable transaction but if receptive anal sex was agreed upon an increased payment was normally negotiated (Millay et al.). The money accrued was used to pay financial obligations or to support drug use (Millay et al.).

Decker et al. (2012) showed African American women that were more likely to trade sex compared to Caucasian women and Hispanic women; and immigrant women were less likely to trade sex. Cavazos-Rheg et al. (2009) included 243 women in the study that were cocaine dependent, Caucasian women (n = 118) and African American

women (n = 125). The findings showed that African American women (62.4%, n = 78) traded sex for drugs and/or money compared to Caucasian women (40.2%, n = 47) traded sex for drugs and/or money (Cavazos-Rheg et al.).

A longitudinal study examining HIV risk behaviors among rural drug users found of the 266 women, 100 (37.6%) reported trading sex for money or drugs (Wright et al. 2007). Rural African American women were more likely to trade sex for money or drugs (44.7%) compared to 19.7% of Caucasian women (AOR = 1.7) (Wright et al. 2007).

Semple, Strathdee, Zians, and Patterson (2011) examined 342 subjects with a high risk sex behavior for trading sex for methamphetamine; 176 (51.5%) were females. In this study women were twice as likely as men to trade sex for methamphetamine (AOR= 1.77, 95% CI [1.08, 2.89]), be binge methamphetamine users (AOR = 2.33, 95% CI [1.25, 4.37]), and trade sex as non-binge methamphetamine users (Semple et al.). The authors also noted that sex trading was associated with high risk HIV sex behaviors in those having 24 or more anal sex acts in the last two months (OR = 3.04, 95% CI [1.27, 7.15]) and forced or coerced sex in last two months (OR = 3.19, 95% CI [1.45, 6.99]).

A cross sectional study of women (N = 1277) visiting family planning clinics in North Carolina compared sexual risks of women who traded sex and women who did not trade sex (Decker et al., 2012) . Women who traded sex showed that risk tripled for having multiple current sex partners, and showed the risk doubled for engaging in anal sex and for having more than two partners (Decker et al.). Women who traded sex were five times the risk to be a victim of unwanted anal sex and at three and half times risk for unwanted vaginal sex (Decker et al.). Sex trade was also associated with an increased risk of unintended pregnancy and increased abortion (Decker et al.). STDs, unwanted

pregnancy, or unintended plan to abort were the consequences of risky sexual behavior described by Decker et al.

Attitudes about HIV/AIDS and Risky Sexual Behavior

Attitudes are a person's beliefs, the ways of thinking that influences the person's behavior (Merriam-Webster Inc., 2014). For this study, attitudes are personal beliefs or opinions about contracting HIV/AIDS and beliefs regarding risky sexual behavior. Based on a review of the literature presented in this section cultural stereotypes and risky sexual attitudes, attitudes about the use of condoms, and attitudes about drugs are described.

Cultural Stereotype and Risky Sexual Attitudes

Duvall et al. (2013) studied 206 African American women and examined the association of complimentary sexual stereotypes on risky sexual attitudes and behaviors. The Complimentary Sexual Stereotypes (CSS) Subscale of Multidimensional Racial Attitude Scale was used to measure cultural stereotype attitudes, and risky sexual attitudes were measured using the Reducing Risky Relationships Thinking Myths Scale (RRR-TMS) (Duvall et al.).

The five item CSS subscale measured responses on seven point Likert scale and ranged from strongly disagree to strongly agree. Responses were computed and averaged to create a measure ranging from 0 to 6, and an item average was used in place of a total score to allow for the interpretation and of the multivariate regression analysis (Duvall et al., 2013). Sample items on the CCS subscale include: "Black men give off an aura of sexuality" and "Black people have a unique quality of sexuality that most white people don't have" (Duvall et al., p. 7). The 12 item RRR-TMS measured the magnitude of participating in risky sexual behavior and drug use on relationship status. Responses were

measured significantly and positively on a 10 point scale ranging from definitely true to definitely not true, and a higher score indicated riskier sexual attitudes (Duvall et al., 2013). Examples reflect risky sexual attitudes: "Having sex without protection will strengthen my relationship", and "I only think good things about myself when I am in a relationship, even if it is risky relationship" (Duvall et al., p.7).

Duvall et al. (2013) reported age (X = 36.6, SD = 14.2) had a positive relationship with risky sexual behaviors (r = .14, p < .05). The analysis indicated that African American women in the sample had a significant positive association with cultural stereotype attitudes and attitudes of sexual risk (B = .25, SE = .09, p < .01) (Duvall et al.). The number of partners was significantly and positively associated on the CCS (r = .46, p < .01) as well as trading sex for money (r = .16, p < .01); the number of casual sexual partners revealed a significant relationship agreeing with cultural stereotype attitudes (B = .29, SE = .15, p < .01) (Duvall et al.). Duvall et al. concluded that complimentary sexual stereotypes could lead to increased sexual risk behavior, which may lead to HIV infection.

Duvall et al. (2013) also reported that African American women (N = 206) who traded sex for money, drugs, or favors showed a significant relationship with complimentary sexual stereotypes (B = .78, OR = 2.18, SE = .34, p < .05). The results indicated that, among African American women, there is an association between racial sexual stereotypes and the act of trading of sex (Duvall et al.). The importance of this finding is that risky sexual behaviors may be influenced by the African American women's affirmation of racial sexual stereotype beliefs (Duvall et al.). Moreover, racial

sexual stereotype beliefs may be an extenuating factor influencing HIV risky behavior among African American's women (Duvall et al.).

In an exploratory study by Jarama, Belgrave, Bradford, Young, and Honnold (2007) of 51 African American women aged 18 to 49 years, the women all believed they had control within their sexual relationship and voiced assurance of being comfortable to discuss safer sex with partners. Of the 51 women, 36 (70%) reported inconsistent condom use, and 22 (43%) reported not discussing safer sex with partner. Themes that emerged for not discussing safer sex with their partners included trust and the belief that God would protect them from harm (Jarama et al.). Although all of the women perceived HIV risk as minimal, Jarama et al. noted during the semi-structured interviews that all of the women acknowledged that there was an identifiable HIV risk. Jamara et al. concluded this sample of African American women had a moderate risk for HIV by generalizing participants' comments and responses that revealed identifiable risk factors among the women's sexual partners.

Attitudes about Use of Condoms

Attitudes among African American women about condom use are important and related to HIV risk. Corneille, Zyzniewski, and Belgrave (2008) assessed condom attitudes among 325 African American women aged 18 to 61 years. Corneille et al. used a seven item Likert attitude scale ranging from strongly disagree to strongly agree to measure participants' attitude about using condoms and perception of partner's attitude of about using condoms that found a participants' mean score of 1.76 (SD = 0.7), which reflected a slightly negative attitude towards condom use.

Duvall et al. (2013) in a study of African American women found frequency of condom use (r = -.26, p < .01) was negatively associated with age and marital status (r = -.19, p < .01). African American women believed their relationship was reinforced by not having their partner use condoms ([B = .28, SE = .10, p < .01]; Duvall et al.). Likewise, participants' perception of partners' attitude toward no condom use as reinforcing their relationship showed a similar mean score of 1.79 (SD = 0.59) with greater deviation of a negative attitude towards condom use (Duvall et al.).

Corneille et al. (2008) studied the influence of age on participants' perceptions of their partners' attitude towards condom use controlling for education, partner status, length of relationship and found when the women's age increased, perception of partner's attitude towards condom use decreased. Age impacted the women's perception of partners attitudes about condom use, when the women's age increased their perception of partner's attitude towards condom use decreased. Length of relationship and level of education were significantly associated with the women's perception of their partners attitudes towards condom use, women with college or some college education perceived partner's attitudes towards condom use as more positive and women in a longer relationship were more likely to have reported a decrease in partner's approval to wear condoms (Corneille et al.).

Belgrave, Corneille, Hood, Foster-Woodson, Fitzgerald (2010) studied 398 unmarried, heterosexual, African American women to determine attitudes towards condoms and drugs. Attitudes about condom use were measured using a seven item questionnaire with a four point Likert scale with questions like: "Sex with condoms does not feel natural" (Belgrave et al., p. 133). A higher score indicated an unfavorable

attitude toward condom use; condom attitudes had a mean of 1.73 (*SD* = .54) on pretest and a posttest HIV intervention mean of 1.59 (*SD* = .46) (Belgrave et al.).

A qualitative study explored HIV beliefs, attitudes, feelings, and behaviors among a convenience sample of 36 African American Midwestern women primarily professional (78%) aged 40 to 65 years using focus groups and interviews (Harris, Mallory, & Stampley, 2013). The theme of man sharing, defined as two women residing at two different residences knowingly have a committed intimate relationship with one man during the same time period, surfaced during interviews with 15 of 21 participants (Harris et al.). African American women in the study noted that the practice of man-sharing is due to lack of acceptable and available African American men stemming from: (a) incarceration, (b) intravenous drug use, (c) down low (secret homosexual or bisexual behavior), and (d) dating women outside the African American race (Harris et al.). These women described the restricted belief of not being able to negotiate safe sex practices for fear the man would terminate the relationship and initiate relationship with another woman, and viewed man sharing as risky, dangerous, and a contributing factor to increase incidence of HIV among middle age African American women (Harris et al.).

Attitudes about Drugs

Belgrave et al. (2010) hypothesized that African American women who sensed the presence of group social support were likely to have an increase condemnation of drug use and had a greater awareness of the dangers of drug use. In addition, Belgrave et al. hypothesized that African American women would report on post-test lower use of alcohol and marijuana. Belgrave et al. surveyed 398 African American women who attended three out of five HIV prevention classes and then administered an instrument

that measured both their disapproval and perception of harm using alcohol, marijuana, and tobacco. Perception of drug harm was measured with a four item Likert scale examining participants' attitudes about drugs: "How much do people risk harming themselves when they smoke marijuana once a month" (Belgrave et al., p. 134). The results showed a 7% decrease in alcohol use from pre-test to post-test; marijuana use showed no change from pre-test to post-test; and the tobacco use was not reported (Belgrave et al.). The participant results on post-test showed an overall 1% increase in disproval of alcohol, marijuana, and tobacco use; and 2% increase in perception of the drug harm with alcohol, marijuana, and tobacco use (Belgrave et al.). These findings suggest that a perceived social support has a limited association with disapproval and perception of harm with alcohol, marijuana, and tobacco use (Belgrave et al.).

Knowledge about Actions to Prevent HIV or STDs

Knowledge is defined as having a general awareness or possession of information facts, truths, or principles (Merriam-Webster Inc., 2014). Important to this investigation is knowledge about actions taken before and after intercourse to prevent HIV. Shamley–Ebron (2009) used focus group interviews and participatory observation while providing an eight week culture, gender oriented HIV prevention intervention to explore eight young African American girls', aged nine to twelve years, knowledge of body and sexual health. Shamley-Ebron found the girls lacked knowledge about reproductive body processes or sexual health and were unable to identify actions needed to consummate sex or sex behaviors that transmitted disease. The next theme to emerge was the girls' inaccurate reproductive knowledge, body knowledge, and sexual health. Shamley-Ebron illustrated lack of knowledge about sexual health with the girl's desire for knowledge

with a participant's quote: "… My mother just told me not to bring home any babies, but she did not tell me how it happens … just don't hang around with boys because they are nasty" (p.33).

Kennedy and Roberts (2009) in a mixed-method study explored STD and HIV knowledge among 15 young women (11 African American, 2 Hispanic, 2 Samoan) aged 18 to 24 years using a 27 item STD knowledge questionnaire with internal consistency (α = .86) and an 18 item HIV knowledge questionnaire with internal consistency (α = .79 - .89). The mean score for the sample on STD knowledge test was 59%, and the mean score on HIV knowledge test was 73% (Kennedy & Roberts). Participants expressed frustration with their high school sex education, which included only sex abstinence, not having an adult woman in their life willing to discuss sex, and a desire to have someone to discuss sex with and the ability to have questions answered truthfully (Kennedy & Roberts).

Younge, Salem, and Bybee (2010) studied 196 low income African American women with a mean age of 30.38 (*SD* = 9.34) and measured their HIV knowledge using a 24 true/false item HIV/AIDS knowledge scale that identified acts before and after sex to prevent HIV/STDs developed specifically to be used with African American women. The women answered an average of 82% of the true/false questions (Younge et al.). Young et al., asked participants about actions they took to prevent HIV/STDs before and after sex and reported the participants responses: (a) 127 (65%) used condoms, (b) 49 (25%) practiced monogamy, (c) 25 (13%) had routine HIV testing, (d) 19 (10%) douched or washed after sexual intercourse, (e) 19 (10%) knew partner was HIV negative, (f) 10

(5%) took birth control, (g) 7 (4%) partner pulled out before ejaculation, and (h) 1 (.5%) substituted oral or anal sex for vaginal sex (Young et al., 2010).

HIV Testing

An HIV test is used to detect the HIV/AIDS virus (CDC, 2014b). In 2006 the CDC modified HIV testing guidelines as a result of an increase HIV incidence among persons unaware of HIV status and those who may not appear to belong to high risk categories such as sex trading, IDU, and men who have sex with men (MSM), etc. (CDC,2006). The 2011 HIV Surveillance Report revealed N = 50,007 new cases of HIV infection; heterosexual exposure accounts for 12% (N = 4,775) of the HIV infections among males, and 86% (N = 9,026) of the HIV infections among females (CDC, 2013f). The accumulated total of heterosexual exposure is extracted from the CDC 2011 surveillance report by calculating the sum of HIV cases among females and males exposed by heterosexual relation and then dividing by the cumulative total of HIV cases. Heterosexual contact accounts for all HIV cases are 27.6% (N = 13,801); yet it accounts for 63% of the cases among African American women.

HIV Status Awareness

The CDC (2008) reported an estimate of the number of undiagnosed people with HIV to be 21.0% to 25.0% (232,700 to 312,000). Marks, Crepaz, and Janssen (2006) calculated that 54% of new HIV cases each year are result of sexual transmission by those persons who are unaware of their HIV status. According to Marks et al. persons who are unaware of their HIV positive status are 3.5 times higher than those aware of HIV positive status to sexually transfer the virus. Marks et al. (2006) theoretically proposed that if 57% of those persons undiagnosed HIV became aware of their HIV

positive status these persons would avoid unprotected anal and vaginal intercourse and could decrease new HIV sexual transmissions by 31%.

Early HIV Detection

Early detection of HIV can result in the initiation of antiviral medications to maintain CD4 counts and decrease presence of serum viral load (Department of Health and Human Services [HHS], 2009, 2011). The decreased viral load can diminish the probability of transferring the virus to another person as well as decreasing the risk for opportunistic infection (Castilla et al., 2010; Donnell et al. 2010; Lingappa, 2010; Quinn et al. 2000; Wilson, Law, Grulich, Cooper, & Kaldor, 2008). There is also evidence that initiation and adherence to antiretroviral medications can reduce viral load 1,500 copies/ml or undetectable (Donnell, 2010; Quinn et al., 2000). Evidence has shown that low to undetectable viral load can prevent the transferring of the virus (Castilla et al., 2010; Donnell et al. 2010; Lingappa, 2010; Quinn et al. 2000; Wilson, Law, Grulich, Cooper, & Kaldor, 2008). With the increase awareness of HIV status and the initiation of antiretroviral medications, the HIV incidence rates may be decreased. Most important, awareness of HIV disease can provide initiation of antiretroviral therapy to halt the progression of the disease and prevent death.

HIV Screening

Screening for HIV was initially developed in 1985 to prevent the contamination of the blood supply (CDC, 1985). There are approximately 50,000 new cases of HIV reported each year in the U.S (CDC, 2013f). The true prevalence of HIV virus is unknown. As of 2009 the CDC (2010) noted that 82.9 million of adults aged 18 years and over in the U.S. reported they had never been tested for HIV, which is approximately

36% (N = 230,118 million [U.S. Census, 2010]. In 2001, the CDC recommended routine HIV screening in urban and rural areas with high prevalence of HIV to be provided by the public and private venues that offer HIV counseling, referral, and treatment. In areas with low prevalence of HIV, the private and public health care settings were to screen for high risk behaviors (CDC, 2001). If high risk behaviors were noted, HIV screening was recommended (CDC, 2001).

HIV Tests

The need to develop tests to detect HIV as quickly as possible became a priority. The Henry J. Kaiser Family Foundation (2006) reported the history of HIV test development, which follows:

1. The first HIV test, the enzyme linked immunosorbent assays (ELISA), was introduced in 1985. The Western Blot blood test kit was developed in 1987.
2. Rapid HIV test, Murex Single Use Diagnostic System (SUDS) was introduced in 1992 (Park C. & Arens M., 1993).
3. The oral fluid HIV test was developed in 1994.
4. The home urine HIV test was developed in 1996.
5. Rapid HIV test requiring whole blood sample per finger prick was introduced in 2002.
6. Clinical laboratory improvement amendment (CLIA) provided a waiver to allow the HIV rapid finger testing to be administered outside the conventional laboratory by persons without official laboratory training in 2003.
7. In 2004 the CLIA provided a similar waiver for the rapid oral fluid test.

Each of these tests is presented below:

ELISA

The HIV test, enzyme linked immunosorbent assays (ELISA), binds blood serum HIV antibodies with HIV antigens (University of Arizona, 2000). The HIV positive results have an optical density, concentration of viral proteins, of 0.500 nanometer (nm) (University of Arizona, 2000). A nanometer is a unit measurement of one billionth of a meter. An optical density below 0.300 nm is considered negative, and 0.300 to 0.499 is considered indeterminate (University of Arizona, 2000). A false negative can be related to the time between infection and antibody response to the virus that is not yet detectable (University of Arizona, 2000). If test is positive there is a need to confirm the results with a second test to rule out technical error (University of Arizona, 2000).

Western Blot-test Kit

The Western Blot is performed using blood serum and is considered the confirmatory test (University of Arizona, 1998). The Western Blot allows for the visualization of viral antibodies against each viral protein (University of Arizona, 1998). The HIV proteins being tested are: (a) glycoprotein (gp)160 (viral envelope precursor), (b) gp120 (viral envelope protein that binds to the CD4), (c) protein (p) 24 (viral core protein), and (d) p 31 (reverse transcriptase) (University of Arizona, 1998). If the test is positive there will be two bands present in agreement with the following criteria: (a) band present for either p 31 or p 24, and (b) band present for either gp 160 or gp 120 (University of Arizona, 1998). If bands are present, but the pattern is not in agreement with criteria for a positive result, then the test result is considered indeterminate and if there are no bands, the test is negative (University of Arizona, 1998).

Rapid HIV Tests

The development of rapid HIV tests provided an inexpensive way to screen at risk individuals for HIV. Many of these tests were Clinical Laboratory Improvement Amendments (CLIA) waived. Congress passed the CLIA of 1988 to categorize laboratory tests according to complexity as (a) waived, (b) moderate complexity, and (c) high complexity (FDA, 2009). The CLIA waiver is provided for a simple laboratory test that can be administered by a person with minimal training to achieve accurate results to lead to diagnosis of HIV (FDA, 2009). All FDA approved home tests are CLIA waived (FDA, 2009). These tests furnished community based organizations the ability to offer HIV testing to at risk populations, with minimal access to health care (Greenwald, Burnstein, Pincus, & Branson, 2006). The main advantage of rapid tests was the ability to provide immediate results for an individual in comparison to the HIV tests that took longer and often resulted in an inability of locating individuals to report results to (Greenwald et al.). Rapid testing provided the potential for the expansion of testing to reach greater numbers of individuals who are unaware of their status and who had not yet presented with signs and symptoms of HIV (Greenwald et al.).

There are a variety of approved Federal Drug Administration (FDA) rapid tests. The rapid test screens for circulating HIV antibodies and has shown high sensitivity and specificity. Following are the FDA approved rapid tests (Health Research and Education Team, CDC, 2008).

OraQuick Advance Rapid HIV 1/2 Antibody

The OraQuick Advance Rapid HIV 1/2 Antibody test was approved by the FDA in November 2002 (Health Research Education Team & CDC, 2008). This test is

performed with (a) oral fluids from the mucosal transudate the cheeks and gums has sensitivity of 99.6% (98.5 - 99.9) and specificity of 99.8 (99.6 - 99.9), (b) whole blood via finger stick or venipuncture has a sensitivity of 99.6% (98.5 - 99.9) and specificity of 100% (99.7 - 100), and (c) plasma has sensitivity of 99.6% (98.5-99.9) and specificity of 100% (99.6 - 99.9) (Health Research Education Team & CDC, 2008). The oral fluid and whole blood specimens are CLIA waived and the test with plasma is categorized by CLIA of moderate complexity (Health Research Education Team & CDC, 2008).

Uni-Gold Recombingen HIV

The Uni-Gold Recombingen HIV rapid test was approved by the FDA in December 2003 (Health Research Education Team & CDC, 2008). The test can be performed with whole blood via finger stick or venipuncture and has a sensitivity of 100% (99.5 - 100) and specificity of 99.7% ([99.0 - 100]; Health Research Education Team & CDC, 2008). This test can also be performed with serum and plasma specimens and has a sensitivity of 100% (99.5 - 100) and specificity of 99.8% ([99.3 - 100]; Health Research Education Team & CDC, 2008). The test using whole blood specimen is CLIA waived, but serum and plasma is categorized as moderate complexity (Health Research Education Team & CDC, 2008).

Reveal G3 Rapid HIV-1 Antibody Test

The Reveal G3 Rapid HIV-1 Antibody rapid test was approved by the Federal Drug Administration (FDA) in April 2003 and is CLIA categorized as moderate complexity (Health Research Education Team & CDC, 2008). This test can be performed with a serum specimen and has a sensitivity of 99.8% (99.2 - 100) and a specificity of 99.1% ([98.8 - 99.4]; Health Research Education Team & CDC, 2008). Testing with a

plasma specimen has a sensitivity of 99.8% (99.0 - 100) and slightly lower specificity of 98.6% ([98.4 - 98.8]; Health Research Education Team & CDC, 2008).

MultiSpot HIV-1/HIV-2 Rapid Test

The MultiSpot HIV-1/HIV-2 rapid test was approved by the FDA in November 2004 and has a CLIA category of moderate complexity (Health Research Education Team & CDC, 2008). The test can be performed with a serum or plasma specimen. The serum and plasma specimens have a sensitivity of 100% (99.4 - 100). The specificity of serum is 99.93% (99.79 - 100), and the specificity of plasma is 99.91% ([99.77 - 100]; Health Research Education Team & CDC, 2008).

Clearview HIV ½ STAT-PAK

The Clearview HIV ½ STAT-PAK rapid test was approved by the FDA in May 2006 is CLIA waived and can be performed using whole blood specimens via a finger stick or venipuncture (Health Research Education Team & CDC, 2008). The whole blood specimen has a sensitivity of 99.7% (98.9 - 100) and a specificity of 99.9% ([99.6 -100]; Health Research Education Team & CDC, 2008). The test can also be performed using serum and plasma specimens that are CLIA non-waived and reveal a sensitivity of 99.7% (98.8-100) and a specificity of 99.9% ([99.6 - 100]; Health Research Education Team & CDC, 2008).

Clearview Complete HIV ½

The Clearview Complete HIV ½ was FDA approved in May 2006 (Health Research Education Team & CDC, 2008). The test specimens are (a) whole blood via finger stick or venipuncture with CLIA waiver, and (b) plasma or serum and are CLIA non-waived (Health Research Education Team & CDC, 2008). The specimen types yield

the same sensitivity of 99.7% (98.9-100) and specificity of 99.9% (99.6-100) (Health Research Education Team & CDC, 2008).

Calypte™ HIV-1 Urine EIA test for HIV

The Calypte™ HIV-1 Urine EIA test for HIV was FDA approved in 1996 and is an immunoassay test that detects HIV recombinant gp 160 envelope in the urine (FDA, 2000). Clinical studies yielded sensitivity between 94.5% and 96.7% and specificity 78.3% and 80.8% (FDA, 2000). This test has less sensitivity to HIV antibodies and greater false positives compared to other rapid tests using oral fluids, whole blood, serum, or plasma. Since the advancement of rapid HIV tests, the urine test is generally not used in the U.S. (San Francisco AIDS Foundation, 2009). The Calypte™ HIV Urine EIA test has been marketed and distributed to Brazil, Canada, China, Egypt, England, France, India, Italy, Ivory Coast, Japan, Malaysia, South African, South Korea, Spain, and Uganda (FDA, 2000). The urine test is used more, accepted, and utilized by cultures that have cultural issue with providing a blood specimen (San Francisco AIDS Foundation, 2009).

Counseling if HIV Positive

Rapid HIV tests allows individuals to receive results in 20 to 30 minutes. According to the CDC (2006), rapid testing provides a method to increase HIV screening. The CDC (2006) claimed HIV prevention counseling in the acute health care setting may be seen as a barrier to testing and can interfere with HIV screening and diagnostic testing. Although counseling may be seen as a barrier, the CDC (2007) endorsed that HIV education with prevention measures be provided to individuals in the health and community settings caring for populations at high risk for HIV.

Prior to testing the individual should be informed that if HIV rapid test is reactive, a confirmatory testing will be needed (CDC, 2007). Counseling prior to an HIV rapid test is outlined by the CDC (1999) RESPECT-2. The counselor's focus is to assist with identifying personal HIV risks and creating an individualized risk reduction plan (CDC, 1999). After testing, a simple explanation of test results is provided and the HIV risk reduction plan is reviewed. If test is HIV positive, the person is reminded that there is a need for confirmation testing and assistance with identifying sources of support and making referrals as necessary (CDC, 1999, 2007). If the individual is negative, there is a need to provide education regarding a potential false negative. A false negative can happen if the test is performed during the window period, the time when the virus is in the body but HIV antibodies cannot be detected (Gallagher, 2010). The individual should be advised to have a follow up test in three months (CDC, 2007). At the follow up testing, it is important to review the person's individualized risk reduction plan while prompting the person to recognize any perceived barriers to the risk reduction plan (CDC, 1999).

Opt-in HIV Testing

The CDC (2001) recommended that HIV testing be offered to patients in health settings where the prevalence of HIV is greater or equal to 1%. Opt-in HIV testing is a targeted screening of patients who self-identify one or more HIV risks on a condensed HIV risk survey tool of five items (CDC, 2001). The patient is then counseled on HIV transmission, HIV prevention methods, the meaning of a HIV test, and the importance of obtaining HIV test results (CDC, 2001). With opt-in testing, the patient must provide informed consent before HIV testing is performed (CDC, 2001).

Opt-in Testing and Acceptance

Merchant, Seage, Mayer, Clark, DeGrutolla , and Becker (2008) studied acceptance of opt-in HIV testing among patients aged 18 to 55 years who visited the New England emergency department from July 2005 to July 2006. Merchant et al. reported less acceptance of opt-in HIV testing among adults (a) over 45 years, (b) men, (c) Caucasians, (d) persons with private insurance, (e) married, never married, or (f) no partner. Patients who were more likely to accept opt-in HIV testing were (a) Hispanic and African Americans with less than 12 years education, (b) previously HIV tested, and (c) no insurance or government insurance of Medicaid/Medicare (Merchant et al.). They reported the core reasons for accepting opt-in HIV testing were to obtain knowledge of HIV status and concern about possible HIV exposure. The chief reasons cited for declining opt-in HIV testing were perceived belief of not being at risk for HIV and previously being mandated to HIV test, such as requirement of marriage, health insurance, military, or incarceration (Merchant et al.). The study has a limitation of not appraising the perceived and actual HIV risk factors of the participants.

Merchant et al. (2008) also reported that, of the 2,099 study participants, 935 (44.6%) had never tested, 1,144 (54.5%) had a previous HIV test, and 39% of all study participants agreed to rapid HIV opt-in testing. Of the 935 participants who were never tested, the participants reasons for not testing: (a) 56.2% did not perceive themselves at risk, (b) 29.6% had not contemplated testing, (c) 6.4% reported testing angst, (d) 4.4% viewed testing as inconvenient, and (e) 3.5% reported other (Merchant et al.). Participants aged 25 to 29 years had the greatest acceptance of opt-in HIV testing (44.5%). In contrast, participants aged 45 to 49 years were less accepting of opt-in HIV testing

(30%); 39.0% of women accepted and 39.5% of the men accepted HIV opt-in testing; and Hispanics (54.6%), African American (43.6%), Caucasian (36.1%), and other (42.3%) accepted HIV opt-in testing (Merchant et al.). Participants with a high school education or less were twice as likely than participants with higher education to accept HIV opt-in testing because of apprehension about HIV exposure (OR = 2.29, 95% CI [1.35, 3.88]); and participants with high school education or less were twice as likely than those with higher education to decline opt-in HIV testing because of recent HIV testing (OR = 1.74, 95% CI [1.15, 2.64]; Merchant et al.).

Opt-out HIV Testing

In 2006, the CDC (2006) changed its recommendation of opt-in HIV testing to opt-out HIV testing, which should be performed in all settings with greater or equal to 1% prevalence per 1,000 patients screened for HIV. Opt-out HIV testing is offered to all patients regardless of HIV risk as part of routine care unless the patient declined testing resulting in the opt-out of HIV testing designation (CDC, 2006). This change to opt-out-testing was a result of barriers with opt-in testing. For example, health care providers did not always have the personnel or time to provide HIV risk screening and the required counseling, informed consent was needed, and HIV testing was often not reimbursed by insurance companies because it was not deemed routine care (CDC, 2006). The advantages of opt-out HIV testing was the patient's initial signing of consent for treatment during routine admission paperwork, which covered HIV testing and no additional informed consent was needed for HIV testing (unless otherwise mandated by state law of the residing health facility), and the test was reimbursable by insurance companies because it became a part of routine care (CDC, 2006). Additionally, the CDC

(2006) by changing opt-in to opt-out HIV testing increased awareness of HIV among individuals with unknown risk status, and maybe result in earlier care for patients with a HIV positive test.

HIV Opt-out-testing and Acceptance

Opt-out HIV testing has been recommended by the CDC 2006 guidelines, yet there are few studies showing the efficacy of the recommendations. Brown et al. (2008) was among the first studies to investigate patient acceptance of routine HIV opt-out-testing at an emergency department (ED) with an high HIV prevalence. A convenience sample of 9,826 participants from an ED revealed HIV testing acceptance of 53% (N = 5,223) and an HIV testing rejection of 47% (N = 4,594). According to Brown et al. African American self-identified as being HIV positive (6.1%) was higher than of all other races/ethnic backgrounds (0.8%). When comparing percentage of HIV test acceptance rates within a homogenous group, African Americans (55%) accepted HIV testing compared to Caucasians (52%), Hispanics (50%), and Asians (42%). A study be Brown et al. indicated African Americans were (a) more likely to accept HIV testing, (b) less likely to reject a test due to low risk perception, and (c) more likely to provide the response for test rejection as having a recent HIV test or belief of perceived low risk.

Freeman et al. (2009) studied opt-out-testing among patients aged 13 to 64 years at a Georgia hospital. Of the 5,080 patients invited to participate in the study, 91% agreed to HIV testing. Among the participants, the study revealed high agreement to be HIV tested. It needs to be recognized that 11% of the eligible patient population were offered HIV testing. The study design outlined specific time parameters for HIV testing to take place per study protocol, five days a week and during a 10 hour day shift. Outside the

study's protocol recognized parameters of time and day, there were 73 (.16%) patients HIV tested.

Freeman (2009) identified 29 patients with positive HIV rapid tests, and 26 confirmed tests performed via Western Bloc test. Of the patients tested, 2% (N = 112) were identified as having high risk behaviors for HIV. Although age and race were not considered significant variables in predicting high risk behavior, the return rate of HIV assessment survey was 2%, too low to make inferences related to socio-demographic variables. Freeman et al. reported 98% of the sample did not complete HIV risk assessment. Of the surveys completed, 3% (N = 62) of the men and 2% (N = 60) of the women had high risk HIV behaviors, males were more likely to report high risk behavior than females (OR = 1.83; 95% CI [1.23, 2.72]), and African Americans (92%) were more likely to accept HIV testing compared to Caucasians (89%) (Freeman et al.). Overall Freeman et al. found that African American, older patients, and unmarried patients were more likely to seek HIV testing compared to Caucasian, pediatric patients, and married patients. Findings of Freeman et al. (2009) and Myers et al. (2009) findings were similar findings by Brown et al. that African Americans are more likely to accept HIV testing with HIV opt-out-testing.

Myers, Modica, Dufour, Bernstein, and McNamara (2009) evaluated six community health Centers serving high risk populations for HIV screening between March 1, 2007 and March 31, 2008 and reported high acceptance of HIV opt-out-testing when HIV testing was offered. Of the 58,619 patients in the community centers 16,148 (28%) were offered rapid HIV testing and 10,769 (67%) accepted rapid HIV testing (Meyers et al.). The rapid HIV test yielded 39 positive tests and 17 of the positive tests

were confirmed with the Western Bloc test for a HIV diagnosis (Meyers et al.). African Americans were more likely than Caucasians to be offered HIV testing (OR = 1.06; 95% CI [1.01, 1.11]); African Americans were more likely to accept HIV testing (AOR = 1.08, 95% CI [1.66, 2.04]) compared to Caucasians; and men with private insurance were less likely to accept HIV testing (OR = 0.82, 95% CI [0.70, 0.9], $p < 0.0001$) in contrast to men without insurance. Myers et al. found minimal HIV diagnosis in this high risk community population and speculated that the minimal HIV infections diagnosed may have occurred because of the window period where HIV antibodies are not yet detectable. Meyers et al. also noted that patients who presented with acute HIV disease symptoms were more likely to be misdiagnosed as influenza and to yield a false negative response on a rapid HIV test.

Podhurst, Storm, and Dolgnos (2009) surveyed women from multi-geographical clinical sites in an effort to understand women's perceptions of HIV opt-out-testing during pregnancy and to determine HIV knowledge. Women (N = 836) were from clinical sites in Puerto Rico (N = 73), Florida (N = 109), New York (N = 145), Illinois (N = 172), Michigan (N = 41), Mississippi (N = 102), New Jersey (N = 158), Wyoming (N = 57), and not reported (N = 17). Podhurst et al. found 82% of the women were aware of their HIV status; 75% reported negative, 7.0% positive, 13% unaware, and 5% did not report a HIV status. Podhurst et al. also reported that 755 (90%) of women agreed that HIV testing should be a routine part of prenatal care and 772 (91%) were comfortable with HIV testing during pregnancy.

Podhurst et al. (2009) also administered a survey to 853 women regarding HIV transmission and reported correct and incorrect responses: (a) "Women can get HIV from

public toilet (p. 333).” [787 (92%) correct, 68 (8%) incorrect response] (b) “Women can give HIV to their babies (p. 333).” [694 (81.4%) correct, 158 (18.6%) incorrect response] (c) “Women can give their babies HIV during delivery (p. 333).” [551(64.6%) correct, 302 (35.4%) incorrect response] (d) “Women can give their babies HIV through breast feeding (p.333).” [534 (62.6%) correct, 319 (37.4%) incorrect response] (e) “There are medicines that can help keep newborn infants from getting HIV when the mother is HIV positive (p. 333).” [524 (61.4%) correct, 329 (38.6%) incorrect response]. The women who were never tested were three times more likely to have lower HIV knowledge (OR = 3.05, 95% CI [1.39, 6.99] than the women who self-reported to be positive; African American women were more likely to have lower HIV knowledge (OR = 1.57, 95% CI [1.04, 2.37]) than Caucasian women; and Hispanic women were three times more likely to have lower HIV knowledge (OR = 3.34, 95% CI [2.2, 5.10]) than Caucasian women (Podhurst et al.).

Adherence to CDC Opt-Out HIV Testing Guidelines

Jain, Wyatt, Burke, Sepkowitz, and Beiger (2009) found low adherence to opt-out HIV testing among medical residents and reported that of the 426 medical residents, only 152 (35.8%) provided routine HIV testing to all patients and 274 (64.2%) of the residents used HIV behavior risk assessment to determine if there was a need for HIV testing. The barriers in ordering HIV testing among the medical residents were identified as (a) discomfort approaching patients to offer HIV testing, (b) counseling on positive results, and (c) assessing sexual history and risk behaviors (Jain et al.). Additional analysis showed the 35.8% of the residents who offered HIV testing used one of the three approaches: (a) 21.3% offered HIV testing routinely when providing an exam, (b) 18.9%

offered to all new clinic patients, and (c) 13.2% offered to all clinic patients (Jain et al.). Interestingly, the (n = 95, 40.9%)medical residents who went to school outside the U.S. ordered greater than 10 HIV tests in the past month compared to 196 U.S. medical residents who ordered greater than 10 HIV tests in the past month (Jain et al.). Overall, medical residents 138 (32.4%) claimed to not be aware of the CDC 2006 HIV testing guidelines (n = 59, 29.9%; Jain et al.).

Jain et al. found six variables that had significant association with medical residents ordering 10 or fewer HIV tests compared to medical residents that ordered 10 or more HIV tests. Provided are the adjusted odds ratio (AOR) that illustrate the HIV ordering practices as reported by medical residents:

1. not comfortable with HIV pre-test counseling were less likely to order HIV testing compared to medical residents who were comfortable with HIV pre-test counseling (AOR 7.0, 95% CI [1.6, 41.7]).
2. who did not provide risk based HIV testing were less likely to order HIV testing compared to medical residents who did provide HIV testing based on risk assessment (AOR 4.5; 95% CI [2.5, 8.2]).
3. who reported never or occasionally obtaining sexual histories from patients were less likely to order HIV testing compared to medical residents who did obtain sexual histories (AOR 3.9, 95% CI [2.2, 7.2]).
4. who reported never/occasionally referring patients to another medical doctor for HIV testing were less likely to perform HIV testing compared to medical residents who did refer patients to another medical doctor for HIV testing (AOR 2.8, 95% CI [1.4, 4.9]).

5. who reported being dissuaded by pre-counseling to order more tests were less likely to order a HIV test compared medical residents who were not dissuaded by pre-counseling to order more tests (AOR 2.6, 95% CI [1.4, 4.9]).
6. who never reported a HIV negative result to a patient were less likely to order a HIV test compared to medical residents who had reported HIV negative result to a patient (AOR 2.2, 95% CI [1.3, 3.8]).

HIV Testing Patterns of African American Women

Medina (2009) explored HIV testing and retesting trends among 56 women. The study participants included 32 (58%) African American women and 24 (42%) Latina women. The themes identified for HIV testing were the desire to know one's status (N = 16; 28.5%), apprehension regarding personal drug use (N = 8; 14.6%), apprehension about risk behavior (N = 6; 10.7%), and fear ([N = 6; 10.7%]; Medina). The primary reason for the women to be HIV retested was to monitor HIV status (N = 26; 46.4%); the women reported having male partners who had multiple sex partners (Medina). There were 21 (37.5%) women who provided no response and 13 (23.2%) women who reported HIV retesting was related to apprehension about their participation in these risky behaviors: (a) IV drug use, (b) unprotected sex, (c) having more than one sexual partner, and (d) sexual partner's risky sex behaviors or drug use (Medina, 2009). These women volunteered to be a part of the study, which may have an influenced the large number of women who chose HIV testing and retesting.

A cross-sectional study of 571 African American women of low income from Missouri who completed a self-administered survey found 52.6% of rural women and

57.4% of the non-rural women reported having been HIV tested (Crosby,Yarber, Diclimente, Wingood, & Meynerson, 2002). The non-rural women were less likely to participate in HIV or STD prevention methods, utilize condoms, and more likely to trust that their partner was HIV negative if tested or not (Crosby et al.).

Summary

This review of the literature found that African American women with a history of drug use are at risk for HIV infection and STDs. Drug use may alter thinking processes, promote impulsivity, and distort judgment (NIDA, 2012). Thus African American women with drug use behaviors combined with risky sexual behaviors and trading sex behaviors all contribute to an increased risk for HIV infection. This review also found that understanding the attitudes of African American woman about HIV/AIDS and risky sexual behavior are important factor in preventing HIV transmission. Additionally, African American women's knowledge about actions to prevent HIV and STDs are also an important factor in preventing HIV transmission.

Early HIV testing is important for African American women with a known risk(s) of becoming HIV infected in order to be aware of their HIV status. Early HIV treatment with antiretroviral agents during early phase of HIV infection reduces the transmission of HIV by suppressing viral replication and progression of disease (HHS, 2013). Even more important, studies have shown women who are aware of their HIV positive status are more likely to change behaviors (unprotected sex, sharing needles) to prevent the spread of HIV (CDC, 2013f; Marks, Crepaz , Senterfitt, & Janssen, 2005). Early detection of HIV is imperative so the woman can be linked to a healthcare team resulting in early treatment with antiretroviral agents, counseling, and continuous follow up care (HHS,

2013). Moreover, early detection with treatment coupled with awareness of behavioral changes can prevent the spread of HIV to other persons (CDC, 2013f; HHS, 2013).

For nurses, the gap in knowledge is determining factors that can guide African American women with HIV/STD risk factors to seek HIV testing. Nurses are in a unique position to counsel and guide African American women with a history of drug use to reduce their risk of HIV or STDs and to seek HIV testing. Thus, it is important to study African American women's attitudes about HIV/AIDS and risky sexual behavior as well as knowledge about actions to prevent HIV or STDs in order to learn factors that influence African American women's decision to seek or to avoid HIV testing. This study seeks to add to the body of knowledge of public health nurses to improve nurses ability to educate women at risk for HIV/STDs and the need for HIV testing and early detection of HIV.

Chapter III

Introduction

The purposes of this investigation were to examine an existing data set from a sample of African American women with a history of drug use and who are at high risk to acquire or transmit HIV and/or STDs to determine the women's knowledge and attitudes about risky sexual behaviors, factors influencing a decision to have HIV testing, and the influence of sex trading on the decision to have HIV testing.

Research Questions

This study was designed to answer the following research questions:

1. What knowledge do women have about actions before and after sex to prevent acquiring HIV or STDs?
2. What are women's attitudes about risky sexual behaviors?
3. Will women's knowledge about risky sexual behavior influence her decision to have HIV testing?
4. Will women's attitudes about risky sexual behavior influence her decision to have HIV testing?
5. Are there interactions between women's knowledge to prevent HIV, attitudes about risky sexual behavior, and the women's decision to have HIV testing?
6. Is there difference in women who engage in sex-trading versus women who do not engage in sex-trading and their decision to have HIV testing?

Methodology

Research Design

The study design was a secondary data analysis of existing data collected in a study conducted at a large Midwestern University School of Medicine that investigated the efficacy of a female oriented model delivered at discrete intervals to decrease drug use and sexual risks behaviors (Cottler, 2006). This original study was funded by National Institute of Drug Administration (NIDA). The intervention study, focused on women, aimed to reduce drug use and HIV/ sexual transmitted infection (STD) risk behaviors (Cottler, 2006). Participants in the study were randomly assigned to one of the three peer dispensed interventions: (a) a modified NIDA cooperative agreement standard intervention, (b) standard intervention plus well woman exam, and (c) standard intervention, plus well woman exam, plus four educational sessions. The investigators examined the degree of variance and effects of reducing high risk drug and sexual behaviors from the differentiated interventions (Cottler).

There were multiple advantages to performing secondary analysis of existing data. Boslaugh (2007) noted the following advantages of secondary analysis:

1. promotes the generation of new hypothesis extending the intended purpose
2. frees the researcher from expending direct and indirect cost on the data collection phase, such as time and money
3. de-identifies so data is free of any personal identifiers
4. allows the researcher more time for analyzing data and testing hypotheses

There were also multiple disadvantages to secondary analysis of existing data. Boslaugh (2007) noted that the disadvantages include no control over original data

collection methods, variables may be defined or categorized differently, operational definitions may have been characterized with broader or narrower descriptions than desired, an inability to collect additional information from the original sample, or inability to verify the data cleaning process.

Sample and Setting

The setting for the original study was a large city in the Midwest. In order to recruit the women, community health outreach workers provided a potential participant with an abbreviated synopsis of the study and eligibility to participate in the study. The inclusion criteria for participants of the study were: (a) female; (b) ≥18 years of age; (c) self-reported to be sexually active within the last 4 months; (d) recent use of amphetamines, cocaine or heroin; (e) have not attended substance abuse treatment program within the last 30 days; and (e) self-reported to be residing in the large Midwestern city. Exclusion criteria were: (a) under age 18, (b) male or transgender, (c) not sexually active with the past four months, (d) no recent drug use of amphetamines, cocaine or heroin, or (e) resides outside the large Midwestern city (Cottler, 2006).

Vaddiparti et al. (2006) recommended participant recruitment using community advertisement in neighborhood newspapers and the posting flyers in geographical venues that were observable by the target population. Thus, women were also recruited for the initial study at nightclubs, bars, hair and beauty salons, bus stations, and laundromats**.** Additionally, women were referred by caseworkers from the Midwestern city Female Drug Courts and social services agencies. Potential participants were also referred by friends. The recruited participants were interviewed and surveyed at Midwestern health department.

There were 761 African American women recruited in the original study. For this secondary data analysis only African American women with a drug history were included (Cottler, 2006). Of the original sample, 99.5% (N = 751) of the women were included in this study. The following data were available from the original study: (a) frequency of HIV testing among the women, (b) knowledge of actions before after sex to prevent an STD and HIV, (c) attitudes towards risky sexual and attitudes about sex, and (d) frequency of trading sex for drugs, money, food, place to stay or clothes (Cottler, 2006). Demographic variables available included age and income level.

Operational Definitions

Operational definitions for this investigation were derived from the inclusion criteria for the subjects and the Washington University Risk Behavior Assessment of Women ([WU-RBA-W]; see Appendix A) instrument categories: HIV testing; risky sexual behaviors: sexual activity; sex trade: sex for money/drugs/food; knowledge: sexual activity before and after sex; attitudes: HIV/AIDS (Cottler, 2006).

African American Women with a History of Drug Use

African American women with a positive urine drug test for cocaine, amphetamines, or opiates; and/or physical presence of track marks from recent intravenous drug use were considered to have a history of drug use.

HIV Testing

HIV testing was defined as the score on the WU-RBA-W for number of times tested, responses to 14 yes/no questions, and one open ended question related to HIV testing (Cottler, 2006; see Appendix A).

Risky Sexual Behaviors: Sexual Activity

Risky sexual behaviors-sexual activity were defined as the score on the WU-RBA-W in response to having had sex in the past four months and five open ended questions related to number of times engaging in risky sexual behavior (see Appendix A).

Sex Trade: Sex for Drugs/Money/Food/Place to Stay/Clothes

Sex trade-sex for money/drugs/food /place to stay, clothes were defined as the score on WU-RBA-W in response to four open ended questions asking number of times in the past four months subjects traded sex for drugs alcohol, money, food, a place to stay or clothes; 24 yes/no questions about trading sex for drugs alcohol, money, food, a place to stay or clothes with an answer of yes defined as a sex trade; and one open ended question specifying other drugs used (Cottler, 2006; see Appendix A).

Knowledge: Sexual Activity Before and After Sex

Knowledge-sexual activity before and after sex were defined as the score on the WU-RBA-W in response to the 17 yes/no questions related to behaviors performed before and after sex keep from getting STDs or HIV (Cottler, 2006; see Appendix A).

Attitudes about HIV/AIDS and Risky Sexual Behavior

Attitudes were defined as the score on the WU-RBA-W in response to three statements about subjects attitudes towards sex (agree, neutral, disagree) sexual, drug use, drinking behaviors that need changing; one question related to perception of the most risky behavior in terms of causing HIV/AIDS (not using condoms, sharing needles, using alcohol or drugs before or during sex): and five questions (agree, neutral, disagree) related to perception of if they get the HIV virus (Cottler, 2006; see Appendix A).

Instrumentation

The Washington University Risk Behavior Assessment of Women (WU-RBA-W) was modeled after the 1991 *Risk Behavior Assessment* (RBA) developed by the National Institute of Drug Abuse (NIDA) jointly with the grantees of AIDS Cooperative Agreement (Needle et al., 1995; Vaddiparti et al., 2006; ee Appendix A). The WU-RBA –W is a self-report survey that includes 14 yes/no questions about HIV testing, one yes/no question with five open ended questions with responses scored for risky sexual behaviors, (sexual activity); two open ended questions with a response score, and 13 yes/no questions and two open ended questions with a response score related to sex trade (sex for money/drugs/food/place to stay/clothes); 17 yes/no questions related to knowledge (activities before and after sex to prevent HIV and STDs); and eight statements with categorical responses of agree/neutral/disagree, one statement with scale of the most risky behavior causing HIV/AIDS, and three yes/no questions related to attitudes ([HIV/AIDS], Cottler, 2006; see Appendix A). There is no psychometrics on the WU-RBA-W. The NIDA Cooperative Agreement RBA yields a range of reliability from moderate to strong association (r = .66, SEM = 3.29 to r = .83, SEM = 3.25; Needles et al. 1995). The WU-RBA-W tool is an assessment tool that provides incidence data at nominal and interval levels of measurement (Cottler, 2006). The WU-RBA-W was a baseline assessment administered to the women by a research assistant with responses recorded electronically on the computer prior to HIV education (Cotter, 2006).

The WU-RBA-W has items inquiring of (a) the number of times the participant has procured HIV testing, (b) if test results were received with the last HIV test, and (c) reasons for not getting HIV tested. The items have good face validity. Test–retest

reliability on the continuous RBA item, "How many times, if any, have you had a test for HIV virus?" reveals good reliability, Pearson correlation (r) = .82 (Fisher, Reynolds, Jaffe, & Johnson, 2007). The test-retest reliability on the dichotomous variable, "Did you get your test results that last time?" reveals slight to fair agreement with Cohen's kappa (κ) = .22 with 95% confidence interval [.118, .332] (Fisher et al., 2007).

Informed Consent

Approval of the original secondary data analysis was obtained from the Washington University Human Studies Committee while a pre-doctoral student at Washington University School of Medicine (TL1 TR000449). The data has been de-identified so that there are no personal identifiers and subjects are completely anonymous. Approval for this secondary analysis of this de-identified data set was obtained from the University of Missouri-St. Louis Institutional Review Board. This de-identified data is stored on pass word protected computer at University Florida that requires remote access and computer password entry to University Florida computer then another remote access with password to statistical lab and data storage (Cottler, 2006). A code book had been created to document changes in codes, variables with numerical codes present, dummy variables that are created, and tests that were performed.

Data Collection

After signing informed consent in the original study, the WU-RBA-W survey was administered by research assistant, during participant interview, (Cottler, 2006). All participants received modest cash reward for their time (Cottler). The original data came from a dataset that was compiled from NIDA grant, R01DA11622A, funded research (Cottler, 2006).

Data Analysis

Statistical analysis was done using SPSS 21 statistical software. Descriptive statistics were used to characterize the sample with selected socio-demographic variables of age and income level. Descriptive statistics provided the mean number of HIV tests and range of the number of HIV test done among participants, frequency of the participants' responses of the behaviors employed before and after sex to prevent HIV/STD are identified as knowledge variables, and the frequency of self-reported beliefs of HIV risk among the participants were identified as attitude variables.

Binary logistic regression was performed using the variable predictors from the data set. These variables included demographic variables, number of times participants HIV tested, sex trade (yes, no), behaviors considered most risky (no condoms, sharing needles, or using alcohol or drugs before sex), sexual practices (used or not used) to prevent HIV/STD, HIV knowledge, and HIV attitudes.

The advantage of using logistic regression was the ability to analyze discrete, continuous, and dichotomous variables. Binary logistic regression has no assumptions to be met about predictor variables being normally distributed; this provided the flexibility of using such a homogenous sample. Binary logistic regression is flexible in producing non-linear models (Mertler & Vannatta, 2005).

The disadvantage of binary logistic regression was it could lead to high correlations among predictor values and a condition of multicollinearity (Mertler & Vannatta, 2005). Multicollinearity can make it difficult for the researcher to discern, which independent variable is influencing the dependent variable (Mertler & Vannatta,

2005). Binary logistic regression is sensitive to outliers and can create poor fit for the model (Mertler & Vannatta, 2005).

Chapter IV

Results

This chapter presents the characteristics of the sample. Results for research questions one through six are presented.

Sample Profile

The study sample was derived from a preexisting data base of 761 African American women with a history of drug use. Ten cases were missing age data and were removed from the sample. The resulting sample size was 751 African American women with a history of drug use. Other missing data will be reported as missing values for analysis. Demographic data selected for this investigation include income level, age, and if the women had a HIV test. This sample of African American women ages ranged from18 to 65 years. Ages were transformed and recoded into stratified age groups to mirror the stratification used by the CDC for collecting HIV data and categorical income levels were derived from the data set. The majority of women (86.0%) were aged 18 to 44 years, over half (50.6%) were aged 35 to 44 years, and the majority (84.6%) had an income below $11,000 (see Table 1).

Table 1

Demographic Characteristics of Women by Age and Income Level

Characteristic	n	%
Age category		
18 - 24	90	12.0
25 - 34	176	23.4
35 - 44	380	50.6
45 - 54	91	12.1
55 - 64	13	1.7
65 - 65+	1	.1
Total	751	100.0
Income previous 12 months		
$0 - $3,999	363	48.4
$4,000 - $6,999	170	22.7
$7,000 - $10,999	101	13.5
$11,000 - $14,999	46	6.1
$15,000 - $18,999	25	3.3
$19,000 - $24,999	19	2.5
$25,000 - $34,999	12	1.6
$35,000 - $44,999	6	.8
$45,000 - $64,999	4	.5
$65,000- $100,000	3	.4
Missing	1	.1
Total	750	99.9

The majority, 673 (89.7%) of African American women responded yes, they had been HIV tested, only 77 (10.3%) responded no to having been HIV tested, and one (.1%) did not respond to the question. Cross-tabulation was used to determine the number of HIV tests among the age categories of participants (see Table 2) and the number of times tested (see Table 3). The largest number of women (380) reported yes or no to HIV testing were aged 35 to 44 years. Women aged 25 to 34 years (93.1%) and aged 35 to 44 years (91.1%) had a greater percentage of HIV testing than other cohorts of women. The number of times tested ranged from one time to greater than ten times. The majority of times the women reported testing were one to two times (39.3%) and three to four times (26.5%). Of the women who reported HIV testing, 379 (50.4 %) women had been HIV

tested more than two times and 295 (39.3%) women had been HIV tested one to two times (see Table 3).

Table 2

Number and percent of HIV test done by Age Category (n = 750)

	No HIV test		Yes HIV test	
Age category	n	%	n	%
18 - 24	14	15.6	76	84.4
25 - 34	12	6.9	163	93.1
35 - 44	34	8.9	346	91.1
45 - 54	15	16.5	76	83.5
55 - 64	2	15.4	11	84.6
65 - 65+	0	0.0	1	100.0
Total	77	10.3	673	89.7

Table 3

Number of times tested and percent of HIV Tests by Age Category (n = 751)

	Number of HIV Testes							
Age category	0 n (%)	1- 2 n (%)	3- 4 n (%)	5 - 6 n (%)	7 -8 n (%)	9-10 n (%)	> 10 n (%)	Total
18 - 24	14 (15.6)	42 (46.7)	19 (21.1)	7 (7.8)	1 (1.1)	2 (2.2)	5 (5.6)	90
25 - 34	12 (6.8)	62 (35.2)	54 (30.7)	23 (13.1)	5 (2.8)	6 (3.4)	14 (8.0)	176
35 - 44	34 (8.9)	150 (39.5)	103 (27.1)	47 (12.4)	12 (3.2)	18 (4.7)	16 (4.2)	380
45 - 54	15 (16.5)	34 (37.4)	19 (20.9)	14 (15.4)	3 (3.3)	4 (4.4)	2 (2.2)	91
55 - 64	2 (15.4)	6 (46.2)	4 (30.8)	0 (0.0)	1 (7.7)	0 (0.0)	0 (0.0)	13
65 - 65+	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1
Total HIV tests	77 (10.3)	295 (39.3)	199 (26.5)	91 (12.1)	22 (2.9)	30 (4.0)	37 (4.9)	751

Of the 673 women who had HIV testing, 555 (82.2%) received results and 120 (17.8%) did not receive results. Women were asked the reason for not having a HIV test. Reasons reported by participants for not being HIV tested: (a) 206 (27.5%) were afraid to know HIV status (b) 156 (20.8%) believed they were not be at risk, (c) 147 (19.6%)

feared others would find out HIV status is positive, and (d) 75 (10.0%) feared of contracting AIDS from the test.

Research Question Results

Research question 1. What knowledge do women have about actions before and after sex to prevent acquiring HIV or STDs? There are seventeen knowledge items used from the Washington University Risk Behavior Assessment of Women (WU-RBA-W) that have dichotomous recorded responses of no or yes about the women's activity performed to prevent contracting a STD or HIV/AIDS. Descriptive analysis was performed. Activities include: (a) Cleanse before sex (soap); (b) cleanse after sex (soap, douche, alcohol, bleach/peroxide); (c) cleanse partner before sex (soap); (d) cleanse partner after sex (alcohol, bleach/peroxide); (e) sex partner history (ask partner sex history, ask if HIV positive); (f) substitution for vaginal sex (oral sex, anal sex); and other actions (partner ejaculation, urination, antibiotics, healthy looking partner, ear wax). An activity, inserting ear wax in the woman's vagina, is believed that an STD can be identified if vaginal burning is the resultant of this activity. Only 90 (12%) of the women did not respond to any of the questions about their activity performed to prevent contracting a STD or HIV/AIDS while 603 to 662 of the women responded to the majority of the questions.

There were 322 (48.7%) women who responded yes and 339 (51.3%) no to washing genitals with soap before sex (see table 4). Over half of the women aged 25 to 34 and 35 to 44 reported washing genitals with soap before sex. With the exception of women aged 65 or more, all age categories reported washing genitals with soap after sex about 50% to 60% of the time; only 18 (25.7%) of women aged 18 to 24 douched after

sex while women aged 25 to 64 years reported douching nearly 50 percent of the time; few women reported cleansing with alcohol or bleach after having sex in all age categories (see Table 4).

Table 4.

Cleansing Prior to and After Sex to Prevent STD or HIV/AIDS by Age Category

	Cleanse prior	Cleanse after			
Age category yes/no	Soap n (%)	Soap n (%)	Douche n (%)	Alcohol n (%)	Bleach n (%)
18-24	70	70	70	70	70
Yes	29 (41.4)	38 (54.3)	18 (25.7)	5 (7.1)	1(1.4)
No	41 (58.6)	32 (45.7)	52 (74.3)	65 (92.9)	69 (98.6)
25-34	145	145	145	145	145
Yes	73 (50.3)	85 (58.6)	67 (46.2)	16 (11.0)	8 (5.5)
No	72 (49.7)	60 (41.4)	78 (53.8)	129 (89.0)	137 (94.5)
35-44	341	341	341	341	341
Yes	171 (50.1)	229 (67.2)	164 (48.1)	52 (15.2)	31 (9.1)
No	170 (49.9)	112 (32.8)	177 (51.9)	289 (84.8)	310 (90.9)
45-54	91	91	91	91	91
Yes	43 (47.3)	56 (61.5)	44 (48.4)	12 (13.2)	7 (7.7)
No	48 (52.7)	35 (38.5)	47 (51.6)	79 (86.8)	84 (92.3)
55-64	13	13	13	13	13
Yes	6 (46.2)	8 (61.5)	6 (46.2)	3 (23.1)	4 (30.8)
No	7 (53.8)	5 (38.5)	7 (53.8)	10 (76.9)	9 (69.2)
65-65+	1	1	1	1	1
Yes	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No	1 (100.0)	1 (100.0)	1 (100.0)	1 (100.0)	1 (100.0)
Total	661	661	661	661	661
Yes	322 (48.7)	416 (62.9)	299 (45.2)	88 (13.3)	51 (7.7)
No	339 (51.3)	245 (37.1)	362 (54.8)	573 (86.7)	610 (92.3)

Only 277 (41.9%) of the women asked their partner about their sex history; however, the majority of women 394 (59.6%) asked their partner if they were HIV positive (see Table 5). Over half of the younger women aged 18 to 24 years asked their partner's sex history while over half of women aged 18 to 65 years asked their partner if they were HIV positive (see Table 5). Few women reported substituting oral or anal sex

for vaginal sex. The most frequent yes response for substituting vaginal sex with oral sex to prevent STD or HIV/AIDS were women aged 25 to 34 years 24 (16.6%) and aged 35 to 44 years 56 (16.4%); only 22 (3.3%) of the responded yes to substituting vaginal sex with anal sex (see Table 5).

Table 5

Sex Partner History and Substitute for Vaginal Sex to Prevent STD or HIV/AIDS by Age Category

	Sex partner history		Substitute for vaginal sex	
Age category yes/no	Ask partner sex history n (%)	Ask partner if HIV positive n (%)	Oral sex n (%)	Anal sex n (%)
18-24	70	70	70	70
Yes	36 (51.4)	47 (67.1)	10 (14.3)	0 (0.0)
No	34 (48.6)	23 (32.9)	60 (85.7)	70 (100.0)
25-34	145	145	145	145
Yes	64 (44.1)	86 (59.3)	24 (16.6)	4 (2.8)
No	81 (55.9)	59 (40.7)	121 (83.4)	141 (97.2)
35-44	341	341	341	341
Yes	137 (40.2)	200 (58.7)	56 (16.4)	15 (4.4)
No	204 (59.8)	141 (41.3)	285 (83.6)	326 (95.6)
45-54	91	91	91	91
Yes	35 (38.5)	52 (57.1)	11 (12.1)	3 (3.3)
No	56 (61.5)	39 (42.9)	80 (87.9)	88 (96.7)
55-64	13	13	13	13
Yes	5 (38.5)	9 (69.2)	0 (0.0)	0 (0.0)
No	8 (61.5)	4 (30.8)	13 (100.0)	13 (100.0)
65-65+	1	1	1	1
Yes	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No	1 (100.0)	1 (100.0)	1 (100.0)	1 (100.0)
Total	661	661	661	661
Yes	277 (41.9)	394 (59.6)	101 (15.3)	22 (3.3)
No	388 (58.1)	267 (40.4)	560 (84.7)	639 (96.7)

Women were asked to report other actions to prevent STD or HIV/AIDS. These include: (a) not allowing sex partner to ejaculate in the vagina, (b) urination after sex, (c)

taking antibiotics after having sex, (d) having sex with only healthy looking partners, and (e) using ear wax to determine if STD is present.

Partner ejaculation. Of the 661 participants, 397 (60.1%) women responded yes to not allowing their partner to ejaculate in the vagina and 264 (39.9%) responded no. The most frequent yes responses were women aged 25 to 34 years 60 (41.4%) and 35 to 44 years 139 ([40.8%], see Table 6).

Urination after sex. Of the 661 participants, 335 (50.7%) women responded yes and 326 (49.3%) responded no to urination after sex. Women aged 35 to 44 years 195 (57.2%) responded most often to urinating after sex to prevent STD or HIV/AIDS (see Table 6).

Taking antibiotics after sex. Of the 661 participants, 76 (11.5%) women responded yes and 585 (88.5%) responded no to taking antibiotics after sex. Yes responses greater than 10% for taking antibiotic after sex to prevent STD or HIV/AIDS were women aged 35 to 44 years 50 (14.7) and aged 45 to 54 years 13 ([14.3%], see Table 6).

Having sex with only healthy looking partners. Of the 661 participants, 310 (46.9%) women responded yes and 351 (53.1%) women responded no to having sex only with healthy partners. The cohorts with approximately half and slightly greater than half that engaged in sex only with healthy looking partners to prevent STD or HIV/AIDS were women aged 35 to 44 years 170 (49.9%), 45 to 54 years 46 (50.5%), and 55 to 64 years 7 ([53.8%], see Table 6).

Using ear wax used to determine if an STD is present. Of the 603 participants, 33 (5.5%) women responded yes and 570 (94.5%) responded no to using ear wax to

determine if an STD was present in their partner. Women aged 25 to 34 years provided almost one third of the yes responses 13 (10.2%) to using ear wax to prevent STD or HIV/AIDS (see Table 6).

Table 6

Other Actions to prevent STD or HIV/AIDS by Age Category

	Other actions to prevent STD or HIV/AIDS				
Age category yes/no	Partner ejaculation n (%)	Urination n (%)	Antibiotics n (%)	Healthy looking partner n (%)	Ear wax n (%)
18-24	70	70	70	70	63
Yes	27 (38.6)	28 (40.0)	3 (4.3)	25 (35.7)	2 (3.2)
No	43 (61.4)	42 (60.0)	67 (95.7)	45 (64.3)	61 (96.8)
25-34	145	145	145	145	127
Yes	60 (41.4)	65 (44.8)	10 (6.9)	61 (42.1)	13 (10.2)
No	85 (58.6)	80 (55.2)	135 (93.1)	84 (57.9)	114(89.8)
35-44	341	341	341	341	308
Yes	139 (40.8)	195 (57.2)	50 (14.7)	170 (49.9)	16 (5.2)
No	202 (59.2)	146 (42.8)	291 (85.3)	171 (50.1)	292 (94.8)
45-54	91	91	91	91	91
Yes	35 (38.5)	42 (46.2)	13 (14.3)	46 (50.5)	2 (2.2)
No	56 (61.5)	49 (53.8)	78 (85.7)	45 (49.5)	89(97.8)
55-64	13	13	13	13	13
Yes	3 (23.1)	5 (38.5)	0 (0.0)	7 (53.8)	0 (0.0)
No	10 (76.9)	8 (61.5)	13 (100.0)	6 (46.2)	13 (100.0)
65-65+	1	1	1	1	1
Yes	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
No	1 (100.0)	1 (100.0)	1 (100.0)	0 (0.0)	1 (100.0)
Total	661	661	661	661	603
Yes	397 (60.1)	335 (50.7)	76 (11.5)	310 (46.9)	33 (5.5)
No	264 (39.9)	326 (49.3)	585 (88.5)	351 (53.1)	570 (94.5)

Research question 2. What are women's attitudes about HIV/AIDS and risky sexual behaviors? The WU-RBA-W has 11 questions with categorical responses asking women's attitudes about HIV/AIDs and risky sexual behaviors. Descriptive statistics were used to analyze the responses of 751 African American women.

When asked to respond (agree, disagree, neutral) about having risky sex behaviors that need changing, 255 (34.0%) women agreed, 464 (61.8%) disagreed, and 32 (4.3%) were neutral. The women were also asked about having risky drug behaviors and risky drinking behaviors that need changing: (a) risky drug behaviors 355 (47.3%) agreed, 372 (49.5%) disagreed and 24 (3.2%) were neutral, and (b) risky drinking behaviors 288 (38.3%) agreed, 441 (58.7%) disagreed, and 22 (2.9%) were neutral.

Women were asked which behavior is the most risky for causing HIV/AIDS (a) not using condoms, (b) sharing needles, or (c) using alcohol or drugs before sex. Almost half 374 (49.8%) of the women responded sharing needles was the most risky, 344 (45.8%) responded not using condoms, and only 33 (4.4%) replied using alcohol or drugs before sex.

When women were asked if they thought a steady partner had ever cheated on them or had they ever cheated on one of their steady partners: (a) 508 (67.6%) responded yes, their steady partner had cheated on them and 243 (32.4%) responded no; (b) 462 (61.5%) replied yes, they had cheated on one of their steady partners and 289 (38.5%) responded no. When asked if having one sex partner is more safe than having two or more sex partners, 639 (85.1%) of women answered yes, and 112 (14.9%) responded no.

Women were asked to respond to five statements with agree, disagree, neutral: (a) I am in control of whether or not I get the HIV virus; 476 (63.4%) agreed, 240 (32.0%) disagreed, and 35 (4.7%) were neutral. (b) If I get the HIV virus, it is my destiny - it is meant to be; 189 (25.2%) agreed, 531 (70.8%) disagreed, and 30 (4.0%) were neutral. (c) Other people play a big part in whether I get the HIV virus; 375 (49.9%) agreed, 354 (47.1 %) disagreed, and 22 (2.9%) were neutral. (d) Whether or not I get the HIV virus

depends on my sex partner; 438 (58.3%) agreed, 286 (38.1%) disagreed, and 27 (3.6%) were neutral. (e) My own behaviors determine whether I get the HIV virus; 631 (84.0%) agreed, 106 (14.1%) disagreed, and 14 (1.9%) were neutral.

Research question 3. Will women's knowledge about risky sexual behavior influence her decision to have HIV testing? Independent t-tests were performed on the women's responses to knowledge questions from the WU-RBA-W about actions prior and after sex to prevent STD or HIV/AIDS to determine if there were significant differences in the number of HIV tests. Of the 659 women who reported HIV testing and responded to the two knowledge questions (ask if partner is HIV positive and ask about partner's sex history) the results were significant. Item analysis compared the number of times women reported HIV testing who asked if their partner was HIV positive and women who did not ask if their partner was HIV positive; and women who asked their partner's sex history and women who did not ask their partner's sex history.

There was a significant difference in the number of HIV tests for women who asked their partner if they were HIV positive (M = 4.65, SD = 8.48) compared to women who did not ask their partner if they were HIV positive (M = 2.87, SD = 3.20); t (539) = -3.79, p = 0.00 (see Appendix B). There was also a significant difference between the number of times women were HIV tested who asked their partner about their sex history (M = 4.66, SD = 8.04) compared to women who did not ask their partner about their sex history (M = 3.40, SD = 5.93); t (480) = -2.21, p = .03 (see Appendix B).

Additional statistical analyses were performed. Results from the Hosmer and Lemeshow test showed women's knowledge about risky sexual behavior had less deviation between the observed and expected outcomes of women who had HIV testing

revealing that a predictive ability was present using binary logistic regression analysis. In contrast, a greater deviation between the observed and expected outcomes of women who did not have HIV testing was noted, revealing less predictive ability using the binary logistic regression analysis. The binary logistic regression model demonstrated an 88.7% ability to predict HIV testing. According to the model summary, the model showed a variation of 10.0% of the women's decision to be HIV tested was influenced by the women's knowledge of risky sexual behaviors (Nagelkerke R^2 = .100; see Appendix E). The knowledge items of risky sexual behavior that show significance with having HIV testing were (a) not let partner ejaculate in you to prevent HIV infection (p = .020), (b) took antibiotics to prevent HIV infection (p = .042), and (c) asked partner if HIV positive (p = .003). When running Kendall's Tau-b (*Tau-b*) correlation analysis on HIV testing and knowledge items about risky sexual behavior, a weak, positive relationship was present for having HIV testing and answering yes to the following items: (a) not let partner ejaculate in you to prevent HIV infection (*Tau-b* = .097, p = .013), (b) took antibiotics to prevent HIV infection (*Tau-b* = .094, p = .016), and (c) asked partner if HIV positive (*Tau-b* = .117, p = .003). The Wald criterion revealed that only one knowledge item, asked partner if HIV positive, was a significant predictor for HIV testing (*Wald* = 8.490, *df* = 1, p = .004; see Appendix E). The model showed that women who asked their partner if they were HIV positive were 1.26 times (26%) more likely to decide to be HIV tested (Exp[B]) = 1.265, 95% CI [1.024, 4.177]; see Appendix E).

Research question 4. Will women's attitudes about risky sexual behavior influence her decision to have HIV testing? An independent sample t-test was conducted

to compare the number of times the women were HIV tested who reported yes to the risky sexual behavior of ever cheating on one of their steady sex partners and women who reported no to ever cheating on one of their steady sex partners. The sample size ranged from 712 to 749 because neutral responses by the woman were excluded from the analysis. There was a significant difference in the number HIV tests for women who reported cheating on one of their steady sex partners (M = 4.25, SD = 7.49) and the women who did not cheat on one of their steady sex partners (M = 3.28, SD = 4.67); t (747) = - 2.19, p = .03 (see Appendix C). There was also a significant difference for women who agreed that their own risky sexual behaviors determined whether they contract the HIV virus (M = 4.06, SD = 7.00) compared to the women who disagreed (M = 2.98, SD = 3.37); t (288) = 2.50, p = .01 (see Appendix C).

Cramer's V analysis was used to compare the number of HIV tests and risky sexual behaviors (not using condoms, sharing needles, or using alcohol before sex) that can result in contracting HIV/AIDS. Using Cramer's V, there was a significant weak relationship between the number of HIV tests and the risky sexual behaviors (not using condoms, sharing needles, or using alcohol before sex) causing HIV/AIDS (V = .145, p < .001).

Of the 200 women who reported having three to four HIV tests, 118 (59.0%) believed sharing needles was the riskiest sexual behavior for causing HIV/AIDS. In contrast the 91 women who reported having five to six HIB tests; 50 (54.9%) women believed not using condoms was the riskiest sexual behavior to cause HIV/AIDS. A significant weak relationship was found between the number HIV tests and women who had responded yes to cheating on their sex partner (Cramer's V = .133, p < .038).

Additional statistical analyses were performed. Results from the Hosmer and Lemeshow test showed women's attitudes about risky sexual behavior had less deviation present among observed and expected outcomes of the women who were HIV tested revealing a predictive ability is present with binary logistic regression analysis. In contrast, a greater deviation was noted in observed and expected outcomes of women who did not have HIV testing revealing the logistic regression model had less predictive ability. The model demonstrated an 89.7% ability to predict HIV testing. According to the model summary, the model showed a small variation of 4.3% of the women's decision to be HIV tested was influenced by the women's attitudes about risky sexual behavior (Nagelkerke R^2 = .043; see Appendix F). The attitude items about risky sexual behavior that showed significance were (a) agreement (p = .019) and disagreement (p = .034) with the statement, I have risky sexual behaviors that need changing and (b) agreement (p = .033) and disagreement (p = .012) with the statement, I have risky drug use behaviors that need changing. When running *Tau-b* correlation analysis on HIV testing and attitudes of risky sexual behavior, there was a weak, positive association (*Tau-b* = .097, p = .013) with HIV testing and the women who agreed with the statement, I have risky sexual behaviors that need changing. The analysis showed a weak, inverse association (*Tau-b* = .092, p = .011) with HIV testing and the women who agreed with the statement, I have risky drug behaviors that need changing. The Wald criterion revealed that women who agreed with the statement, I have risky drug behaviors that need changing, was a significant predictor for HIV testing (*Wald* = 4.088, *df = 1*, p = .043; see Appendix F). The model showed that women who agree with the statement, I

have risky drug behaviors that need changing, were 1.83 times (83%) more likely to decide to be HIV tested (Exp [B] = 1.829, 95% CI [1.018,3.288]; see Appendix F).

Research question 5. Are there interactions between women's knowledge to prevent HIV, attitudes about risky sexual behavior, and the women's decision to have HIV testing? Analysis using the Hosmer and Lemeshow test demonstrated an 88.4% ability to predict HIV testing. According to the model summary, the model showed an increase variation of 15.3% that the women's decision to have HIV testing is influenced by the women's knowledge to prevent HIV and attitudes about risky sexual behavior (Nagelkerke R^2 = .153; see Appendix G). When combining the women's knowledge to prevent HIV and attitudes about risky sexual behavior, the Wald criterion revealed that the item, I have risky sexual behaviors that need changing, became a significant predictor in the combined model (Wald = 4.102, *df* = 1, *p* =.043; see Appendix G). The model demonstrated that women who agreed with the attitude statement about risky sexual behavior item, I have risky sexual behaviors that need changing, were twice as likely to decide to have HIV testing (Exp[B]) = 2.068, 95% CI [1.024, 4.177; see Appendix G). The model also demonstrated that women who agreed with the attitude statement about risky sexual behavior, I have risky drug behaviors that need changing, was significant demonstrating an increase as a predictor for the women's decision to be HIV tested (*Wald* = 3.728, *df = 1*, *p* = .053; see Appendix G). The model showed the women who agreed with the statement, I have risky drug behaviors that need changing, were almost twice as likely to decide to be HIV tested. The model also demonstrated that women who agreed with the knowledge item, asked partner if HIV positive, was significant and showed an increase as a predictor for the women's decision to be HIV tested (*Wald* = 10.582, *df = 1*,

p = .001; see Appendix G). The model showed that women who, asked partner if HIV positive, were 1.3 times more likely to decide to have HIV testing (Exp [B] = 1.303, 95% CI [1.111, 1.529; see Appendix G).

Research question 6. Is there difference in women who engage in sex trading versus women who do not engage in sex trading and their decision to have HIV testing? On the WU-RBA-W, women were asked: (a) if they ever traded sex to get drugs or alcohol (yes, no); (b) how many times in the past four months they traded sex to get drugs or alcohol; (c) more specifically (yes, no), in the last four months had they ever traded sex for alcohol, marijuana or hashish, crack or cocaine, heroin, heroin and cocaine mixed together (known as speedball), amphetamines (speed or uppers), ecstasy (GHB or other club drugs), and other drugs (d) had they ever traded sex to get money, food, a place to stay, or clothes (yes, no); and (e) how many times in past four months they traded sex for money, food, a place to stay, or clothes. Descriptive statistics were stratified by age groups to analyze the responses of the women.

Trading sex for drugs or alcohol. Of the 751 women who responded to the question of ever trading sex for drugs or alcohol, 273 (36.4%) women responded yes and 478 (63.6) women responded no. The age category of women who showed greater percentage of women who reported trading sex for alcohol or drugs or alcohol were 74 (42.0%) women aged 25 to 34 years and 163 (42.9%) women aged 35 to 44 years. In contrast, the age category of women with the smallest percentage who reported trading sex for alcohol or drugs was 4 (4.4%) women aged 18 to 24 years (see Table 7).

Table 7

Trading Sex for Drugs or Alcohol

	Yes		No		Total
Age category	n	%	n	%	
18 - 24	4	4.4	86	95.6	90
25 - 34	74	42.0	102	58.0	176
35 - 44	163	42.9	217	57.1	380
45 - 54	29	31.9	62	68.1	91
55 - 64	3	23.1	10	76.9	13
65 - 65+	0	0.0	1	100	1
Total	273	36.4	478	63.6	751

Number of times, past four months, traded sex for drugs or alcohol. The number of times the women traded sex for drugs or alcohol ranged from 1 to 976. Of the women who responded the majority 113 (85.0%) reported one to 20 times. The average median of trading sex for drugs or alcohol using the frequency one to 20 times was 3.0 times. The median was used with the frequency on one to 20 times due to skewness with the large numbers.

Traded sex for alcohol in last four months for specific drugs. Of 273 women who responded to trading sex for drugs or alcohol, 131 to 132 women aged 18 to 54 years responded to the question about trading sex for alcohol, marijuana or hashish, crack or cocaine, heroin, heroin and cocaine mixed together known as speedball, amphetamines or speed or uppers, Ecstasy, GHB, or other drugs (see Table 8).

Only 16 (10.0%) women traded sex for alcohol. There were only 5 (13.4%) women aged 25 to 34 who responded yes to trading sex for marijuana/hashish. The majority of the women 124 (94.7%) in all age categories responded yes to trading sex for crack/cocaine (see Table 8). Few women in all age categories traded sex for heroin,

heroin and cocaine mixed together (speedball), amphetamines or speed uppers, ecstasy GHB or other club drugs, and other drugs (see Table 8).

Table 8

Traded Sex for in Past Four Months for Specific Drugs by Age Categories

	Alcohol	Marijuana or hashish	Crack or Cocaine	Heroin	Heroin & Cocaine mix together speedball	Ampheta-mines speed or uppers	Ecstasy GHB or other club drugs	Other drugs
Age category	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
18 - 24	2	2	2	2	2	2	2	2
Yes	0 (0.0)	0 (0.0)	2 (100.0)	1 (50.0	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No	2 (100)	2 (100.0)	0 (0.0)	1 (50.0)	2 (100.0)	2 (100.0)	2 (100.0)	2 100.0)
25 - 34	37	37	37	37	37	37	37	37
Yes	4 (10.8)	5 (13.5)	34 (91.9)	1 (2.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No	33 (89.2)	32 (86.5)	3 (8.1)	36 (97.3)	37 (100.0)	37 (100.0)	37 (100.0)	37 (100.0)
35 - 44	83	82	82	82	82	82	82	82
Yes	11 (13.3)	0 (0.0)	78 (95.1)	2 (2.4)	0 (0.0)	1 (1.2)	1 (1.2)	2 (2.4)
No	72 (86.7)	82 (100.0)	4 (4.9)	80 (97.6)	82 (100.0)	81 (98.8)	81 (98.8)	80 (97.6)
45 -54	10	10	10	10	10	10	10	10
Yes	1 (10.0)	0 (0.0)	10 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No	9 (90.0)	10 (100.0)	0 (0.0)	10 (100.0)	10 (100.0)	10 (100.0)	10 (100.0)	10 (100.0)
Total	132	131	131	131	131	131	131	131
Yes	16 (10.0)	5 (3.8)	124 (94.7)	4 (3.1)	0 (0.0)	1 (0.8)	1 (0.8)	2 (1.5)
No	116 (90.0)	12 6 (96.2)	7 (5.3)	127 (96.9)	131 (100.0)	130 (99.2)	130 (99.2)	129 (98.5)

Traded sex for money, food, a place to stay, or clothes. There were 750 women who responded to trading sex for money, food, place to stay, and clothes. Approximately half of the women 85 (48.3%) aged 25 to 34 years and 191 (50.4%) women aged 35 to 44 years traded sex for money, food, a place to stay, or clothes (see Table 9). Specifically, there were 326 (43.5%) women who traded sex for money, 130 (17.3%) women who

traded sex for food, 109 (14.5%) who traded sex for place to stay, and 51 (6.8%) traded sex for clothes (see Table 10).

Table 9

Trading Sex for Money, Food, Place to Stay, or Clothes

	Yes		No		
Age category	n	%	n	%	Total
18 - 24	8	8.9	82	91.1	90
25 - 34	85	48.3	91	51.7	176
35 - 44	191	50.4	188	49.6	379
45 - 54	39	42.9	52	57.1	91
55 - 64	4	30.8	9	69.2	13
65 - 65+	1	100.0	0	0.0	1
Total	328	43.7	422	56.3	750

Number of times, past four months, traded sex for money, food, a place to stay, or clothes. The number of times the women traded sex for money, food, place to stay, or clothes frequency ranged from 1 to 880 times. Of the women who responded, the majority 134 (86.5%) responded one to 30 times. The average median of trading sex for money, food, place to stay, and clothes using the frequency of one to 30 was 4.0 times. The median was used with the frequency of one to 30 times due to the skewness with the large numbers.

Table 10

Traded Sex for Money, Food, Place to Stay, and Clothes by Age Categories

Age category	Money n (%)	Food n (%)	Place to stay n (%)	Clothes n (%)
18 - 24	90	90	90	90
Yes	8 (8.9)	2 (2.2)	5 (5.6)	3 (3.3)
No	82 (91.1)	88 (97.8)	85 (94.4)	87 (96.7)
25 - 34	176	176	176	176
Yes	85 (48.3)	31 (17.6)	30 (17.0)	14 (8.0)
No	91 (51.7)	145 (82.4)	146 (83.0)	162 (92.0)
35 - 44	379	379	379	379
Yes	191 (50.4)	79 (20.8)	61 (16.1)	26 (6.9)
No	188 (49.6)	300 (79.2)	318 (83.9)	353 (93.1)
45 -54	91	91	91	91
Yes	39 (42.9)	14 (15.4)	11 (12.1)	7 (7.7)
No	52 (57.1)	77 (84.6)	80 (87.9)	84 (92.3)
55 - 64	13	13	13	13
Yes	3 (23.1)	4 (30.8)	2 (15.4)	1 (7.7)
No	10 (76.9)	9 (69.2)	11 (84.6)	12 (92.3)
65 -65+	1	1	1	1
Yes	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No	1 (100.0)	1 (100.0)	1 (100.0)	1 (100.0)
Total	750	750	750	750
Yes	326 (43.5)	130 (17.3)	109 (14.5)	51 (6.8)
No	424 (56.5)	620 (82.7)	641 (85.5)	699 (93.2)

Trading sex for alcohol or drugs and HIV testing. Cross tabulation was used to describe and analyze women's responses related to sex trading. Of the 273 women who said yes to trading drugs for alcohol, marijuana or hashish, crack or cocaine, heroin, heroin and cocaine mixed together (known as speedball), amphetamines (speed or uppers), Ecstasy (GHB or other club drugs), and other drugs, only 132 answered the item about alcohol and 131 provided responses for the specific drugs. Categorical (yes, no) responses of women who had HIV testing and who reported number of HIV tests (0, 1 to 2, 3 to 4, 5 to 6, 7 to 8, 9 to 10 and greater than 10) were women who traded sex for

alcohol, marijuana or hashish, crack or cocaine, heroin, heroin and cocaine mixed together (known as speedball), amphetamines (speed or uppers), Ecstasy (GHB or other club drugs), and other drugs were analyzed.

There were 132 women who responded yes or no to trading sex for alcohol and yes or no to HIV testing and 131 who responded yes or no to trading sex for specific or other drugs and yes or no to HIV testing. Trading sex for crack or cocaine had the majority 117 (94.6%) of women who said yes to HIV testing (see Table 11).

Table 11

Trading Sex for Alcohol, Specific, or other Drugs and HIV Tested

	HIV Tested		
	Yes	No	
Trading sex for alcohol, specific, or other drugs	n (%)	n (%)	Total n
Alcohol	124	8	132
Yes	14 (87.5)	2 (12.5)	16
No	110 (84.8)	6 (5.2)	116
Marijuana or hashish	124	7	131
Yes	5 (100.0)	0 (0.0)	5
No	119 (94.4)	7 (5.6)	126
Crack/Cocaine	124	7	131
Yes	117 (94.6)	7 (5.3)	124
No	7 (100.0)	0 (0.0)	7
Heroin	124	7	131
Yes	4 (100.0)	0 (0.0)	4
No	120 (94.5)	7 (5.5)	127
Heroin and cocaine mixed together, speedball	124	7	131
Yes	0 (0.0)	0 (0.0)	0
No	124 (94.7)	7 (5.3)	131
Amphetamines or speed or uppers	124	7	131
Yes	0 (0.0)	1 (100.0)	1
No	124 (95.4)	6 (4.6)	130
Ecstasy, GHB or other club drugs	124	7	131
Yes	0 (0.0)	1 (100.0)	1
No	124 (95.4)	6 (4.6)	130
Other Drugs	2	129	131
Yes	1(0.8)	6 (85.7)	7
No	1 (14.3)	123 (99.2)	124

There were 132 women who responded yes or no to trading sex for alcohol, yes or no to HIV testing, and number of times tested. There were 131 who responded yes or no to trading sex for specific or other drugs, yes or no to HIV testing, and number of times tested. Of the 16 (12.1%) women who traded sex for alcohol, only two did not have an HIV test, 11 had one to six HIV tests and one had greater than 10 tests. The majority of women who traded sex for specific or other drugs traded sex for crack or cocaine. Of the 124 women, 117 (94.4%) who responded yes to trading sex for crack or cocaine reported having had HIV tests ranging from one to greater than 10 (see Table 12).

Table 12

Trading Sex for Alcohol, Specific, or other Drugs and Number of HIV Tests

	Number of HIV tests							
Trade sex	No n (%)	1- 2 n (%)	3 - 4 n (%)	5 – 6 n (%)	7 - 8 n (%)	9 - 10 n (%)	> 10 n (%)	Total n (%)
Alcohol	8	46	39	19	8	5	7	132
Yes	2 (25.0)	3 (6.5)	5 (12.8)	3 (15.8)	0 (0.0)	0 (0.0)	3 (42.9)	16 (12.1)
No	6 (75.0)	43 (93.5)	34 (87.2)	16 (84.2)	8 100.0)	5(100.0)	4 (57.1)	116 (87.9)
Marijuana or hashish	7	46	39	19	8	5	7	131
Yes	0 (0.0)	3 (6.5)	0 (0.0)	0 (0.0)	1 (12.5)	1 (20.0)	0 (0.0)	5 (3.8)
No	7(100.0)	43 (93.5)	39 (100.0)	19 (100.0)	7 (87.5)	4 (80.0)	7 (100.0)	126 (96.2)
Crack/cocaine	7	46	39	19	8	5	7	131
Yes	7 (100.0)	44 (95.7)	36 (92.3)	18 (94.7)	8 (100.0)	5 (100.0)	6 (85.7)	124 (94.7)
No	0 (0.0)	2 (4.3)	3 (7.7)	1 (5.3)	0 (0.0)	0 (0.0)	1 (14.3)	7 (5.3)
Heroin	7	46	39	19	8	5	7	131
Yes	0 (0.0)	3 (6.5)	0 (0.0)	1 (5.3)	0 (0.0)	0 (0.0)	0 (0.0)	4 (3.1)
No	7 (100.0)	43 (93.5)	39 (100.0)	18 (94.7)	8 (100.0)	5 (100.0)	7 (100.0)	127 (96.9)
Heroin and cocaine	7	46	39	19	8	5	0	131
Yes	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
No	7 (100.0)	46 (100.0)	39 (100.0)	19 (100.0)	8 (100.0)	5 (100.0)	7 (100.0)	131 (100.0)
Amphetamine speed uppers	7	46	39	19	8	5	7	131
Yes	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)
No	6 (85.7)	46 (100.0)	39 (100.0)	19 (100.0)	8 (100.0)	5 (100.0)	7 100.0)	130 (99.2)
Ectasy, GHB, or other club drugs	7	46	39	19	8	5	7	131
Yes	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)
No	6 (85.7)	46 (100.0)	39 (100.0)	19 (100.0)	8 (100.0)	5 (100.0)	7 (100.0)	130 (99.2)
Other drugs	7	46	39	19	8	5	7	131
Yes	1 (14.3)	1 (2.2)	0 (0.0)	0(0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.5)
No	6 (85.7)	45(97.8)	39 (100.0)	19 (100.0)	8 (100.0)	5 (100.0)	7 (100.0)	129 (98.5)

Independent sample t-tests were run to determine if there were significant differences in women who responded yes and women who responded no to trading sex for alcohol or specific drugs (see Appendix D). Compare means tests were run to validate means from t-test results and to identify median number of HIV tests. This was done because of the wide range of HIV tests reported. Of the sample of 751 women, 273 women reported trading sex for alcohol or drugs. Of the 273 women who reported trading sex for alcohol or drugs, 257 (94.1%) reported having HIV testing (M = 4.58, SD = 7.12, Mdn = 3). Of 131 women who responded yes or no to trading sex for specific drugs, 124 (94.6%) reported trading sex for crack or cocaine, 7 (5.6%) women reported no HIV testing, 117 (94.4%) women reported yes to HIV testing with (M = 4.14, SD 4.33, Mdn = 3; see Table 12; see Appendix D).

Traded sex for money, food, a place to stay, or clothes and HIV testing. There were 749 women who responded yes or no to trading sex for money, food, place to stay, and clothes and yes or no to HIV testing. Of the women who traded sex for money, food, place to stay, or clothes; 93.6% or greater had HIV testing (see Table13). Interestingly, there were a large number of women (87.0% to 89.3%) who responded no to trading sex also had HIV testing (see Table 13).

Table 13

Traded Sex for Money, Food, Place to Stay, or Clothes and HIV Tested

	HIV tested		
	Yes	No	
Trade sex for:	n (%)	n (%)	Total
Money			749
Yes	305 (93.6)	21 (6.4)	326
No	368 (87.0)	55 (13.0)	423
Food			749
Yes	122 (93.8)	8 (6.2)	130
No	551 (89.0)	68 (11.0)	619
Place to Stay			749
Yes	107 (98.2)	2 (1.8)	109
No	566 (88.4)	74 (11.6)	640
Clothes			749
Yes	49 (96.1)	2 (3.9)	51
No	624 (89.3)	74 (10.6)	698

There were 749 women who responded yes or no to trading sex for money, food, place to stay, and clothes and the number of time they had an HIV test. The largest number of women, 326 (43.5%) who responded yes to trading sex for money reported having had HIV tests ranging from zero to greater than 10 (see Table 14). Women who responded yes to trading sex for food 130 (17.5%), a place to stay 109 (14.5%), and clothes 51 (6.8%) had low percentages for the number of HIV tests (see Table 14).

Table 14

Traded Sex for Money, Food, Place to Stay, or Clothes and Number of HIV Tests

	HIV testing							
Trade sex for:	No n (%)	1- 2 n (%)	3 - 4 n (%)	5 - 6 n (%)	7-8 n (%)	9 - 10 n (%)	> 10 n (%)	Total n
Money	76	295	199	91	22	30	26	749
Yes	21 (6.4)	104 (31.9)	99 (30.4)	53 (16.3)	12 (3.7)	19 (5.8)	18 (5.5)	326 (43.5)
No	55 13.0)	191 (45.1)	100 (23.6)	38 (9.0)	10 (2.4)	11(2.6)	18 (4.3)	423 (56.5)
Food	77	295	199	91	22	30	36	749
Yes	8 (6.2)	35 (26.9)	46 (35.4)	19 (14.6)	4 (3.1)	9 (6.9)	9 (6.9)	130 (17.4)
No	68 11.0)	260 (42.0)	153 (24.7)	72 (11.6)	18 (2.9)	21 (3.4)	27 (4.4)	619 (82.6)
Place to Stay	76	295	199	91	2	30	36	749
Yes	2 (1.8)	25 (22.9)	40 (36.7)	22 (20.2)	5 (4.6)	7 (6.4)	8 (7.3)	109 (14.5)
No	74 11.6)	270 (42.1)	159 (24.8)	69 (10.8)	17 (2.7)	23(3.6)	28 (4.4)	640 (85.4)
Clothes	76	295	199	91	22	30	36	749
Yes	2 (3.9)	14 (27.5)	17 (33.3)	12 (23.5)	1 (2.0)	2 (3.9)	3 (5.9)	51 (6.8)
No	74 (10.6)	281 (40.3)	182 (26.1)	79 (11.3)	21 (3.0)	28 (4.0)	33 (4.7)	698 (93.2)

An independent sample t-tests were run to determine if there was a significant difference in women who responded yes and women who responded no to trading sex for alcohol, specific drugs, other drugs, money, food, a place to stay, or cloths (see Appendix D). There was a significant difference in the number of HIV tests for women who responded yes to trading sex for money (M = 4.84, SD = 4.32) and those who responded no to trading sex for money (M = 3.14, SD = 4.33); t (452) = -3.27, p = .001. There was also a significant difference in the number of HIV tests for women who responded yes to trading sex for food (M = 5.62, SD = 10.08) and the women who responded no to trading sex for food (M = 3.51, SD = 5.49); t (145) = -2.32, p = .01. Last, a significant difference in the number of HIV tests for women who reported yes to trading sex for a place to stay (M = 6.12, SD = 10.52) and the women who reported no to trading sex for place to stay (M = 3.50, SD = 5.54); t (118) = - 2.54, p = .01.

Chapter V

Introduction

This chapter presents a summary of the problem, the design and purpose, and a discussion of the results to the research questions. A discussion of limitations of the study, implications for nursing practice, and recommendations for future nursing science and research are also presented.

Summary of Problem

According to the CDC (2013e), in 2011, there were 136,690 African American women living with HIV infection and 5,311 African American women with initial test results classified as AIDS. African American women accounted for 6,623 (63%) of new female HIV cases reported in 2011 (CDC, 2013a). In 2010, AIDS was ranked among the top 10 causes of mortality for African American women aged 25 to 64 years (CDC, 2013c). High risk heterosexual behavior accounted for 74% of the HIV/AIDS cases among African American women (CDC, 2008). Routine HIV testing may provide for earlier recognition of the virus, and referral for disease management that may prevent the acceleration of the HIV virus to AIDS. With the rising numbers of African American women testing positive for HIV, additional research is needed to determine factors that will influence African American women to seek HIV testing. Therefore, it is important to study if African American women's knowledge of risk behaviors can influence early HIV testing.

Summary Design and Purpose

This study design used a secondary data analysis of existing data collected in a study conducted at a large Midwestern University School of Medicine that investigated

the efficacy of a female oriented model delivered at discrete intervals to decrease drug use and sexual risks behaviors (Cottler, 2006). The purposes of this investigation were to examine this existing data set from a sample of African American women with a history of drug use and who are at high risk to acquire or transmit HIV and/or STDs to determine the women's knowledge and attitudes about risky sexual behaviors, factors influencing a decision to have HIV testing, and the influence of sex trading on the decision to have HIV testing.

Discussion of Results

Research question 1. This investigation sought to determine what knowledge women have about actions before and after sex to prevent acquiring HIV or STDs? This study found 322 (48.7%) cleansed with soap prior to sex, more than half of the women 416 (62.9%) cleansed with soap after sex, and almost half cleansed with douching after sex to prevent HIV or STDs. These findings are inconsistent with the findings from a Younge, Salem, Bybee (2010) reported from a sample 196 women only 19 (10%) douched or washed after sex. Younge et al. did not report on specific findings of cleansing with soap before sex to prevent HIV or STDs.

This study also found that 397 (60.1%) over half of the women did not allow their partner to ejaculate as action to prevent HIV or STDs. This study findings were much higher than Young, Salem, and Bybee's (2010) study findings who reported only 7 (4.0%) of the women from a sample of 196 did not allow their partner to ejaculate.

In addition, this study found 335 (50.7%) of the women urinated after sex to prevent HIV or STDs. Although the results are low, it was interesting to find in current study that 76 (11.5%) of the women were taking antibiotics after sex to prevent HIV or

STDs. This finding is consistent with a study in Thailand of men who took antibiotics to prevent HIV (Khamboonruang, et al., 1996). Although men in this study were less likely to be HIV infected, the effect of taking antibiotics to prevent HIV is unknown (Khamboonruang, et al.)

The study found almost half, 310 (46.9%), of the women were having sex with partners they deemed as healthy partners to prevent HIV or STDs. This is consistent with Jarama et al. (2007) who reported the unknown risk behavior among African American women is the result of trust in their partner. This is also consistent with other researchers who noted that, although health departments have worked to educate the public about HIV risks, many African American women perceive themselves as low risk, especially if African American women believe they are in a monogamous relationship (Hobfoll, Jackson, Lavin, Britton, Shepherd, 1993; Mallory, 2008; McNair & Prather, 2004).

Research question 2. This investigation aimed to determine the attitudes about HIV/AIDS and risky sexual behaviors. In this study almost half of the women, 374 (49.8 %), identified that a high risk behavior to contract HIV/AIDS was sharing needles; 344 (45.8%) reported not using condoms as a risky sexual behavior; and the majority 639 (85.1%) of the women believed having sex with one partner was safer than having sex with two or more partners consistent with CDC (2008) definition of risky sexual behaviors. These findings are consistent with study of unmarried, heterosexual African American women (N = 325) aged 18 to 61 years who participated in the five week Sistas Informing Sistas about the Topic of AIDS (SISTA) program (Corneille et al. (2008). The findings suggest that older African American women may be at greater risk for HIV because they perceived their principal partner as being opposed to condom use, younger

African American women were more likely to use condoms in current or past relationships; yet all women reported they were less likely to use condoms with principal partner (Corneille et al.). The investigation findings are also consistent with study of 398 African American unmarried heterosexual women reported an unfavorable attitude toward the use of condoms (Belgrave et al., 2010).

Although this study found that majority 639 (85.1%) of the women believed having sex with one partner is safer than having sex with two or more partners; 112 (14.9%) of the women disagreed. In the current study, a key finding was that 255 (34%) of the women agreed that they had risky sexual behaviors they needed to change. For example, 112 (14.9%) of the women disagreed that having sex with one partner is safer than having sex with two or more partners; 508 (67.6%) believed their steady partner had cheated on them; and 461 (61.5%) reported having cheated on one of their steady partners is consistent with CDC (2008) identified risky sexual behaviors. These findings lends some credence to Moreno et al. (2011) findings that African American women were 1.5 times more likely than Latina women to report five or more sex partners in a life time. In study by Wright et al. (2007) African Americans were twice as likely as Caucasians to report multiple sex partners. In addition, Atkinson et al. (2007) findings of 497 African American men and 195 African American women had an average number of sex partners of 9.7 with median of five partners and the women had significantly more partners than the men.

This study also found more than half of the 476 (63.4%) women believed they were in control of whether or not they get HIV. This finding is consistent with an exploratory study by Jarama et al. (2007) of 51 African American women aged 18 to 49

years, the women in this investigation all believed they had control within their sexual relationship and voiced assurance of being comfortable to discuss safer sex with partners. Only 189 (25.2%) of the women in current study had agreed with getting HIV as their destiny. Although the study found 375(49.9%) women believed other people play part in getting HIV and 438 women (58.3%) believed getting HIV depends on their partner. This study also showed 631(84.0%) of the women believed their own behaviors determine if they got HIV, 375(49.9%) women believed other people played a part in getting HIV.

Research question 3. This study found that women's knowledge about risky sexual behavior influenced her decision to have HIV testing. In this investigation, there was a significant difference in the number of HIV tests for women who asked their partner if they were HIV positive (M = 4.65, SD = 8.48) and who asked their partner about their sex history (M = 4.66, SD = 8.04) compared to women who did not ask their partner if they were HIV positive (M = 2.87, SD = 3.20); t (539) = -3.79, p = 0.00 and who did not ask their partner about their sex history (M = 3.40, SD = 5.93); t (480) = -2.21, p = .03 (see Appendix B). These findings lend some support to researchers who reported African American women were acculturated to not inquire about a partner's sex history, negotiate condom use, or discuss sex in general (Harris et al., 2013; Jarama et al., 2007; Whyte, Whyte, & Cormier, 2008). In contrast Longmore, Johnson, Manning, and Giordano (2013) reported that young women found it difficult to communicate about sex or had more verbal disputes with their partner about their relationship were more likely to be HIV tested.

Further analysis using the binary logistic regression model predicted a small percentage of the women's decision to be HIV tested was influenced by their knowledge

of risky sexual behaviors (Naegelkerke R^2 = .100; see Appendix E). Specifically this investigation found women who had asked their partner if they were HIV positive were 1.26 times more likely to decide to be HIV tested (Exp [B] = 1.265, 95% CI [1.024, 4.177]; see Appendix E). These results were similar to study by Longmore et al. (2013) of HIV testing among 655 young adults (mean age 20.6; 372 women, 293 men), who reported their partner having a history of numerous past sexual partners were more likely to be HIV tested; and 65% of the women who reported their partner not being monogamous in their current relationship were HIV tested. Specifically, Longmore et al. concluded young women's own risk behaviors together with their partners' risk behaviors were associated with HIV testing.

Research question 4. This study found that women's attitudes about risky sexual behavior influence her decision to have HIV testing. This study found there was a significant difference in the number HIV tests for women who reported cheating on one of their steady sex partners (M = 4.25, SD = 7.49) and the women who did not cheat on one of their steady sex partners (M = 3.28, SD = 4.67); t (747) = - 2.19, p = .03 (see Appendix C). There was also a significant difference for women who agreed that their own risky sexual behaviors determined whether they contract the HIV virus (M = 4.06, SD = 7.00) compared to the women who disagreed (M = 2.98, SD = 3.37); t (288) = 2.50, p = .01 (see Appendix C).

In this investigation the binary logistic regression model predicted a minor percentage of the women's decision to be HIV tested was influenced by the women's attitudes to about risky sexual behavior (Nagelkerke R^2 = .043; see Appendix F). Specifically this investigation found that women who agreed with the statement, I have

risk drug behaviors that need changing were predicted to be twice as likely to be HIV tested (Exp [B] = 1.829, 95% CI [1.018, 3.288]; see Appendix F). These results are consistent with Medina (2009) study of 56 women who also reported a small number of women (8, 14.6%) were HIV tested as result of an identified theme, apprehension of personal drug use. Spiller, Broz, Wejnertm, Nerlanderm, and Bailey (2015) also reported from a 2012 surveillance of HIV behavior, there was only an 11% prevalence rate among intravenous drug users who were HIV tested. Interestingly, of the 10,002 women (32%) in the study sample, 63% reported having been HIV tested in the previous 12 months (Spiller et al.) In contrast, a Croatian retrospective study by Matković Puljić, Kosanović Ličina, Kavić, and Nemeth Blažić (2014) found both men and women who self-reported intravenous drug use were predicted to be almost three times as likely to obtain repeated HIV testing.

Research question 5. This study sought to determine if there were interactions between women's knowledge to prevent HIV, attitudes about risky sexual behavior, and the women's decision to have HIV testing. This investigation found the binary logistic regression model predicted an increased to 15.3% variation in the decision to be HIV tested is influenced by the women's knowledge to prevent HIV and attitudes about risky sexual behavior (Nagelkerke R^2 = .153, see Appendix G). For example, the women agreed with the knowledge items, asked their partner if they are HIV positive, were 1.3 times more likely to be HIV tested, and women who agree with the knowledge statement, I have risky drug behaviors that need changing, increased to 1.9 times more likely to be HIV tested. Interestingly, the interactions between women's knowledge to prevent HIV and attitudes about risky sexual behavior emerged as an additional and more

significant predictor; women who agreed with the attitude statement, I have risky sexual behavior that need changing, were twice as likely to be HIV tested (Exp [B] = 2.068, 95% CI [1.024, 4.477]; see Appendix G). These findings suggest that women in this study who were aware of their risky sexual behaviors were HIV tested more often than those women who disagree with the knowledge items of having risky sexual behaviors. Thus, the act of engaging in risky sexual behaviors may have been a factor that influenced the women to be HIV tested. These findings are similar to a recent qualitative study by Teitelman, Calhoun, Duncan, Washio, and McDougal (2015) who reported 30 African American women who knowingly engaged in risky sexual behaviors sought HIV testing. According to Teitelman et al. qualitative findings, 30 African American women aged 18 to 25 years disclosed being HIV tested as a strategy to reduce HIV risk. A theme that emerged was when women were unable to negotiate condom use or their partner's willingness to be monogamous, these women recognized their HIV risk and proposed an agreement that both would be HIV tested in order to establish trust and to establish devotion to the relationship (Teitlman et al., 2015).

Research question 6. Lastly, this study found a difference in women who engage in sex-trading versus women who do not engage in sex-trading and their decision to have HIV testing. This investigation found 273 (36.4%) of the women reported trading sex for alcohol and drugs; 257 (94.1%) reported having HIV testing with a median of three HIV tests (M = 4.58, SD = 7.12, Mdn = 3). Of the 273 women who reported trading sex for alcohol and drugs, 132 responded to the survey item asking about trading sex for alcohol and 131 women responded to the survey items about trading sex for specific drugs. Interestingly, 74 (42.0%) women aged 25 to 34 years and 163 (42.9%) women

aged 35 to 44 years had a higher percentage of trading sex for alcohol or drugs (see Table 7). This finding is consistent with the Wright et al. (2007) who reported that from a sample of 266 rural women, 100 (37.6%) reported trading sex for money or drugs, but lower than Dolwick-Grieb, Davey-Rothwell, and Lakin (2012) findings, from a sample of 567 urban African American women 375 (66.1%) women traded sex to obtain drugs. In contrast, this investigation found a high percentage of women, 124 (94.6%) a sample of 131 women, who traded sex for crack or cocaine. This finding was higher than Cavazos-Rheg et al. (2009) who reported that 78 (62.4%) from a sample of 125 women traded sex for cocaine or money. In addition, this investigation also found higher sex trade for crack or cocaine than Schönnesson et al. (2008) who reported that 59 (42.7%) from a sample of 138 women who were crack cocaine or users, 59 (42.7%) traded sex for a money or drugs, with more than two partners, and had inconsistent condom use. Although Schönnesson et al. (2008) findings of trading sex for crack or cocaine were lower than this investigation, it should be noted these women were aware of their HIV positive status. In the current study 117 (94.4%) of the 124 women who traded sex for crack or cocaine were HIV tested with a median of 3 HIV tests (M = 4.14, SD = 4.33, Mdn = 3; see Appendix D).

Overall this study found 328 (43.7%) of the women traded sex for money, 130 (17.5%) traded sex for food, 109 (14.5%) traded sex for a place to stay, and 51 (6.8%) traded sex for clothes. Likewise, Millay et al. (2009) findings from focus interviews of 30 women with high risk sex behaviors reported that the women traded sex for money, which was used to pay financial obligations or to support drug use.

This investigation showed women who traded sex for money, food, place to stay, or clothes had higher number of HIV tests with mean number of HIV tests range from 4.84 to 6.12 compared to women who did not trade sex for money, food, place to stay, or clothes with mean number of HIV tests range from 3.14 to 3.51. Women who traded sex for food showed the highest average number of HIV tests (M = 5.62, SD = 10.08, see Appendix D). These findings suggest that the women who traded sex for money, food, place to stay, or clothes knew they were at risk, and sought HIV testing.

Limitations

The findings of this investigation are limited because the sample was all African American women, from a lower socio-economic status, and were high risk female drug users, from a large Midwest metropolitan area. Thus, the findings can be generalized only to population with similar characteristics. Another limitation is the data is older and current trends of HIV testing may have changed. Additionally, the level of measurement of the data is categorical, which allows for a prediction of categorical outcome, yes or no, but statistically inappropriate to predict the number of times to HIV test.

Implications for Nursing Science and Practice

Based on the findings of this investigation, the following implications for nursing science and practice are presented:

- It is important for nurses to assess African American women's high risk behaviors for contracting HIV and if they have had HIV testing. Being tested for HIV increases the potential for early detection and early treatment.
- It is important for nurses who provide HIV and STD educational programs to assess what knowledge African American women have about actions before

and after sex to prevent acquiring HIV or STDs. These preventative actions may protect the woman from contracting HIV.

- Community health nurses need to assess African American women's knowledge to prevent HIV and attitudes about risky sexual behavior, educate women about high risk behaviors for HIV, and the importance of HIV testing. Women in this investigation who recognized risky drug behavior and risky sexual behaviors that need changing were more likely to be HIV tested.
- It is important for nurses who provide HIV and STD educational programs to teach and promote communication skills that help the African American women ask their partner about sex history and HIV status. Women who communicated with their partner, asked about HIV status, were more likely to be HIV tested.
- Community health nurses need to be aware of the underlying health issues surrounding drug and alcohol use and addiction. African American women's cognitive ability may be impaired by alcohol and drugs and may be unable to learn or make behavioral changes to prevent HIV. Thus, community nurses should encourage African American women with addictive behaviors to seek alcohol and drug treatment.
- Community health nurses need to be aware that African American women who are using crack or cocaine have a high incidence of trading sex in order to support their need for the drug. Thus there is a greater need for nurses to assess specifically the drugs women are using and encourage women who use crack or cocaine the importance of being tested for HIV and STDs.

- Community health nurses need to be aware that there are African American women who trade sex for life essentials such as money, food, a place to stay, or clothing. It is important to also note that when women trade sex for drugs, need additional nursing support. It is vital for community health nurses to bring together a multidisciplinary team to address African American woman's lack of life's essentials (money, food, place to stay, and clothing); psychological support to address the issues surrounding drug use; psychological support to address potential emotional abuse as a result of trading sex; and community programs aimed to teach life skills and household management.

Implication for Conceptual Model

The conceptual model, African American Women with Drug Use and HIV Testing, was useful to guide this investigation. Based on a review of the literature, this conceptual model was designed to identify factors that influence HIV testing among African American women with a history of drug use. Thus, this investigator found defining the concepts African American women with a history of drug use, drug use behaviors, trading sex behaviors, risky sexual behaviors, attitudes about HIV/AIDs and risky sexual behaviors, knowledge about actions to prevent getting HIV or STDs, and HIV testing were useful for the study of this population. The analysis then provided the guide for recommendations for nursing practice and research.

Recommendations for Future Nursing Science

Based on the findings of this investigation, the following recommendations for nursing research are presented:

This study was a homogenous sample of African American women. Future studies should include other populations with a history of drug use, including both men and women, to determine factors that influence the decision to be HIV tested.

This study suggests that African American women are able to identify their own risky sexual behaviors, their partners' risky sexual behaviors, and were in control of whether or not they could get the HIV virus. Future research should measure actions of African American women with a history of drug or risky sexual behavior use to prevent acquiring HIV or STDs, and study nursing interventions that determine if these reduce the incidence of HIV or STDs.

Corneille et al. (2008) reported that lack of communication regarding sexual history coupled with need to show trust, put African American women at an unknown risk for contracting HIV infection. In contrast, this investigation found that African American women who were able to ask about their partner's sexual history were more likely to be HIV tested. Future research should measure strategies that help African American women communicate with their partner about their sexual history (drug use or risky sexual behaviors) to determine if using communication skills can reduce the risk of HIV and increase HIV testing.

This investigation found women who agreed that they had risky sexual behavior that needed changing were more likely to be HIV tested. Future research should study African American women who recognize that they have risky sexual behaviors that need changing to determine strategies to help them change these risky sexual behaviors to prevent HIV and to encourage HIV testing.

This study found HIV testing was influenced by the women's knowledge to prevent HIV and her attitudes about risky sexual behavior. There was also an interaction, an increased variation of 15.3%, that the women's decision to have HIV testing was influenced by her knowledge to prevent HIV and attitudes about risky sexual behavior. Future studies should assess both African American women's knowledge to prevent HIV and her attitudes about risky sexual behavior. Then design a tailored teaching program that increases African American women's knowledge about HIV, helps her develop strategies to reduce risky sexual behaviors, helps her to understand when there is a need to be HIV tested, and determine the effectiveness of the tailored teaching program.

Of the 751 African American women in this investigation, over one third traded sex for drugs and alcohol and almost half traded sex for money, food, a place to stay and clothes. Future studies need to determine strategies that ascertain the unique needs of African American women, develop and evaluate tailored intervention programs to reduce the prevalence of sex trading. These tailored intervention programs should include teaching life skills and household management that can facilitate finding housing and employment. These tailored intervention programs should also provide interventions for drug and alcohol abuse and psychological support for potential emotional abuse.

Conclusion

This study reinforce previous studies that this high risk sample of African American women with a history of drug use have some knowledge about actions before and after sex to prevent HIV or STDs. Almost half of the women were able to identify their risk behaviors, sharing needles, not using condoms, and having sex with one partner was safer than with two or more partners. Almost half of the women were having sex

with partners they deemed as health partners, consistent with previous studies that African American women had trust in their partner and believed they were at low risk for HIV. More than half of the women believed they were in control of whether or not they get HIV.

In contrast to other studies that reported women found it difficult to engage their partner in discussion about sex were more likely to be tested, in this study there was a significant difference in the number of HIV tests for women who asked there partner if they were HIV positive and their sex history compared to women who did not ask these questions. Women in this investigation decision to be HIV tested was influenced by their knowledge of risky sexual behaviors; this was small but significant relationship.

This study reinforced previous finding that a minor percentage of the women's decision to be HIV tested was influenced by the women's attitudes about risky sexual behavior. For example, there was a significant difference in the number HIV tests for women who reported cheating on one of their steady sex partners and women who did not cheat on one of their steady sex partners. There was also a significant difference for women who agreed that their own risky sexual behaviors determined whether they contract the HIV virus compared to the women who disagreed.

This study lends support to previous studies that previous that African American women knowingly engaged in risky sexual behaviors were more likely to be tested. Findings from this investigation suggest that women who were aware of their risky sexual behaviors were HIV tested more often than those women who disagree with the knowledge items of having risky sexual behaviors. This investigation predicted an increased to 15.3% variation in the decision to be HIV tested was influenced by the

women's knowledge to prevent HIV and attitudes about risky sexual behavior. For example, the interactions between women's knowledge to prevent HIV and attitudes about risky sexual behavior emerged as an additional and more significant predictor; women who agreed with the attitude statement, I have risky sexual behavior that need changing, were twice as likely to be HIV tested.

Reinforcing previous research, over one third of the African American women in this investigation reported trading sex for alcohol and drugs and with a large number of women who traded sex for crack or cocaine. Just under half of the women (n = 326, 43.4%) traded sex for money, food, place to stay, or clothes. In this investigation, women who traded sex for money, food, place to stay, or clothes had higher number of HIV tests compared to women who did not trade sex for money, food, place to stay, or clothes.

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Appendix A

Washington University Risk Behavior Assessment of Women.

HIV Testing

TX17	Now I want to ask questions about the test for HIV, the virus that causes AIDS. Not counting today, how many times, if any, have you had a test for HIV (the AIDS virus)?	TIMES	_ _ _

Sex Trade: Sex for Money/Drugs/ Food

SA 45	Have you <u>ever</u> traded sex of any kind or "tricked" to get drugs or alcohol?	NO GO TO SA48	1
		YES…	5
SA46	How many times in the past 4 months, since (DATE 4 MONTHS AGO), did you trade sex to get drugs or alcohol?	TIMES	_ _ _

SA47 In the past 4 months did you trade sex for:

		NO	**YES**
A.	Alcohol?.....	1	5
B.	Marijuana or hashish?.....	1	5
C.	Crack or cocaine?.....	1	5
D.	Heroin?.....	1	5
E.	Heroin and cocaine mixed together (e.g. speedball)?	1	5
I.	Amphetamines or speed or uppers?.....	1	5
J.	Ecstasy, GHB or other club drugs?.....	1	5
K.	Some other drug?..... [SPECIFY:_____]	1	5

SA48 Have you ever traded sex to get…

		NO	**YES**
A.	Money?.....	1	5
B.	Food?.....	1	5
C.	A place to stay?.....	1	5
D.	Clothes?.....	1	5

SA49	How many times have you traded sex in the past 4 months to get money, food, a place to stay, or clothes?	TIMES	_ _ _

Knowledge: Sexual Activity Before and After Sex

SA 50. We have heard about some things people do before or after sex to keep from getting STDs or HIV. Have you done any of these behaviors to keep from getting HIV or STDs?

		NO	**YES**
a.	Washed your genitals before sex with soap?.....		
b.	Washed your partner's genitals before sex with soap?.....	1	5
c.	Washed your genitals after sex with soap?	1	5
d.	Not let your partner ejaculate in you?.....	1	5
e.	Douched after sex?.....	1	5
f.	Urinated after sex?.....	1	5
g.	Washed your genitals after sex with alcohol?.....	1	5
h.	Washed your partner's genitals after sex with alcohol?…….....	1	5
i.	Took antibiotics before or after sex?	1	5
j.	Had sex with only healthy looking people?.....		
k.	Washed your genitals with bleach or peroxide after sex?.....		
l.	Washed your partner's genitals with bleach or peroxide after sex?.....	1	5
m.	Asked your partners if they are HIV positive?.....	1	5
n.	Substituted oral sex for vaginal sex?.....	1	5
o.	Substituted anal sex for vaginal sex?.....	1	5
p.	Asked your partner for their sex history?.....	1	5
q.	Have you or your partner used ear wax to determine if you have an STD?.....	1	5

Attitudes: HIV/AIDS

HIV1. These questions are about your attitudes toward sex. For each of the statements please tell me if you agree, disagree, or are neutral. I want to know how you feel **right now**, not what you feel in the past or what you would like to feel.

		Agree	Neutral	Disagree
A.	I have risky sexual behaviors that need changing.	1	0	5
B.	I have risky drug use behaviors that need changing.	1	0	5
C.	I have risky drinking behaviors that need changing.	1	0	5

HIV2. Which of these do you think is most risky in terms of causing HIV/AIDS- not using condoms, sharing needles, or using alcohol or drugs before or during sex?

Not using condoms	1
Sharing needles	2
Using alcohol or drugs before or during sex	3

HIV3. Do you think a steady partner has ever cheated on you?

NO	1
YES	5

HIV4. Have you **ever** cheated on one of your steady partners?

NO	1
YES	5

HIV5. Do you feel that having **one** sex partner is more safe than having two or more sex partners?

NO	1
YES	5

HIV6. I am going to read some statements and I'd like you to tell me if you agree, disagree, or are neutral.

		Agree	Neutral	Disagree
A.	I am in control of whether or not I get the HIV virus.			
B.	If I get the HIV virus, it is my destiny- meaning it is meant to be,			
C.	Other people play a big part in whether I get the HIV virus.			
D.	Whether or not I get the HIV virus depends on my sex partner.			
E.	My own behaviors determine whether I get HIV virus.			

Appendix B

Average Number of HIV Tests by Knowledge

							95% CI	
Actions Prior and After Sex to Prevent HIV	*n*	*M*	*SD*	*t*	df	*p*	*LL*	*UL*
Washed genitals before sex with soap?								
Yes	321	3.99	7.29	-.224	641	.82	-1.18	.94
No	338	3.87	6.54					
Washed partner's genitals before sex with soap								
Yes	299	4.24	7.62	-1.02	576	.31	-1.64	.522
No	360	3.68	6.27					
Washed your genitals after sex with soap								
Yes	415	3.90	6.69	.133	475	.89	-1.05	1.20
No	244	3.98	7.29					
Not let your partner ejaculate in you?								
Yes	262	3.93	7.91	-.024	656	.98	-1.00	.98
No	397	3.94	5.05					
Douched after sex?								
Yes	298	4.24	8.15	1.49	610	.14	-.247	1.79
No	361	3.51	5.01					
Urinated after sex?								
Yes	334	4.14	7.17	.756	650	.45	-.651	1.47
No	325	3.73	6.66					
Washed your genitals after sex with alcohol?								
Yes	88	4.10	7.09	-.292	132	.77	-1.53	1.14
No	571	3.91	5.69					
Washed your partner's genitals after sex with alcohol?								
Yes	79	4.30	5.55	-.613	116	.54	-1.79	.94
No	580	3.88	7.08					
Took antibiotics after sex?								
Yes	76	3.86	3.20	.182	198	.86	-.848	1.02
No	583	3.94	7.26					
Had sex with only healthy looking people?								
Yes	309	4.04	6.99	-.362	643	.72	-1.26	.87
No	350	3.84	6.85					
Washed your genitals with bleach or peroxide after sex?								
Yes	51	6.92	5.78	-1.58	51	.12	-7.37	.89
No	608	3.68	5.78					
Washed your partner's genitals with bleach or peroxide after sex?								
Yes	41	4.44	6.76	-.501	46	.62	-2.75	1.65
No	619	3.89	6.92					
Asked your partner if they are HIV positive?								
Yes	393	4.65	8.48	-3.79	539	.00*	-2.71	-.86
No	266	2.87	3.20					
Substitute oral sex for vaginal sex?								
Yes	101	5.69	11.18	-1.83	110	.07	-4.38	.18
No	558	3.61	5.77					
Substituted anal sex for vaginal sex?								
Yes	22	4.09	6.73	-.113	23	.91	-3.19	2.86
No	637	3.93	6.92					
Asked your partner for their sex history?								
Yes	276	4.66	8.04	-2.21	480	.03*	-2.38	-.137
No	383	3.40	5.93					
Have you or your partner used ear wax to determine if you had an STD?								
Yes	33	3.58	3.47	.698	51	.49	-.889	1.84
No	569	4.05	7.36					

Appendix C

Average Number of HIV Tests by Reported HIV Attitudes

							95% CI	
Attitudes	*n*	*M*	*SD*	*t*	df	*p*	*LL*	*UL*
I have risky sexual behaviors that need changing.								
Agree	254	3.76	4.16	-.536	715	.592	-1.11	.64
Disagree	463	4.00	7.74					
I have risky drug use behaviors that need changing.								
Agree	355	4.29	8.19	1.52	560	.128	-.219	1.74
Disagree	370	3.53	4.71					
I have risky drinking behaviors that need changing								
Agree	287	4.44	9.27	1.60	355	.110	-.210	2.07
Disagree	441	3.51	3.98					
Do you think a steady partner has ever cheated on you?								
Yes	506	4.13	7.29	-1.75	688	.08	-1.64	.09
No	243	3.35	4.67					
Have you ever cheated one of your steady partners								
Yes	461	4.25	7.49	-2.19	747	.03*	-1.84	-.10
No	288	3.28	4.67					
Do you feel having one sex partner is more safe than having two or more sex partners								
Yes	637	3.89	6.96	-.266	283	.79	-.978	.75
No	112	3.78	3.60					
I am in control of whether or not I get the HIV virus								
Agree	475	4.11	7.66	1.47	710	.14	-.216	1.51
Disagree	239	3.46	4.06					
If I get the HIV virus, it is my destiny meaning it is meant to be.								
Agree	189	3.57	3.65	-.998	643	.32	-1.23	.40
Disagree	529	3.98	7.31					
Other people play a big part in whether I get the HIV virus								
Agree	374	3.76	4.70	-.635	555	.53	-1.30	.67
Disagree	354	4.08	8.22					
Whether or not I get HIV virus depends on my sex partner								
Agree	437	3.75	6.57	-.541	596	.59	-1.27	.72
Disagree	285	4.03	6.74					
My own behaviors determine whether I get HIV virus								
Agree	629	4.06	7.00	2.50	288	.01*	.228	1.92
Disagree	106	2.98	3.37					

Appendix D

Average Number of HIV Tests by Trading Sex and Not Trading Sex

							95% CI	
Traded Sex in Past 4 Months	*n*	*M*	*SD*	*t*	df	*p*	*LL*	*UL*
Alcohol								
Yes	16	5.38	5.58	-.956	17	.35	-4.43	1.67
No	116	3.99	4.13					
Marijuana								
Yes	5	4.60	4.10	-.227	4.37	.83	-5.46	4.61
No	126	4.17	4.36					
Crack/Cocaine								
Yes	124	4.14	4.33	.569	6.63	.59	-3.22	5.23
No	7	5.14	4.56					
Heroin								
Yes	4	2.50	2.38	1.39	3.67	.24	-1.86	5.35
No	127	4.24	4.38					
Heroin & Cocaine mix/Speedball								
Yes	131	4.19	4.33	-	-	-	-	-
No	0	-	-					
Amphetamines								
Yes	1	-	-	-	-	-	-	-
No	130	4.22	4.34					
Club Drugs								
Yes	1	-	-	-	-	-	-	-
No	130	4.22	4.34					
Other Drugs								
Yes	2	1.00	1.41	3.03	1.31	.15	-4.65	11.13
No	129	4.24	4.35					
Money								
Yes	326	4.84	4.32	-3.27	452	.001*	-2.71	-.68
No	422	3.14	4.33					
Food								
Yes	130	5.62	10.08	-2.32	145	.02*	-3.91	-.31
No	618	3.51	5.49					
Place to Stay								
Yes	109	6.12	10.52	-2.54	118	.01*	-4.66	-.58
No	639	3.50	5.54					
Clothes								
Yes	51	5.02	6.61	-1.28	57.5	.21	-3.14	.70
No	697	3.80	6.56					

Appendix E

Binary Logistic Regression: Knowledge about Risky Sexual Behavior and Influence to HIV Test

Classification Table[a,b]

	Observed		Predicted		
			Y1N0HIV		Percentage Correct
			No	Yes	
Step 0	Y1N0HIV	No	0	68	.0
		Yes	0	534	100.0
	Overall Percentage				88.7

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	2.061	.129	256.190	1	.000	7.853

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	31.327	17	.018
	Block	31.327	17	.018
	Model	31.327	17	.018

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	393.267[a]	.051	.100

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	SA50_A	-.090	.128	.502	1	.479	.914	.711	1.173
	SA50_B	-.213	.119	3.171	1	.075	.808	.640	1.022
	SA50_C	.064	.131	.242	1	.623	1.066	.825	1.378
	SA50_D	.143	.083	2.993	1	.084	1.154	.981	1.356
	SA50_E	-.129	.093	1.924	1	.165	.879	.732	1.055
	SA50_F	.168	.097	3.022	1	.082	1.183	.979	1.429
	SA50_G	-.192	.142	1.833	1	.176	.825	.625	1.090
	SA50_H	.169	.171	.981	1	.322	1.185	.847	1.656
	SA50_I	.204	.163	1.561	1	.211	1.226	.891	1.687
	SA50_J	-.041	.075	.295	1	.587	.960	.829	1.112
	SA50_K	.341	.280	1.484	1	.223	1.406	.813	2.432
	SA50_L	-.121	.293	.171	1	.679	.886	.499	1.573
	SA50_M	.235	.081	8.490	1	.004	1.265	1.080	1.482
	SA50_N	.097	.138	.493	1	.483	1.102	.840	1.446
	SA50_O	.077	.287	.073	1	.787	1.081	.616	1.896
	SA50_P	-.053	.080	.435	1	.510	.949	.811	1.110
	SA50_Q	-.013	.163	.006	1	.938	.987	.717	1.360
	Constant	1.098	.485	5.124	1	.024	2.998		

a. Variable(s) entered on step 1: SA50_A, SA50_B, SA50_C, SA50_D, SA50_E, SA50_F, SA50_G, SA50_H, SA50_I, SA50_J, SA50_K, SA50_L, SA50_M, SA50_N, SA50_O, SA50_P, SA50_Q.

Appendix F

Binary Logistic Regression: Attitudes about Risky Sexual Behavior and Influence to HIV Test

Classification Table[a,b]

	Observed		Predicted		
			Y1N0HIV		Percentage Correct
			No	Yes	
Step 0	Y1N0HIV	No	0	77	.0
		Yes	0	672	100.0
	Overall Percentage				89.7

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	2.166	.120	324.248	1	.000	8.727

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	15.610	20	.741
	Block	15.610	20	.741
	Model	15.610	20	.741

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	480.528[a]	.021	.043

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	HIV1_A			4.195	2	.123			
	HIV1_A(1)	.776	.813	.912	1	.340	2.173	.442	10.682
	HIV1_A(2)	.609	.319	3.645	1	.056	1.838	.984	3.434
	HIV1_B			4.213	2	.122			
	HIV1_B(1)	.621	.916	.459	1	.498	1.861	.309	11.214
	HIV1_B(2)	.604	.299	4.075	1	.044	1.829	1.018	3.288
	HIV1_C			2.788	2	.248			
	HIV1_C(1)	-.957	.771	1.542	1	.214	.384	.085	1.739
	HIV1_C(2)	-.387	.296	1.704	1	.192	.679	.380	1.214
	HIV2	-.122	.218	.312	1	.576	.885	.578	1.357
	HIV3	-.053	.071	.558	1	.455	.948	.824	1.090
	HIV4	.033	.069	.234	1	.628	1.034	.903	1.184
	HIV5	-.077	.096	.650	1	.420	.926	.767	1.117
	HIV6_A			.507	2	.776			
	HIV6_A(1)	.060	.601	.010	1	.920	1.062	.327	3.450
	HIV6_A(2)	.190	.270	.494	1	.482	1.209	.712	2.051
	HIV6_B			.085	2	.959			
	HIV6_B(1)	.198	.686	.083	1	.773	1.218	.317	4.678
	HIV6_B(2)	-.005	.298	.000	1	.987	.995	.555	1.785
	HIV6_C			.374	2	.830			
	HIV6_C(1)	-.251	.711	.125	1	.724	.778	.193	3.133
	HIV6_C(2)	-.152	.269	.320	1	.571	.859	.506	1.456
	HIV6_D			.174	2	.917			
	HIV6_D(1)	-.008	.704	.000	1	.991	.992	.250	3.947
	HIV6_D(2)	.110	.275	.160	1	.689	1.116	.651	1.915
	HIV6_E			.253	2	.881			
	HIV6_E(1)	-.165	.883	.035	1	.852	.848	.150	4.782
	HIV6_E(2)	.133	.347	.146	1	.702	1.142	.579	2.253
	Constant	2.292	.737	9.673	1	.002	9.897		

a. Variable(s) entered on step 1: HIV1_A, HIV1_B, HIV1_C, HIV2, HIV3, HIV4, HIV5, HIV6_A, HIV6_B, HIV6_C, HIV6_D, HIV6_E.

Appendix G

Binary Logistic Regression: Attitudes and Knowledge about Risky Sexual Behavior Influence to HIV Test

Classification Table[a,b]

Observed			Predicted		
			HIV test Yes or NO		Percentage Correct
			NO	Yes	
Step 0	HIV test Yes or NO	NO	0	70	.0
		Yes	0	536	100.0
	Overall Percentage				88.4

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	2.036	.127	256.562	1	.000	7.657

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	384.300[a]	.078	.153

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	SA50_A	-.099	.131	.572	1	.450	.906	.700	1.171
	SA50_B	-.244	.127	3.679	1	.055	.784	.611	1.005
	SA50_C	.107	.140	.587	1	.444	1.113	.846	1.466
	SA50_D	.136	.085	2.586	1	.108	1.146	.971	1.353
	SA50_E	-.139	.095	2.151	1	.142	.870	.723	1.048
	SA50_F	.143	.101	2.034	1	.154	1.154	.948	1.405
	SA50_G	-.247	.151	2.677	1	.102	.781	.581	1.050
	SA50_H	.195	.184	1.126	1	.289	1.215	.848	1.741
	SA50_I	.212	.168	1.594	1	.207	1.236	.889	1.718
	SA50_J	-.049	.077	.415	1	.519	.952	.819	1.106
	SA50_K	.325	.304	1.147	1	.284	1.384	.763	2.510
	SA50_L	-.065	.317	.042	1	.838	.937	.504	1.744
	SA50_M	.265	.081	10.582	1	.001	1.303	1.111	1.529
	SA50_N	.041	.145	.082	1	.775	1.042	.785	1.384
	SA50_O	.086	.292	.087	1	.768	1.090	.615	1.932
	SA50_P	-.042	.082	.262	1	.609	.959	.816	1.127
	SA50_Q	-.054	.172	.098	1	.754	.948	.677	1.327
	HIV1_A			4.428	2	.109			
	HIV1_A(1)	.947	1.193	.630	1	.428	2.577	.249	26.709
	HIV1_A(2)	.727	.359	4.102	1	.043	2.068	1.024	4.177
	HIV1_B			4.166	2	.125			
	HIV1_B(1)	1.452	1.441	1.016	1	.314	4.273	.254	72.012
	HIV1_B(2)	.648	.336	3.728	1	.053	1.912	.990	3.693
	HIV1_C			1.959	2	.376			
	HIV1_C(1)	-.948	1.405	.455	1	.500	.388	.025	6.081
	HIV1_C(2)	-.432	.327	1.751	1	.186	.649	.342	1.231
	HIV2	-.173	.246	.492	1	.483	.841	.519	1.364
	HIV3	-.096	.081	1.417	1	.234	.908	.775	1.064
	HIV4	.025	.077	.109	1	.742	1.026	.882	1.193
	HIV5	-.028	.103	.076	1	.782	.972	.794	1.189
	HIV6_A			.765	2	.682			
	HIV6_A(1)	.465	.702	.440	1	.507	1.592	.403	6.300
	HIV6_A(2)	.225	.309	.532	1	.466	1.253	.684	2.294

	HIV6_B			.706	2	.702			
	HIV6_B(1)	.669	.901	.551	1	.458	1.952	.334	11.418
	HIV6_B(2)	-.110	.328	.112	1	.738	.896	.471	1.705
	HIV6_C			.880	2	.644			
	HIV6_C(1)	-.407	.843	.233	1	.629	.666	.128	3.472
	HIV6_C(2)	-.267	.298	.803	1	.370	.765	.426	1.374
	HIV6_D			.514	2	.773			
	HIV6_D(1)	-.029	.772	.001	1	.970	.972	.214	4.411
	HIV6_D(2)	.214	.315	.460	1	.498	1.239	.667	2.299
	HIV6_E			.850	2	.654			
	HIV6_E(1)	-.758	1.013	.560	1	.454	.469	.064	3.415
	HIV6_E(2)	.120	.374	.103	1	.749	1.127	.542	2.345
	Constant	1.295	.895	2.094	1	.148	3.650		

a. Variable(s) entered on step 1: SA50_A, SA50_B, SA50_C, SA50_D, SA50_E, SA50_F, SA50_G, SA50_H, SA50_I, SA50_J, SA50_K, SA50_L, SA50_M, SA50_N, SA50_O, SA50_P, SA50_Q, HIV1_A, HIV1_B, HIV1_C, HIV2, HIV3, HIV4, HIV5, HIV6_A, HIV6_B, HIV6_C, HIV6_D, HIV6_E.