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Drug Use and Sexual Risk Behaviors of MSM With Syphilis in Atlanta

Tarneisha Shantelle Means
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Walden University

College of Health Sciences

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Tarneisha Means

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Walden University
2014

Abstract

Drug Use and Sexual Risk Behaviors of MSM With Syphilis in Atlanta

by

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MSPH, Walden University, 2008

BS, Georgia College & State University, 1997

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

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Abstract

Many men who have sex with men (MSM) engage in alcohol and drug use. Drug use, particularly methamphetamines, amyl nitrates (poppers), and drugs used to treat erectile dysfunction among MSM may also contribute to risks such as unprotected sex, which leads to the possibility of contracting syphilis, Human immunodeficiency virus (HIV), and other Sexually Transmitted Infections (STIs). In the Metro Atlanta Area (Fulton and Dekalb Counties), primary and secondary syphilis rates among MSM are still rising and rank highest among the other counties in the area. Guided by the risk and protective factor theory, the purpose of this study was to determine if club drug use was a contributing factor in high-risk sexual behavior among MSM with syphilis. Data were collected from the State Electronic Notifiable Disease Surveillance System with permission from the State of Georgia's Division of Public Health's STD division and was tested by using hierarchical regression analyses. The findings were inconsistent with the reported literature; there was no association between drug use and risky sexual behavior in this sample of MSM infected with syphilis. However, there was an association between prior incarceration being predictive of engaging in sex with anonymous partners and having sex while high. Implications for positive social change include evidence for the need for public health interventions that target incarcerated MSM because they exhibit the highest-risk sexual behavior due to their time served in the correctional system. Further exploration of this topic could be used to develop health information and policies to meet the needs of those affected by high-risk sexual behavior while incarcerated and upon release, ultimately reducing the spread of HIV.

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Dedication

This work is dedicated to my husband, B'wyangi, and my son, B'wyangi, Jr. (JR). You guys have so graciously been by my side every step of the way. Thanks for all of the support that you have provided throughout this journey. To my family, thanks for everything that you have done to encourage and motivate me along the way. Mom (Barbara A. Lawrence), thanks for believing in me and never giving up! Tavoris, thanks for those late night conversations that we had. Even though you were telling me how you attribute much of your success to the strength and dedication that came from watching me burn the midnight oil as I worked on my undergraduate degree, knowing that I was your mentor gave me more determination and drive to go forward and pursue my own dreams. There were times when I had to draw from that same strength that I had back then when times got rough and I grew weary. However, I knew that I had a race to run, a task to finish, and a mission to accomplish. With God on my side, I pressed onward! Knowing that I was your strength, I could not let you down!

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Chapter 1: Introduction to the Study

Introduction

Alcohol and drug use among some MSM may result from a reaction to homophobia, discrimination, or violence they experienced due to their sexual orientation and can contribute to other mental health problems (CDC, 2013). Alcohol and illegal drug use in some gay and bisexual men also contributes to increased risk for HIV infection and other STIs, especially methamphetamines, amyl nitrates (poppers), and drugs used to treat erectile dysfunction (CDC, 2013). While under the influence of drugs or alcohol, individuals may increase their risk for HIV transmission by engaging in risky sexual behaviors or through sharing needles or other injection equipment (CDC, 2013). Genital sores (chancres) caused by syphilis make it easier to transmit and acquire HIV infection sexually (CDC, 2013). In fact, a person is 2 to 5 times more likely to get HIV if exposed when syphilis sores are present (CDC, 2013). The Syphilis Elimination Effort (SEE) is a national initiative that unites health care providers, policy makers, community leaders, and state and local public health agencies to reduce syphilis rates in the United States (CDC, 2013). In a collaborative effort, there is a unique opportunity to control syphilis as well as reduce the transmission of HIV (CDC, 2013).

Club drugs are a pharmacologically heterogeneous group of psychoactive drugs that tend to be abused by teens and young adults at bars, nightclubs, concerts, and parties (NIDA, 2010). While the effects of each club drug is different, effects common to all club drugs can include anxiety, panic, depression, euphoria, loss of memory,

hallucinations, and psychotic behavior (FBI, n.d.). Club drugs are sometimes used as date rape drugs, to make someone unable to say no to or fight back against sexual assault (NIH, 2010). They can cause serious health problems and sometimes death, and they are even more dangerous if used with alcohol.

Club drug usage is very popular in MSM, and because of its affiliation with unprotected sex, young men who have sex with men (YMSM) continue to be at high risk of acquiring HIV through unprotected sexual encounters (Hall et al., 2007; Wolitski et al., 2001). As a result of the discrimination and marginalization from ethnic groups and their communities, some MSM turn to sex or drugs to cope (Diaz et al., 2005), which increases their risk of becoming infected. Unprotected receptive anal sex is the sexual behavior that carries the highest risk for HIV acquisition (CDC, 2013).

Notifiable disease surveillance data on syphilis and data from GISP (Gonococcal Isolate Surveillance Project) are indicate that some STDs in MSM, including men who have sex with both women and men, are increasing (CDC, 2001, 2009; Fox et al., 2001; Helms et al., 2007). The rise in STDs among MSM may be associated with an increase in HIV diagnoses among MSM (Hall et al., 2008).

There has been a dramatic increase in the rate of syphilis in YMSM and the rate of coinfection with HIV is high (Hitt, 2012). Additionally, syphilis is a sexually transmitted disease caused by the bacterium *Treponema pallidum* and can cause long term complications and/or death if not adequately treated (CDC, 2013). It is transmitted from person to person by direct contact with syphilis sores, which occur mainly on the

external genitals, vagina, anus, or in the rectum (CDC, 2013). Sores also can occur on the lips and in the mouth and can be transmitted during vaginal, anal, or oral sexual contact (CDC, 2013).

Correct and consistent use of latex condoms can reduce the risk of syphilis when the sore or site of potential exposure is covered, but it is best to abstain from sex while any sore is present in the genital, anal, or oral area (CDC, 2013). Furthermore, contact with a sore outside of the area covered by a latex condom can still cause infection (CDC, 2013). The absence of condom usage consistently and correctly is considered unprotected sex (CDC, 2012). Moreover, risky behaviors such as unprotected sex are increased when drugs and alcohol are used (CDC, 2012).

Club drug use and unprotected sex are a few of the variables that contribute to the spread of syphilis, HIV/AIDS, and other STDs. Club drugs encompass a diverse range of substances that emerged during the 1990s as major drugs of use and abuse in the United States and elsewhere (Kelly, Parsons, & Wells, 2006). Among MSM, the most commonly used recreational drugs are often collectively referred to as club drugs (Morgenstern et al., 2009). These drugs, including cocaine, methamphetamine (crystal meth), methylenedioxymethamphetamine (MDMA, commonly known as “ecstasy”), gamma hydroxyl-butyric acid (GHB) and its derivatives, ketamine (“Special K”), and d-lysergic acid diethylamide (LSD) are often used in combination with each other, are a frequent feature of gay-oriented night clubs, bars, and circuit parties, and are commonly used as an enhancement to sexual encounters for MSM (Ramo, Grov, Delucchi, Kelly, & Parsons,

2010). The association between club drug use and HIV is complex and involves many different facets of social, physical, and psychological health (Drumright, Patterson, & Strathdee, 2006). Therefore, this investigation explored the potential role of club drugs as an independent risk factor for STD acquisition.

Background

The SEE was developed and spearheaded by the Centers for Disease Control and Prevention (CDC) in October 1999 as a part of a national initiative (The Department of Public Health [DPH], n.d.). The CDC was responsible for the development of the research design, intervention, and materials used to collect information from participants in order to reduce the syphilis rates in the United States. The tool itself was designed to assess the local social, behavioral, and institutional factors related to the persistence of syphilis within the high morbidity areas of Metro Atlanta (DPH, n.d.). The SEE is a national initiative that brings health care providers, policy makers, community leaders, and state and local public health agencies together to reduce syphilis rates in the United States (CDC, 2011). According to the CDC, syphilis disproportionately affects a small percentage of the population, and research has shown that these are often isolated groups involved in high risk activities such as illicit drug use, exchanging sex for money or drugs, unprotected sexual intercourse, and having multiple sex partners (Georgia Department of Public Health [GDPH], n.d.). In assessing the STD trends, two Georgia counties ranked in the top 20 cities and counties for having the highest rate for primary and secondary syphilis infection in the United States with the rates steadily increasing

over the past 5 years (CDC, 2011). Fulton ranked sixth in the country and Dekalb followed ranking 19th (CDC, 2011). There are programs designed to combat the high STD rates in a collaborative effort; one of the most notable is the Comprehensive STD Prevention System (CSPS). CSPS is a grant-funded program that is intended to execute the mission of the Division of Public Health's STD section, which ultimately prevents STDs and their complications (GDPH, n.d.).

Syphilis is caused by the spirochete *Treponema pallidum* and is spread primarily through sexual contact (Mattei, Beachkofsky, Gilson, & Wisco, 2012). When left untreated, it progresses to other stages; primary and secondary syphilis are symptomatic stages, latency can last for years and can be asymptomatic, and late syphilis can also be a late symptomatic stage (Holmes, 2008). In the United States, rates of primary and secondary syphilis reached historic lows in 2000, but in 2001 the increase began among males and has continued (CDC, 2009).

In an analysis presented at the 2010 National STD Prevention Conference, the rate of new HIV diagnoses among MSM was found to be more than 44 times that of other men and more than 40 times that of women (Purcell et al., 2010), and the rate of primary and secondary syphilis among MSM is estimated at more than 46 times that of other men and more than 71 times that of women (CDC, 2010). The CDC is looking to increase access to syphilis screening for MSM, especially for those who are HIV infected. It is working at the national level and with the state and local partners to identify and implement the most cost effective and scalable interventions in the geographic areas hit

the hardest by HIV and among the most severely affected populations within those areas (CDC, 2013). As of June 2011, the CDC announced a new 5-year HIV prevention funding opportunity that better aligns HIV prevention funding to the current geographic burden of the U.S. HIV epidemic. The CDC provides funding to health departments in states, territories, and selected cities based on the number of people living with HIV diagnosis in the area (CDC, 2013).

Drug use among MSM is becoming quite widespread. The National Alliance of State and Territorial AIDS Directors (NASTAD; 2005) in the United States have described the increased use of crystal methamphetamine among MSM as a public health crisis. However, in other areas, drug use among MSM and its implications in the rising of STI and HIV rates are more patchy (Rusch et al., 2004; Slavin, 2004; Wilkins et al., 2002). There are reasons to be concerned about recreational drug use among MSM: The drug use culture is changing, the nature of the association between substance abuse and sexual risk behavior remains unclear, and there is likely to be increased need for health service interventions to address the impacts of rising recreational drug use in this population likely to require the expertise and joint effort of sexual health, mental health, and substance abuse professionals (NASTAD, 2005).

Previous researchers have found a correlation of club drugs use among MSM in areas along the West Coast, but there is limited information on the East Coast, particularly in the South Atlantic Region. In order to fulfill this gap in literature, my study was composed of secondary data taken from Georgia, specifically the Metro

Atlanta area. I examined club drug use among MSM to determine if there was some correlation between its use and sexual risk taking.

Problem Statement

Researchers of previous studies have shown that when compared with the general population, gay and bisexual men are one of the populations who are more likely to use alcohol and drugs and have higher rates of substance abuse (CDC, 2013). Their alcohol and drug use can be a reaction to homophobia, discrimination, or violence they experienced due to their sexual orientation and can contribute to other mental health problems (CDC, 2013). In some gay and bisexual men, alcohol and illegal drug use also contributes to increased risk for HIV infection and other STIs (CDC, 2013).

Among MSM, the most commonly used recreational drugs are often collectively referred to as club drugs (Morgenstern et al., 2009). Furthermore, the CDC estimates that 1.2 million people in the United States are living with HIV infection (CDC, 2012) and an estimated 50,000 people were newly infected annually. Consequently, in 2006, MSM comprised approximately 53% of all new HIV infections, 12% were injection drug users (IDU), and 4% were both MSM and IDU (Hall et al., 2008). Potential reasons for the syphilis increase among HIV-infected individuals include improvements in HIV therapy leading to increased wellbeing and reduced mortality, burnout over safer sex practices, false assurance from HIV serosorting, and recreational drug use (Marazzo, 2007; Truong et al., 2006).

Purpose of the Study

The purpose of this quantitative research was to examine the relationship between club drug use and sexual risk taking among MSM in the Metro Atlanta area (Fulton and Dekalb Counties) who have been infected with syphilis. This is an area where primary and secondary (P&S) syphilis has had a steady increase in cases from 2001 to 2009 (CDC, 2012). During 2010, overall rates of P&S decreased for the first time since 2000 (CDC, 2010); however, rates among men continued to increase, making it the 10th consecutive year of increasing rates among men (CDC, 2012).

Research Questions and Hypotheses

This research was guided by two research questions. Each research question has a respective null, alternative hypothesis, and a mode of analysis.

Research Question 1: Is there an association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) while controlling for injection drug use and a history of imprisonment and previous STIs?

Null Hypothesis 1 (H_1o): There is no significant association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and

engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) while controlling for injection drug use and a history of imprisonment and previous STIs.

Alternative Hypothesis 1 ($H1_a$): There is a significant association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) while controlling for injection drug use and a history of imprisonment and previous STIs.

These associations will be tested by employing a multivariate linear regression analysis to determine whether club drug use as reported on the supplemental interview record (SIR) is predictive of engaging in unprotected sex.

Research Question 2: Does type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties)?

Null Hypothesis 2 ($H2_0$): Type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) does not predict engaging in risky sexual

behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties).

Alternative Hypothesis 2 ($H2_a$): Type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) does predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties).

These results were obtained by performing a hierarchical regression analysis on the results of club drug and other drug use as reported on the SIR to determine if one set of drugs were more likely to predict engaging in unprotected sex.

Theoretical Foundation

Over the past 2 decades research has been conducted in an attempt to determine how drug abuse begins and its progression. The risk and protective factor theory was developed by Hawkins and Catalano on the basis of an extensive review of research on substance use and other problem behaviors among youth (as cited in Temple & Stuart, 2009). As it relates to human disease, this theory suggested that substance abuse and other problem behaviors can be made less severe by reducing the number of risk factors and strengthening protective factors within individuals (Temple & Stuart, 2009). Risk

factors include anything within an individual or the individual's family, peers, or community that increases the likelihood of developing a problem with substance use (Temple & Stuart, 2009). In opposition, protective factors are those that decrease the probability of developing problematic substance use (Temple & Stuart, 2009).

Drug use among MSM is not an all or nothing phenomenon. According to Santos, Das, and Colfax (2011), there needs to be more emphasis on addressing the specific patterns of noninjection substance abuse among substance using MSM (SUMSM), and what implications these patterns have for intervention approaches. Most SUMSM are not drug dependent, but rather use episodically (i.e., using substances less than weekly; Santos et al., 2011).

In my research, I evaluated drug use among MSM and the risk factors that have been presented. The work of previous researchers has shown that both young MSM (aged 16-25) and older MSM (46 and older) engaged in risky sexual behaviors; however, they differed in the types of sexual risk behavior in which they engaged (Salomon et al., 2009). Older MSM face their own unique set of challenges, and some of the issues play a role in their risky sex behavior (Heath et al., 2012). Psychologically, they have concerns about living up to the idealized standard of younger gay men, desirability, feelings of worthlessness, depression, and isolation (Heath et al., 2012). It is these factors that may result in older MSM "trading off" safe sex in order to fulfill their emotional needs (Heath et al., 2012). Physiologically, older MSM struggle with erectile dysfunction, which is exacerbated by condom use. Older MSM are also more likely to have used inhaled

nitrites/poppers and to have injected drugs including heroin and steroids, putting them at risk for HIV and other communicable diseases (Salomon et al., 2009).

In a 2008 the national HIV behavioral surveillance (NHBS) study of New York City, MSM were recruited at social venues, and researchers found there were high levels of HIV prevalence, sexual risk behaviors, and substance use (NHBS, 2010). In global analyses, there was a strong association between noninjection drug use (particularly hard drug use including cocaine, poppers, and crystal meth), and sexual risk: MSM who used hard drugs in the past year were over twice as likely to engage in unprotected anal intercourse (UAI) and nearly three times as likely to engage in UAI with a casual or exchange partner (NHBS, 2010). In event specific analyses, there were racial/ethnic differences in the association between concurrent substance use and sexual risk, with the association especially strong for Hispanic MSM (NHBS, 2010).

The STD Surveillance Network (SSuN) was established in 2005 to improve the capacity of national, state, and local STD programs to detect, monitor, and respond rapidly to trends in STDs through enhanced collection, reporting, analysis, visualization, and interpretation of disease information (Rietmeijer et al., 2009). In 2011, the proportion of MSM who presented to SSuN clinics with P&S syphilis infection who also were infected with HIV ranged from 14.3% in Los Angeles to 65% in Baltimore (CDC, 2012 [Figure X]). The median site-specific proportion co-infected with HIV was 40.4% (CDC, 2012). P&S syphilis was identified by provider diagnosis and HIV was identified by laboratory report, self-report, or provider diagnosis (CDC,

2012).

Nature of the Study

Sexual risk behaviors are contributing factors for syphilis and other STIs in MSM. Unprotected receptive anal sex is the sexual behavior that carries the highest risk for contracting HIV (CDC, 2012). However, oral, anal, vaginal, or penile syphilis sores make it easier to transmit HIV infection (CDC, 2013). In fact, a person is 2 to 5 times more likely to get HIV if exposed when syphilis sores are present (CDC, 2013). There may be some correlation between club drugs and other drug use and high risk sexual practices that could contribute to rising rates of HIV and other STIs among MSM. This quantitative, correlational study, therefore, sought to determine if there is any association between club drug use and sexual risk taking among MSM in Atlanta. There were several variables associated with this research study. Club drug use was the independent variable. Sexual behavior/sexual risk taking were the dependent variables.

The information for this study involved the use of secondary data collected from the State of Georgia's STD Department. The data came from interviews conducted with MSM who have tested positive for syphilis. During the consensual interviews (which were standard procedures for collecting information from syphilis patients), MSM answered a series of questions as they relate to drug use as well as sexual behavior. The study associations were tested by using a hierarchical regression analysis to determine whether club drug use as reported on the SIR is predictive of engaging in unprotected sex.

Definition of Terms

Acute retroviral syndrome: A condition in which HIV infected people develop glandular fever-like illness with fever, rash, joint pains, and enlarged lymph nodes (UNAIDS, 2008).

AIDS: AIDS stands for acquired immunodeficiency syndrome and is a surveillance definition based on signs, symptoms, infections, and cancers associated with the deficiency of the immune system that stems from infection with HIV (UNAIDS, 2008).

Barebacking: Commonly defined as intended UAI outside of a “negotiated safety” association. Negotiated safety arrangements may include open discussion of risk factors (such as HIV serostatus) prior to sex, the establishment of ground rules for sex both within and outside a regular sexual association, or agreement on indications for and frequency of repeat HIV testing (Ayling & Mewse, 2011).

Circuit parties: The phenomenon of the many men who travel on an annual basis to attend these parties in various areas, domestic and international (Colfax et al., 2001; Mansergh et al., 2001).

HIV: Human Immunodeficiency Virus, which can lead to acquired immune deficiency syndrome, or AIDS (CDC, 2012).

MSM: An acronym for the widely used phrase for men who have sex with men. It categories behavior that emerged in the HIV literature in the 1990s and has since become more widely adopted (Young & Meyer, 2005). It also identifies a group of men who have

an elevated risk for HIV transmission because of their behavioral risk factors (Young & Meyer, 2005).

Raves: Parties with loud, electronic techno-rock music, laser light shows, and all-night dancing held in clandestine locations, including warehouses, nightclubs, and farm fields (CDC, 2010).

Seroconversion: The development of antibodies to HIV and usually takes place between 1 and 6 weeks after HIV infection has happened (UNAIDS, 2008).

Definition of Variables

Club drugs: A variety of drugs that have different physiological effects and mechanisms of action but are called club drugs because they are closely linked to the dance club scene (Fernandez et al., 2005). Club drugs are often used in social contexts where sex is the primary object of participation (Bochow, 1998) because they are thought to enhance sexual pleasure or to have direct aphrodisiac effects (Fernandez et al., 2005). According to Parsons, Halkitis, and Bimbi, (2006), the most popular club drugs used by MSM are cocaine, methylenedioxymethamphetamine (MDMA/ecstasy), methamphetamines, gamma hydroxybutyrate (GHB), amyl nitrates, and more recently Viagra. The SIR used during the interview was used to capture any use of drugs by MSM who had tested positive for syphilis and were also at risk for contracting HIV. Specifically, injection drug use was notated with a yes or no answer. The next step permitted the selection of five of the aforementioned drugs listed. The MSM's drug(s) of choice were indicated with a check mark beside it. This variable was scored individually

and dichotomously, yes/no, depending on the presence or absence of a check mark on the use of any club drug on the interview record.

Cocaine: The most widely used club drug in New York City (NYC) clubs (Kelly & Parsons, 2008). It is a Schedule II drug under the Controlled Substances Act of 1970, meaning that it has a high potential for abuse, but it can also be administered by a doctor for legitimate medical uses, such as local anesthesia for some eye, ear, and throat surgeries (U.S. D.E.A., 2010). Cocaine can be snorted through the nose, where it is absorbed into the bloodstream, injected, where it is released directly into the blood, and smoked, where absorption into the bloodstream is as rapid as by injection (U.S.D.E.A., 2010). An indication for cocaine use by the MSM was made on the SIR by placing a check mark beside it during the interview process if there was any usage. This variable was scored dichotomously, yes/no, depending on the presence or absence of a check mark on the interview record.

Crack: The street name given to the form of cocaine that has been processed to make a rock crystal that produces vapors when heated and is smoked. The crackling sound produced by the rock as it is heated is how the term crack was so named (NIDA, 2013). An indication for crack use by the MSM was made on the SIR by placing a check mark beside it during the interview process if there was any usage. This variable was scored dichotomously, yes/no, depending on the presence or absence of a check mark on the interview record.

Ecstasy: Methylamphetamine MDMA is a social drug often used in attaining an optimal social and personal experience. It has been nicknamed as the Love Drug and its most desirable effects are the perceived closeness and feelings of open and nonjudgmental communication with others (Blowers, n.d.). It is commonly consumed in an oral tablet and produces a high that lasts up to 6 hours but the residual effects potentially remain much longer. Users report typical doses of one or two tablets for desired effects (Boot, McGregor, & Hall, 2000). An indication for ecstasy use by the MSM was made on the SIR by placing a check mark beside it during the interview process if there was any usage. This variable was scored dichotomously, yes/no, depending on the presence or absence of a check mark on the interview record.

Heroin: An opiate drug that is synthesized from morphine, which is a naturally occurring substance extracted from the seed pod of the Asian opium poppy plant (NIDA, 2010). Its appearance is usually a white or brown powder or as a black sticky substance, known as “black tar heroin” (NIDA, 2010). Heroin is a highly addictive drug and can lead to other severe health problems. It can be introduced into the body by injection, snorting/sniffing, or by smoking. Injecting and snorting provide passageways to the bloodstream whereas smoking propels smoke into the lungs (NIDA, 2010). It is estimated that about 23% of Heroin users become addicted to it because of its ability to cause decreased physiological and psychological responses in its users (NIDA, 2010). An indication for Heroin was made on the SIR by placing a check mark beside it during the

interview process if there was any usage. This variable was scored dichotomously, yes/no, depending on the presence or absence of a check mark on the interview record.

Methamphetamine: A stimulant with the alternate names of Meth, Speed, Ice, and Tina that increases motor activity, anorexia, increased confidence levels, euphoria, and increased libido when used in moderation and erectile dysfunction when used in high doses (McKim, 2003; National Institutes on Drug Abuse, 2002). The U.S. Food and Drug Administration categorize it as a Schedule II amphetamine because of its high potential for abuse and psychological or physical dependence (CDC, 2007). An indication for methamphetamine use was made on the SIR by placing a check mark beside it during the interview process if there was any usage. This variable was scored dichotomously, yes/no, depending on the presence or absence of a check mark on the interview record.

Nitrates: Nitrite inhalants (poppers) are peripheral vasodilators used by MSM to facilitate and enhance sexual intercourse (Romanelli, Smith, Thornton, & Pomeroy, 2004). Recent seroincidence studies estimate that up to 28% of contemporary HIV infections among MSM can be associated with nitrite inhalant use (Buchbinder et al., 2005). An indication of nitrite use was made on the SIR by placing a check mark beside it during the interview process if there was any usage. This variable was scored dichotomously, yes/no, depending on the presence or absence of a check mark on the interview record.

Viagra: (Sildenafil) is used to treat erectile dysfunction (impotence, inability to get or keep an erection) in men (PubMed Health, 2010). It is associated with high risk

sexual behavior independently, but its behavioral risks are greater when combined with methamphetamine (Spindler, 2007). An indication of Viagra use was made on the SIR by placing a check mark beside it during the interview process if there was any usage. This variable was scored dichotomously, yes/no, depending on the presence or absence of a check mark on the interview record.

Assumptions

This research was a secondary data analysis based on participants who provided their answers via interviews conducted by Communicable Disease Specialist in Fulton and Dekalb Counties. The information (data) was stored on electronic files at the Georgia Department of Public Health office. It was the assumption that the instrument used to collect the research provided an accurate measure of the variables under study and has some consistent meaning and correlation within the culture of MSM and club drug use. It was also assumed that the participants were truthful in their responses regarding any drug use as well as their sexual behaviors.

It was assumed that substance use increase sexual risks. Many epidemiological studies include documental information on the association between substance use and sexual risk behaviors (Wolf & Maisto, 2009). Most MSM who engage in substance use are not drug-dependent, but rather use episodically (i.e., using substances less than weekly; Santos et al., 2011). Episodic patterns are associated with high-risk sexual behaviors, suggesting that while perhaps less concerning from a drug-dependence

perspective, they may contribute significantly to HIV transmission rates among SUMSM (Wolf & Maisto, 2009).

Scope and Delimitations

The initial data collection was comprised of MSM in the Metro Atlanta, Georgia area (DeKalb and Fulton Counties) who had previously tested positive for syphilis and were participants in a Syphilis Elimination Effort (SEE; Georgia Department of Human Resources, n.d.) based on routine questionnaires. These questionnaires were done in public health agencies for all people who had tested positive for primary or secondary syphilis. The information in the analytic database relating to any type of drug use is based on the voluntary consent of the participant, and they have not been validated for accuracy. As a result, the study may not reflect a large number of participants who actually engaged in club drug use, or some may have engaged in drug use but denied that use, which would make it impossible to determine if drug usage was the cause of their STI.

The study does not represent the behaviors indicative of MSM, HIV positive MSM, or any other identity or sexually scripted group within the broader definition of MSM. Information from the original study (which was designed to reduce syphilis rates) was used to gather information to assist in determining if the sexual behavior of MSM who had tested positive for syphilis were influenced by the consumption of club drugs. Marijuana and prescription drugs are not included in this study because they were not included on the SIR that was used to collect the original information. No data were

gathered from those MSM who tested negative for syphilis who might be HIV positive and may also engage in club drug use.

Limitations

The information from this study was secondary and was limited to MSM who tested positive for syphilis. The interview questionnaire and the study design were developed by the State STD prevention unit and collected by state and county staff. This was an ecological, descriptive study explaining the targeted population in the two counties of Georgia and cannot be generalized to any other county or the state. There was no opportunity to gain information in regards to the participant's reasoning for engaging in club drug use. The only information indicated is whether or not they used drugs and the type that was used.

Significance

The results of this study could add to existing knowledge about whether club drug use is a significant risk factor for sexual risk behavior among MSM with syphilis. The public health community can use this new knowledge for the purpose of developing interventions and policies to reduce club drug use and also increase condom usage. Based upon an improved understanding of the association between club drugs and unprotected sex, there is an opportunity for a reduction in the transmission of STIs like syphilis. A decrease in syphilis rates may also contribute to a decrease in HIV rates as well as transmission to children. Noninjection drug use has been identified as an independent risk factor for HIV (Parry et al., 2008) and is thought to facilitate risky

sexual practices via impaired cognition and increased sexual desire (Drumright & Colfax, 2009; Parry, Carney, Peterson, Dewing, & Needle, 2003; Parry & Pithey, 2006).

Because of the increased prevalence of drug use and associated risk of HIV transmission, developing effective interventions for drug-using MSM has a high public health priority (Morgenstern et al., 2009).

Summary

Since the beginning of the AIDS epidemic, researchers in the United States have demonstrated that MSM continue to engage in risk-taking behaviors with their sexual partners (CDC, 2004a; Chen et al., 2002; Halkitis et al., 2004; Wilton, 2001). Drug use is a widespread problem in the MSM community (Cochran, Ackerman, Mays, & Ross, 2004) with an estimated use as high as 19% among gay and bisexual men, with drug-related problems estimated at 5.7% (Cochran et al., 2004). Club drugs are the most commonly used recreational drugs among MSM and are often used in combination with other drugs, are a frequent feature of gay-oriented nightclubs, bars, and circuit parties, and are commonly used as an enhancement to sexual encounters for MSM (Halkitis & Parsons, 2002). Drug use, particularly stimulants, can reduce inhibitions (including those for unsafe sex) and increase sexual drive and it has been consistently linked to HIV-associated risk among MSM (Colfax et al., 2005; Halkitis & Parsons, 2002).

Because of the increased prevalence of drug use and the risk of HIV transmission associated with it, there was great need to develop effective interventions for drug-using MSM (Mongenstern et al., 2009). However, there were questions that had yet to be

answered about the associations between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) and unprotected sex among MSM in the Metro Atlanta area (Fulton and Dekalb Counties). Another unanswered question involved studying the magnitude of the association of club drug use in the same geographical area compared to other drug use (heroin, crack) or no drug use with engaging in unprotected sex. To further explore this research project, Chapter 2 provides a detailed review of the literature and provides more information on MSM behavior and drug use. Chapter 3 encompasses the method of study and provides insight to the research questions and study hypotheses. Chapter 4 details the data analysis process used in this study as well as the results. Chapter 5 outlines the study results, discussions, conclusions, and recommendations.

Chapter 2: Literature Review

Introduction

This study was a secondary data analysis that tested the effects that club drugs have on MSMs' risky sexual behaviors. Club drugs are associated with sexual behavior for several reasons, including the following: clubs and parties often provide more opportunities for hook-ups, all drugs and alcohol intoxication diminish decision making abilities, and club settings typically encourage sexy style and excessive behaviors (LGBT Drug Rehab, 2010-2013).

After presenting my literature search strategy and theoretical foundation, I present an overview of MSM and drug use and the risk factors that are involved. The literature review on MSM and drug use provides information that will lend support to the topic. I also present information on the effects that individual club drugs have on the body and on sexual performance to provide a background as to why MSM may have chosen to use one particular club drug over another or why they prefer a certain combination. This information is followed by a chapter summary and transition to Chapter 3. There is a gap in the literature involving drug use of MSM and the effects that they have on participation in risky sexual behavior (Wolf & Maisto, 2009). I focused on particular drugs that will be used to further examine such an association and fill the literature gap. The club drugs under study are methamphetamines, nitrates/poppers, ecstasy, cocaine, and Viagra. A pattern of use of heroin and crack has been studied and compared to club drug use.

Literature Search Strategy

The information collected for this research was accessed through Walden University's library via Thoreau, which provided the opportunity to search multiple databases simultaneously. The search criteria used to retrieve articles for this research were based on the use of the key words *MSM, HIV, MSM and HIV, MSM and Club drugs, Club Drugs, Ecstasy, Sexual Risk Behaviors, Sexual Risk Behaviors and MSM, MSM and multiple partners, Risk and Protective Factors, STIs, Syphilis, and Exchange Sex*. The accessed studies contained information that was pertinent to MSM and their sexual risk behaviors and their risk for acquiring HIV and other STIs. The information presented in my research came from peer reviewed journals and is the most comprehensive information that is relevant to my study within the past 5 years.

Theoretical Foundation

David Hawkins and Richard Catalano developed the risk and protective factor theory based on their research on substance use and other problem behaviors among youth (as cited in Temple & Stuart, 2009). According to this theory, substance abuse and other problem behaviors can be mitigated by limiting the number or preventing the development of risk factors and by bolstering protective factors within individuals (Temple & Stuart, 2009). Researchers suggest that although gay institutions, such as bars or dance clubs, serve as safe venues for sexual expression, socialization, and dissemination of information, they also be a host site for the facilitation of HIV risk

behaviors such as drug use, unsafe sex, or the combination of drug use during sex (Green, 2003; Kelly, Carpiano, Easterbrook, & Parsons, 2012).

I decided to use the risk and protective factor theory as a means to review a pattern of drug use among MSM and to highlight some risk factors involved, which contributes to the acquisition of STDs. After the risk factors have been identified, protective factors are often implemented to circumvent the problem that contributed to the substance use.

Sexual Risk Behaviors

According to the CDC (2013), sexual behaviors that are risk factors for STIs including having unprotected vaginal, anal, or oral sexual contact, having multiple sex partners, using drugs and alcohol, and engaging in commercial or coerced sex. The CDC estimates that, annually, 55, 400 people in the United States get new infections (2011). In 2011, there was an epidemiologic shift in syphilis rates differing from its 2002 rates when older men (30-39) had the highest rates; increasing cases have been reported in young MSM (CDC, 2003, 2011). However, MSM accounted for 72% of all P&S syphilis cases in 2011 (Su et al., 2011). Black, Hispanic, and other racial/ethnic minorities are disproportionately affected by P&S syphilis in the United States, with black Americans accounting for most of P&S syphilis among individuals who are not MSM (CDC, 2011).

The sexual practices of MSM comprise a wide area, and there are a number of health issues that are of concern. Changes in HIV risk behaviors have been seen over time, which put MSM and their partners at risk. In 2010, MSM accounted for 63% of all

new HIV infections and MSM who use drugs account for another 3% (CDC, 2012). Because some MSM also have girlfriends and wives, females are at risk also, and according to baseline data, condom use with them is low and anal sex is quite common (Biswas et al., n.d.). The dynamics of nondisclosure or inconsistent or incorrect condom usage by MSM are placing their partners at risk in spite of their own knowledge of HIV (Biswas et al., n.d.). Despite the many awareness messages already in place for MSM, there are risk factors (i.e., an unawareness of their partners risk factors, unprotected vaginal sex, unprotected anal sex, sexual abuse, injection drug and other substance use, and sexually transmitted diseases) that contribute to prevention challenges for women (CDC, 2013). All of these risk factors can contribute to the acquisition of HIV.

The surest way to avoid transmission of sexually transmitted infections, including syphilis, is to abstain from sexual contact or to be in a long term mutually monogamous association with a partner who has been tested and is known to be uninfected (CDC, 2013). Should infection occur, there are no home remedies or over the counter drugs that will cure syphilis, but it is easy to cure in its early stages (P&S) with a single injection of long acting Benzathine penicillin G (2.4 million units administered intramuscularly; CDC, 2013). Adult MSM associations that are considered to be serious with feelings of intimacy, trust, and closeness have been suggested by researchers as explanations for the higher rates of unprotected sex (Davidovich et al., 2004; Theodore et al., 2004; Zea et al., 2009). Explanations for such behavior are that there is greater trust and familiarity with serious partners, the perception that condoms interfere with intimacy, and the negotiation

of agreements about acceptable sexual behaviors for the partners as a strategy to increase safety (Davidovich et al., 2004; Hays et al., 1997; Theodore et al., 2004). According to Brickman et al. (2008), other factors associated with increased rates of STIs include the loss of fear regarding HIV transmission because of the increased manageability of the infection, the use of the internet as an efficient way to find sex partners, increasing use of erectile dysfunction agents, and possibly the expanding role of oral sex in STI transmission (Cochran, Ackerman, Mays, & Ross, 2004).

Sex With Anonymous Partners

Methamphetamine use is posing a significant problem among MSM and has become a public health concern. Its use is associated with high risk sexual behaviors, and among those, which are listed, are casual and anonymous partners (UCLA Integrated Substance Abuse Programs, 2006-2012). According to Semple et al. (2004), sexual behavior that occurs with anonymous partners is an important, yet understudied area in prevention research. By definition, anonymous partners are unknown to each other, and the sexual encounters usually take place in parks, bathhouses, public restrooms, beaches, porn shops, adult theaters, and “on the street” (Semple et al., 2004). In a previous study of 133 HIV positive gay and bisexual men, the researchers found less use of condoms for anal sex among HIV positive men who had only anonymous partners as compared to those who had only steady or casual partners (Semple et al., 2004). The lack of condom use among HIV positive men and their anonymous partners cause further public health concern. First, if an anonymous partner who is assumed to be HIV positive, but is

actually negative, engages in sexual risk behavior with an HIV positive partner, viral transmission is possible (Semple et al., 2004). Second, HIV positive gay and bisexual men who have unprotected sex with HIV positive anonymous partners may be setting themselves up for reinfection with a drug resistant strain of the virus (Kelly et al., 1998), particularly if the anonymous partner has had multiple sex partners in the past. It is behaviors such as these that contribute to the increase in the number of positive HIV cases within the MSM population.

In my research, I assessed the sex partner information as provided by each participant, paying close attention to those who indicated that they had sex with anonymous partners. From this information I was able to obtain a more accurate account of the number of people who engaged in such behavior. This analysis can be used to provide the feedback that could support the need for more public health prevention strategies in the area of the dangers of MSM and anonymous sex partners through education and awareness.

MSM often engage in sexual risks that could have negative influences on their health also putting them at risk for HIV infection. Gay, bisexual, and other MSM represent approximately 2% of the U.S. population, yet they are the population most severely affected by HIV (CDC, 2012). Sexual risk behaviors account for most HIV infections in MSM; unprotected receptive anal sex is the sexual behavior that carries the highest risk for HIV acquisition (CDC, 2012). Theoretically, high sensation seekers are more likely to engage in sexual risk than low sensation seekers because they have a

greater value for high risk activities and a higher threshold for determining what is subjectively risky (Hoyle et al., 2000). Therefore, settings such as gay bars or bathhouses, sexually oriented events, or a particular partner may present opportunities for sexual risk and cognitively release the person from sexual norms. In a study conducted by Grov (2012) involving sexual behavior and HIV status disclosure, samples were recruited from bars/clubs, bathhouses, and on Craigslist to determine if they differed from each other in behavior and demographic characteristics. According to the results, men recruited in bathhouses were the most likely to report that they never discussed their HIV status with their sex partners. They also reported high number of recent male sex partners ($Mdn=7$) and had the smallest proportion of male sex partners that were the same HIV status (51%), compared with men in bars/clubs (74%) and men from Craigslist (84%) (Grov, 2012).

Substance use may play a role in risk taking processes. My research provides the opportunity to gather information about participants and to identify risks that might make them more vulnerable to contracting HIV and STDs. The risk factors can be found in the Sexual Preferences section of the SIR and include questions such as whether the participants has had sex with a male, had sex with a female, had sex with an anonymous sex partner, had sex while intoxicated and/or high on drugs, had sex with a person known to be an IDU, or exchanged drugs/money for sex. These risk factors were not examined; they are for information only.

MSM are often users of mind-altering substances, both legal and illegal. Studies have shown that, when compared to the general population, gay and bisexual men, lesbian, and transgender individuals are more likely to use alcohol and drugs, have higher rates of substance abuse, and are more likely to continue drinking into later life (Ostrow & Stall, 2008). In a population-based study of urban gay men 6 months prior to being interviewed, 20% of the men reported using poppers (the popular name for various alkyl nitrites, including isobutyl nitrite, butyl nitrite, and amyl nitrite; DanceSafe, n.d.), 12% reported using MDMA, and 10% reported using methamphetamines; HIV-infected men were more likely to report use of multiple drugs and frequent drug use (Stall et al., 2001). Alcohol and drug use among some MSM can be a reaction to homophobia, discrimination, or violence they experienced due to their sexual orientation and can contribute to other mental health problems (CDC, 2010). It can also contribute to increased risk for HIV infection and other STIs, especially methamphetamines, amyl nitrates (poppers) and drugs used to treat erectile dysfunction (CDC, 2010). Individuals under the influence of drugs may increase their risk for HIV transmission by engaging in risky sexual behaviors or through sharing needles or other injection equipment (CDC, 2010). Previous researchers demonstrated a consistent association between substance use and sexual risk behavior among MSM (Wells et al., 2011); however, there is a dearth of information available on the topic in Georgia. Beyond annual events, such as circuit parties, drug use is common in gay communities and at specific gay venues. In San Francisco, approximately 50% of MSM who frequented gay venues, such as bars, dance

clubs, parks, and sex clubs, reported having used crystal methamphetamine in the past 3 months (Heredia, 2003). In New York City, 52% and 20% of MSM who frequented dance clubs reported using ecstasy and crystal methamphetamine, respectively, in the prior year (Groves, Bimbi, Nanin, & Parsons, 2006; Klitzman, Greenberg, Pollack, & Dolezal, 2002). MSM who use substances are more likely to engage in sexual risk behavior (Shoptaw & Reback, 2007; Spindler et al., 2007) and are more likely to be HIV+ or test positive for a sexually transmitted infection (Drumright & Colfax, 2009; Spindler et al., 2007).

Situations affect the concurrency of sexual behavior and substance use and predict risky sexual behavior (Celentano et al. 2006; Purcell et al., 2005) and HIV/STI transmission (Carey et al., 2009; Koblin et al., 2006). By using the research questions that guide this current study, I sought to determine the association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) and unprotected sex among MSM in the Metro Atlanta Area (DeKalb and Fulton Counties). According to the 2011 Sexually Transmitted Diseases Surveillance, Fulton County ranked number 4 and DeKalb County ranked number 35 in terms of P&S syphilis by reported cases in the United States (Table 32; CDC, 2012). This information indicates that syphilis is still on the rise in Georgia. Given these high rates, it is evident that there are some risk behaviors taking place in Atlanta, but because the population is understudied, there is no evidence indicating that substance abuse was a factor. The existing literature was used to construct the research questions by defining the magnitude of the association between the

aforementioned club drugs compared to other drugs (heroin, crack) or even no drug use at all as a predictor of engaging in sexual risk behaviors.

MSM Having Sex With Known Drug Users

Drug use plays a large role in the spread of HIV. In the United States, injection drug use is a leading cause of HIV infection (US Dept. of Health & Human Services, 2011). Injection drug users can get HIV from sharing used needles or other equipment (works) with an infected person (US Dept. of Health & Human Services, 2011). HIV can then be passed on to sex and drug using partners (US Dept. of Health & Human Services, 2011). Since the epidemic began, injection drug use has directly and indirectly accounted for more than one-third (36%) of AIDS cases in the United States (CDC, 2007).

Noninjection drugs (such as “crack” cocaine) also contribute to the spread of the epidemic when users trade sex for drugs or money, or when they engage in risky sexual behavior that they might not engage in when sober (CDC, 2007). By assessing the data from the SIR, I was able to analyze the results for the participants who indicated having sex with known drug users. The results from this analysis will be beneficial in contributing to public health departments raising awareness about the diseases that are common among drug users that may also be transmitted to their partners.

Exchanging Sex For Drugs/Money

Since the beginning of the AIDS epidemic and through the use of epidemiological data in the United States, researchers have demonstrated that MSM accounted for 61% of new HIV infections in 2009 and 79% of the infections among all newly infected men

(CDC, 2012). In the same year, among all MSM, black/African American MSM accounted for 10,800 (37%) new HIV infections (2012). Exchange sex (i.e. sex in exchange or money, drugs, or other needs) has also been associated with increased risk for acquisition of HIV and sexually transmitted diseases (STDs) among both HIV-positive and HIV negative youth (Edwards, Iritani, & Hallfors, 2006 & Roy, Haley, & Leclerc, 2000). The youth who had a history of exchange sex were more likely to be HIV-positive than youth with no history of exchange sex (Edwards, Iritani, & Hallfors, 2006).

The exchange of sexual activities for money, drugs, or other goods, a form of sexual exploitation, has been associated with other risky sexual behaviors, such as earlier sexual debut (Pederson & Hegna, 2003; Svedin & Priebe, 2007), a greater number of sexual partners (Edwards, Iritani, & Hallfors, 2006; Pedersen & Hegna, 2003; Svedin & Priebe, 2007), and involvement in casual sex (Lavoie, Thibodeau, Gagne', & Hebert, 2010). These behaviors are known to increase the risk of HIV and other STIs; indeed, youth who had engaged in trading sex were found to be more likely than those who had not to report a history of HIV/STI diagnosis (Edwards et al.; Greene, Ennett, & Ringwalt, 1999; Roy et al., 2000).

Through the process of exchange sex or "sex trading," MSM are exposed to sexual risk behaviors or drug use that could put them at risk for contracting HIV (Newman & Rhodes, 2004). With each additional encounter is another opportunity for the spread of disease that contributes to the elevation of HIV rates (Newman & Rhodes,

2004). Among MSM, those who engage in sex trading have been found to be more likely to participate in unprotected sex with non-sex trading male (Rietmeijer et al., 1998; Elwood et al., 1997; Estcourt et al., 2000) and female (Elwood et al., 1997) partners than their non-sex trading counterparts which would lead to increased risk for HIV transmission in non-sex trading encounters. This behavior increases their own risk for contracting HIV and also may infect their non-sex trading male and female partners (Newman & Rhodes, 2004). Very little research has addressed the factors associated with sex trading among MSM (Newman, Rhodes, 2004), that presents a gap in the literature.

This information was of importance to my study because exchange sex was listed as one of the possible risk factors on the SIR designed to collect information about the MSM under study. Under the topic of Sexual Preferences, the participants had the opportunity during the interview to answer a question as to whether he has exchanged drugs/money for sex by indicating Yes or No as appropriate.

Club Drugs

Club drugs refer to a wide variety of dangerous drugs. While club drug use among MSM has been examined in various areas of the country, its prevalence and associated HIV risk behaviors within the South Atlantic Region, namely Georgia (Atlanta) had remained virtually unexplored. Being that there was unexplored territory, there was a critical gap in the ability to target MSM populations for the opportunity to provide information on the prevention of STIs including HIV/AIDS prevention and intervention

efforts. Upon fulfilling this gap, this information will be very important to Public Health and to all those affected.

Patterson et al. (2009) gathered information from a 9-month training program with Volunteers of America: Kentucky STOP (Stop The Spread of HIV Through Outreach and Prevention), which was supervised by CDC. Volunteers of America is the largest provider of HIV case coordination services and is located in Kentucky (Volunteers of America, 2013). Volunteers with the STOP program provide HIV/AIDS prevention, testing, and outreach (Volunteers of America, 2013). The members in the STOP program are MSM as well and one of their duties is to provide outreach services to venues which are frequented by other MSM. Some of these places include recreational parks, coffee shops, bars, and any areas where MSM host parties. The data were collected between March and September of 2004 in order to identify the extent of club drug use and associated risk behaviors among the local MSM community. In order to receive an invite to participate in the program, one had to identify himself as MSM and also had to be sober. To remain in compliance with regular outreach activities, no demographic or identifiable information was required of the participants. The outreach workers decided that by maintaining a level of anonymity, the participants would more likely give more candid responses (Volunteers of America, 2013). According to the researchers, drugs and alcohol use did in fact increase the participants' HIV risk. This study is similar to what I will be conducting. My research is designed to study the association between

recreational (club) drugs and MSM's sexual risk behavior which increases their risk of acquiring HIV and other STIs.

My study drew from secondary data that was generated from the administration of a questionnaire completed by MSM in the Metro Atlanta Area who participated in an interview with local health departments after testing positive for syphilis. The questionnaire (SIR) was used to obtain information on the sexual risk behavior of the MSM (Gwinnett Board of Health, n.d.). Because I used secondary data from the SIR questionnaire, I did not have to send out invitations for participation. The information had already been collected and was stored in a secure location. The participants were contacted as a means to provide testing and treatment opportunities for themselves as well as their partners in an attempt to stop the spread of disease. Other information collected from the interview was used to gain more information about the participant's sexual behaviors and drugs of choice (Gwinnett Board of Health, n.d.). Being sober was not a requirement at the time of information collection either. The information could have come from anyone who had a positive syphilis test at that time.

Club drugs have become increasingly available in New York City and other urban areas of the United States (Stall et al., 2001; Klitzman et al., 2002). In the United States, 8.3% of adults and adolescents reported using illicit drugs in the last month, and 2.8% met criteria for a drug use disorder in the past year (SAMHSA, 2007). The authors of the last decade of research has suggested drug use, particularly methamphetamine, has been growing among MSM (Parsons, Halkitis, & Bimbi, 2006), with use as much as 10

times higher than in the general population (Colfax & Shoptaw, 2005).

Methamphetamine increases the release and blocks the reuptake of brain chemical (or neurotransmitter) dopamine, leading to high levels of the chemical in the brain—a common mechanism of action for most drugs of abuse (NIDA, 2010). Dopamine is involved in reward and the experience of pleasure and methamphetamine has the ability to release dopamine rapidly in reward regions of the brain that produces the intense euphoria, or “rush,” that many users feel after snorting, smoking, or injecting the drug (NIDA, 2010). Transmission of HIV and hepatitis B and C can be consequences of methamphetamine abuse. The intoxicating effects of methamphetamine, regardless of how it is taken, can alter judgment and inhibition and can lead people to engage in unsafe behaviors, including risky sexual behavior (NIDA, 2010). Long-term consequences of methamphetamine use include weight loss, depression, and impaired cognitive performance (Mayer, Colfax, & Guzman, 2006). The use of a “trail mix,” the combination of two or more drugs to achieve desired effects (Halkitis et al., 2003; Parsons et al., 2006), is popular in the gay dance scene. As a result of using multiple drugs, users risk experiencing enhanced negative psychophysiological effects.

One who uses drugs will be the best person to give information as to why he or she uses. Russell et al. (2008) provided a report on risk factors for methamphetamine (MA) use in youth. More than 40 electronic databases, websites, and key journals/meetings abstracts were searched and included studies that compared children and adolescents who used methamphetamine to those who did not. Among low-risk

youth, a history of engaging in a variety of risky behaviors was significantly associated with MA use. A history of psychiatric disorder was a risk factor for MA for both low and high-risk youth. Family environment was also associated with MA use. Many of the included studies were cross sectional making it difficult to assess causation. Future research should use prospective study designs so that temporal associations between risk factors and MA use can be established. In terms of sexual behavior, researchers of two cross sectional studies independently reported significant association between having ever previously engaged in sexual intercourse and methamphetamine. The findings are important to my research study as theoretical based risk and protective factors affect youth and contribute to or safe guard against substance abuse (NePIP, n.d.).

In an attempt to determine the pattern of club drug use and the relative influence of club drug use on sexual risk taking Jerome et al., (2009) conducted a study with participants drawn from the Project BUMPS; a large scale ($n=450$), longitudinal, mixed method investigations of club drugs use among gay and bisexual men in New York City conducted from 2000 to 2004. The participants were divided into two groups, the seroconverted and the seronegative. Five specific club drugs were the subject of focus (methamphetamine, MDMA, ketamine, GHB, and powdered cocaine) and the data was collected in four waves (baseline, months 4, 8, and 12) using both quantitative measures and qualitative interviews. Both groups indicated having used, on average, four of the five club drugs, with 44% ($n=7$) of the seroconverted men and 38% ($n=6$) of the

seronegative men reporting having used all five club drugs (Jerome, Halkitis, & Siconolfi, 2009).

The previous research was designed to test associations between MSM, the use of the aforementioned drugs, and sexual risk factors. A few of the drugs studied are identical to those which were used in my study but with some variances. Additional drugs that I used to further test such associations and fill the literature gap were nitrates/poppers, and Viagra to determine if their usage had any effect on the sexual risk behaviors of MSM. Earlier criticisms of the purported link between Viagra use and STDs including HIV infection were mostly based on the fact that other drugs were also taken with the Viagra and that it was the use of the other drugs and not the Viagra that was more responsible for the association of Viagra use and STD/HIV incidence (Sugar, 2006). Even though there are numerous possible drug combinations, given all of the various club drugs that are available, there are two primary patterns of drug combinations: those for sexual performance and those considered “party drugs.” The sexual performance combination is methamphetamine, Viagra, and poppers (Semple, Strathdee, Zians, & Patterson, 2009).

Sexual Effects Of Noninjection Drugs

Injection drug use comes with many risks. The use of non-injection drugs (i.e. methamphetamines) has been associated with unprotected anal sex with persons of unknown HIV status among MSM (Semple, Patterson, & Grant, 2003; Koblin, Chesney, & Husnik, 2003; Chu, McFarland, & Gibson, 2003). Methamphetamines have become one of the most commonly used recreation drugs among MSM in the West Coast region

(Koblin et al., 2003). In some studies of MSM recently infected with HIV researchers reported significant associations of unsafe sexual activity with methamphetamine use prior to the time of HIV diagnosis (Brewer, Golden, & Handsfield, 2004; Taylor, Aynalem, Smith, Montoya, & Kerndt, 2007). The sexual experiences under the influence of methamphetamines were described as having increased intensity, prolonged performance, and orgasm, which were all due to the pleasurable effects of the methamphetamine. Methamphetamine users reported variable use of condoms, and HIV negative methamphetamine users were less likely to report use of condoms than were HIV positive men (Reback, 1997). HIV positive methamphetamine users in this cohort were likely to report having more sexual partners with whom they participated in unprotected receptive anal sex than were non-users (Shoptaw, Reback, & Freese, 2002).

According to Taylor et al., (2007), there is a correlation between the use of methamphetamine and the indulgence of risky sexual behaviors that present the possible acquisition of HIV and other STIs. Methamphetamine is a drug of choice for MSM (on this West Coast region) and is known for its ability to make sexual experiences more pleasurable and enhanced for its users (Taylor et al., 2007). There is no information available from this study (Taylor et al., 2007) as to the effect of the other drugs that were also used or the impact that they had on sexual performances.

Summary and Conclusion

In conclusion, testing and treatment of STIs can be an effective tool in preventing the spread of HIV (CDC, 2010). CDC estimates that 1.2 million people in the United

States are living with HIV (CDC, 2012) and an estimated 50,000 people are newly infected annually. In 2006 MSM comprised approximately 53% of all new HIV infections, 12% were injection-drug users (IDU), and 4% were both MSM and IDU (Hall, Song, Rhodes, et al., 2008). In order to determine some of the factors which contribute to the spread of HIV/AIDS and possibly other STIs there is a need to study the associations between club drug use and unprotected sex.

According to researchers, club drugs, including cocaine, methamphetamine, methylenedioxymethamphetamine (MDMA, commonly known as “ecstasy”), gamma hydroxyl-butyric acid (GHB), and ketamine, are often used in combination with each other, are a frequent feature of gay-oriented night clubs, bars, and circuit parties; and are commonly used as an enhancement to sexual encounters for MSM (Halkitits & Parson, 2002). There is a complex association between its (club drugs) use and HIV and it involves many different facets of social, physical, and psychological health (Drumright, Patterson, & Strathdee, 2006). I examined the associations between club drug use among MSM in the Metro Atlanta area (Fulton and Dekalb Counties) and the effects that they had on the sexual risk behaviors of MSM. The drugs under study were cocaine, nitrates/poppers, ecstasy, methamphetamine, and Viagra.

Another goal was to determine the magnitude of the association of the above referenced drugs in comparison to other drugs (heroin, crack) or with no drug use at all in terms of the effects that they had on sexual risk behaviors of MSM. The results from this study would help determine which drugs contribute to MSM participating in risky sexual

behaviors that place them at increased risk for contracting HIV/AIDS and other STIs. Club drug use was the independent variable while sexual behavior/sexual risk taking served as the dependent variables. Injection drug use and a history of imprisonment and previous STIs were covariates in the analysis.

Following this comprehensive literature review is Chapter 3, which includes a detailed description of the data and the analysis proposed to achieve the goals of this research project.

Chapter 3: Research Method

Introduction

This research was a secondary data analysis that tested the effects that club drugs have on MSMs' risky sexual behavior. This chapter will include a review of the methods and procedures used in this research. The major sections will include the research design and rationale, sampling and procedures, and instrumentation and operationalization.

Research Design and Rationale

This ecological study was based on an analysis of secondary data collected from Fulton and Dekalb County Health Departments in the Metropolitan Atlanta Area as a result of the collaborative effort among federal and local government agencies. The goal was to determine if there is an association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamine, and Viagra) among MSM who test positive for syphilis in Metro Atlanta (Fulton & Dekalb Counties) and engaging in risky sexual behaviors. I further sought to determine if type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) predict engaging in unprotected sex among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties). It is risky sexual behaviors that can potentially make MSM susceptible to contracting syphilis, HIV, and other sexually transmitted diseases.

Using secondary data from the State of Georgia's reporting system, also known as SENDSS, I was able to obtain the information necessary to meet the needs of this ecological study. This type of study was chosen because my goal was to determine if the

participant is an MSM who has engaged in recreational drug use and if there is a possible linkage between the drug use and the participant engaging in risky sexual behavior that could result in them contracting an STI, such as syphilis, or some other sexually transmitted infection. Using a correlational research design for this analysis allowed me to gather information that might show a correlation between drug use and risky sexual behaviors.

A correlational research design is useful to researchers who are interested in determining to what degree two variables are related; however, correlational research “does not ‘prove’ associations; rather it indicates an association between two or more variables” (Creswell, 2008). A correlational research design served to evaluate the nature and degree of association between two naturally occurring variables (ETR Associates, 2013). It contains two pieces of information: (a) a number, which summarizes the degree to which the two variables are linearly associated, and (b) a sign, which summarizes the nature or direction of the association (ETR Associates, 2013). The time constraints associated with correlational research is that data is only collected one time as their focus is not based on future or past performance of the participants (Creswell, 2008).

Methodology

Population

Information was collected originally from approximately 500 individuals (MSM) who had reactive serology laboratory results for syphilis reported by a provider or laboratory to local and state health departments (CDC, 2003). They may or may not have

been HIV positive and could possibly have had other STIs. The participants were recruited based on their positive lab results through information that was acquired through a process known as case reporting. Some of the purposes and uses of syphilis surveillance using case reporting data at local, state, and national levels are to monitor rates and trends of infections and to identify persons at risk for syphilis and the affected communities in which they live (CDC, 2003). They were also chosen because they were residents of Fulton County, which ranked Number 6 in the state with high syphilis rates or Dekalb County, which ranked Number 19 (CDC, 2010). All persons with positive lab results for syphilis were sought for interviews with high regards to those with primary or secondary diagnosis. The purpose of the original interview was to gather information from index patients about partners they have had within a defined period of time (CDC, 2008). In addition to eliciting as many partner names as possible, the interviewer attempted to obtain enough information about the partners so that they can be located and notified of their possible exposure (CDC, 2008).

Sampling and Sampling Procedures

A minimum of 153 participants of this secondary study were chosen from data that were reported to Fulton and Dekalb Counties via case reporting. The criteria for selecting the participants were that they were MSM and had a reactive serology for either primary or secondary syphilis. This sample size was conducive to representing the targeted population and the participants met the requirements for this study. My sample size was calculated by using G*Power 3.1 software using a priori power analysis (Faul et

al., 2009). The effect size was set to 0.15, the alpha to 0.05, and the power to 0.95. With an alpha of 0.05, essentially the value means that the result could be expected to occur by chance at least 5 times out of every 100 times the statistical analysis is run (Trochim & Donnelly, 2007). A power of 0.95 would mean a 5% chance of failing to detect an effect that is there or a 95% chance of correctly rejecting the null hypothesis when it is false (Trochim & Donnelly, 2007). Based on the information given and the possibility of seven predictors, the total minimum sample size was 153.

Data Collection Process

The information that was used in this study contains archival data. The original data for this study were collected from community providers or laboratories that report positive serology results as mandated by district health protocols. In order to gain more information about the participants and their risky behaviors, interviews were performed whether via telephone or in person. The responses were recorded by the interviewers (Communicable Disease Specialists, CDS) on a SIR, which is located in Appendix A. Program managers at the state level were contacted in order to gain access to the data set to begin the information collection process. They provided permission slips indicating that use of the SIR was approved by them (Appendix B).

Since I used secondary data (archival), no data were collected specifically for this study. The information was initially collected during original and secondary interviews of MSM who tested positive for syphilis infections as a part of standard procedures for diagnosis and treatment (CDC, 2008). The participants who had positive

results were contacted by a CDS based on information that they listed on information sheets during the time that they were tested. If they were notified as being a contact to a case of syphilis, they were contacted based on information that was given by the original patient (OP). The CDS explained to each person the relevance of the visit or call and explained the importance of the interview to encourage participation and to ensure that their information would be confidential and protected. Those who wanted to participate went on to answer the questions in a private setting where it was just them and the CDS. Some people refused to participate because they did not want to answer the questions. Though the preference was for them to participate, it was their right to refuse.

The information was then stored in a State Electronic Notifiable Disease Surveillance System (SENDSS), a web-based reporting system designed to collect information pertaining to notifiable diseases in Georgia (Public Health Preparedness, n.d.). The ability to use SENDSS makes reporting more efficient and timely. It allows public health agencies to track data and follow-up with affected individuals (SENDSS, n.d.). It is also used to identify outbreaks and examine disease trends across the state (SENDSS, n.d.). Reporting is done at the users' convenience and is structured to guide the user through the information needed for each disease, such as pertinent laboratory information, making it a user friendly system (Public Health Preparedness, n.d.). Anyone who has a computer with internet capabilities and has been approved can log on to SENDSS. At the main login screen, click on the Register Here button. Once a potential user has provided the Georgia Division of Public Health with some general information,

he or she will be assigned a temporary password and will be notified via email. When full use is granted, user IDs are established so that potential users can only view records that are part of their hospital system, county, or district.

The dataset was obtained from the State of Georgia Division of Public Health's STD division in order to be used in this research. I contacted them verbally and followed up with a written letter seeking permission to use their data. A copy of the approval letter is placed in Appendix C.

Instrumentation and Operationalization of Constructs

The initial process for collecting information for this study was recorded on paper and then transferred to a Sexually Transmitted Disease Management Information System (STDMIS) database. First released in 2004, the Performance Measures for the system included timeliness of P&S syphilis interviews, timeliness of treatment for contacts to P&S syphilis cases, associates and suspects tested, associates and suspects treated, and timeliness of gonorrhea interviews (CDC, 2011). The information was reviewed by the CDS who initially conducted the interview and then was reviewed again by a supervisor before the case could be considered to be complete and closed. SENDSS is the online database established as a repository for this information and is available for use statewide (GDPH, n.d.). This database was appropriate for the current study because it contained information relevant to each MSM who has tested positive for syphilis. The information stored here is encrypted with Verisign certification. Each public health official and healthcare provider who has access to this system is given a password to a set of web

pages and web-based tools. New users will be permitted to use the system after they have registered on the SENDSS site. The information being reported here includes lab confirmed as well as clinical diagnoses, which are reportable according to the specified time interval as outlined on the Georgia Notifiable Disease Report Form. Permission was sought and granted from officials at the State Division of Public Health to analyze these data that were originally obtained from health districts in order to stage, diagnose, and treat syphilis cases. The database for this project was extracted from SENDSS and recreated using a form of secondary data analysis.

This information from SENDSS is appropriate to the current study because this is the database that the labs and providers use to report positive serology to the health departments and the state office before any follow-up work can be done. After the investigations have begun, additional information is collected on SIRs. The dataset included MSM participants from the original data and also included demographic information that allowed respondents to answer questions about the areas in which they live, housing type, sexual orientation, alcohol and drug usage, and sexual behavior risks. Appendix A contains the SIR used to collect the information. The questions were multiple choice questions where the participants could check the box that was applicable to them or that best described their living situation. There was no published information on the reliability of the SIR; however, it remains the single source of information collection during the process of interviewing MSM who have tested positive for syphilis in Georgia (Gwinnett County Board of Health, n.d.).

Social History

To further capture information about the participant, the SIR was used. Its social history section captured demographic information about each participant in terms of their marital status, primary language, country of birth, current and past addresses, education, and contact information. The collection of such information served as identifiers when it comes to searching for previous STI history. The current address allowed for the collection of information that would help to insure that the morbidity was claimed for the correct county. This information contributed to providing each county's rankings based on the number of positive lab results, and they were categorized accordingly. One challenge that comes with interviewing is finding a homeless individual who has no home address (UNC, n.d.). Sometimes the only information known is what soup kitchen he or she frequents, or finding a prostitute based only on what streets he or she works (UNC, n.d.). This social history was not used in my study; it was for information only.

Sexual Behavior

Information was also captured on the participants' sexual behaviors. At a minimum, data should be analyzed by demographic and risk behavior characteristics, including gender of sex partners (CDC, 2003). This information was collected to determine if the patient had engaged in sexual activities with a male, female, anonymous partners, had sex while intoxicated and/or high on drugs, had sex with a person known to her/him to be an IDU, exchanged drugs/money for sex and (female only), or had sex with

a person who is known to be an MSM. Each response was indicated with Y-Yes, N-No, R-Refused, or D-Did Not Ask. This information was included in my study.

Social Behavior

This section of the SIR captures information about the types of environments or social networks frequented by MSM. Network analysis is defined as the study of how people connect in social structures and of its implications (Potterat, 1998). When the questions were presented about the partners they have had within the past 12 months, participants were permitted to choose between males, females, transgenders, and also the numbers of each. In this same section, information could also be gathered about the places they met their partners as well as the places in which they had sex. The CDS would note as to whether it was a club, grocery store, or a home and indicate specifically the name. It is especially important to understand the role these venues have in the spread of HIV and STIs so that interventions can be tailored and/or marketed to those who frequent these venues (Aynalem et al, 2006). This information was not used in my study but for information only.

Drug Use Behavior

Information captured here is indicative of the engagement of drug use within the past 3 months as well as the past 12 months. First, a general question was asked about whether or not the participant engaged in injection drug use. The choices included circling Y-Yes, N-No, R-Refused, and D-Did Not Ask. The drugs of choice of injection or non-injection drugs included cocaine, heroin, crack, nitrates/poppers, ecstasy,

methamphetamines, erectile dysfunction medications (e.g. Viagra) or none (Supplemental Interview Record, n.d.). Any admission of drug use would be recorded by placing a check mark in the blank beside the drug that was used by the participant. An empty blank was provided just in case they used a drug that was not listed on the questionnaire and wanted to list it.

Other Risk Factors

Other information that is relevant to this study included the collection of information in regards to incarceration and will be included in the study as covariates. The participant was asked if he had been incarcerated? If a yes response was given, the next step would be to ask if the incarceration was within a 6 month or 12 month time frame. Answers in these sections include a choice of circling Y-Yes, N-No, R-Refused, and D-Did Not Ask. Also included in this section was information on a previous STI history. The possible responses included placing an "X" on Y-Yes, N-No, R-Refused, or D-Did Not Ask.

There were several variables used to collect information, but they were not used in this research. The information used was captured during the interview of the MSM by the CDS. Most often, the public health clinic provides a safe and convenient setting in which to interview and counsel patients compared to a field setting (CDC, n.d.). In the initial collection process the participants' names were used to accurately record their information. A lot system requires that case management records be maintained in a single folder (CDC, n.d.). The goal of the lot system is to assure that all obtainable

information regarding the continuing management of cases contained in a lot is readily available to all responsible workers (CDC, n.d.).

Data Analysis Plan

The original database for this study was created using the SIR and then deposited into SENDSS. The dataset included information about MSM who had tested positive for primary or secondary syphilis and were sometimes co-infected with HIV. Also included was information about their social history, sexual behavior, drug use behavior, and other risk factors. Permission was granted from public health officials in the STD/HIV unit to analyze this data. The dataset contained no identifying information that could be linked with other data in the files.

This research was guided by two research questions. Each research question has a respective null, alternative hypothesis, and a mode of analysis.

Research Question 1: Is there an association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) while controlling for injection drug use and a history of imprisonment and previous STIs?

Null Hypothesis 1 ($H1_0$): There is no significant association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) among MSM

who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behavior (i.e. having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) while controlling for injection drug use and a history of imprisonment and previous STIs?

Alternative Hypothesis 1 ($H1_a$): There is a significant association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) while controlling for injection drug use and a history of imprisonment and previous STIs?

These associations can be tested by utilizing a multivariate linear regression analysis to determine whether club drug use as reported on the Supplemental Interview Record (SIR) is predictive of engaging in unprotected sex.

Research Question 2: Does type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties)?

Null Hypothesis 2 ($H2_0$): Type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) does not predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties).

Alternative Hypothesis 2 ($H2_a$): Type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) does predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties).

These results can be obtained by performing a multiple linear regression on the results of club drug and other drug use as reported on the Supplemental Interview Record (SIR) to determine if one set of drugs were more likely to predict engaging in unprotected sex. However, since the research questions that were actually used in my study were modified from those listed above the multiple linear regression was not used for analysis.

Threats to validity

External Validity

Reactivity. Reactivity refers to the participant's behavior when they know that they are being measured. Even though during the time of the interview the participant

may not know exactly how the information on the interview form will be used they know that it is being collected for a purpose. During the initial collection of the information the participant's identifying information is attached to the form. Knowing this, the participant may be less inclined to report the truth when it comes to addressing sensitive information about drug use or their sexual behaviors. If this happens the information collected on the SIR may not be based on the truth, but what the participant thinks the interviewer wants to hear.

Internal Validity

Compounding. One internal threat to validity in this research is compounding. Changes in the dependent variable (risk behavior) may be attributed to the existence or variation in the degree of a manipulated variable (drug use). The types of drugs that the participant uses may very well affect the risk behavior. Each of the drugs under study have different effects when consumed or injected into the body. The participant's reaction to the drug use may have an effect upon the sexual outcome or the risk behavior.

Repeated Testing. Repeatedly testing the same participant may produce bias. Each time the participant tests positive for syphilis an interview is required. After the first encounter the participant knows what to expect from the DIS handling the case, probably remembers the questions on the interview form, and may be less likely to be honest during the process on subsequent interviews. Since the identifying information was not accessible, there was no way to compare the answers for truthfulness. Therefore, the

actual information that was used on the interview forms may not be based on integrity, but of deception.

Ethical Considerations and Protection of Participants

This study was based on a secondary data analysis. The primary research was performed by CDS in an attempt to collect as much information about participants who had tested positive for syphilis as possible in order to gather information about any partners they have had within a defined period (CDC, 2008). In addition to eliciting partners, the interviewer attempted to obtain enough information about the partners so they can be located and notified of their possible exposure (CDC, 2008). Public Health agencies responsible for partner services should conduct a thorough review of all laws relevant to their provision of these services (CDC, 2008). Partner services data for HIV infection and other STIs are among the most sensitive Public Health data routinely collected and should receive careful protection (CDC, 2008). HIV and STI partner services programs have an excellent record of maintaining confidentiality and continued vigilance is critical to future success (CDC, 2008). In order to maintain compliance in patient confidentiality, I sought permission to gain access to the relevant patient information and used it only for the intended purposes. To further protect the participants' confidentiality, the appropriate protocol for gaining Institutional Review Board (IRB) approval for Ethical Standards in Research at Walden University has been completed and submitted.

According to CDC (2008), the following principles serve as the foundation for providing partner services to persons with HIV infection or other STIs and their partners:

Client Centered

Steps of the partner services process should be tailored to the behaviors, circumstances and specific needs of each client.

Confidential

Confidentiality should be maintained and is essential to the success of partner services. Confidentiality also applies to the data collected as part of the partner services process. When notifying partners of their exposure, the identity of the index partner must never be revealed, and no information about partners should be conveyed back to the index partner.

Voluntary And Non-coercive

Participating in partner services should be voluntary for both infected persons and their partners; they should not be coerced into participation.

Free Of Charge

Partner services should be free of charge for infected persons and their partners.

Culturally, Linguistically, And Developmentally Appropriate

Partner services should be provided in a non-judgmental way and be appropriate for cultural, linguistic, and developmental characteristics for each client.

Certain persons who receive previous diagnosis of HIV might have declined partner services at the time of diagnosis, might have partially participated but

subsequently become interested in participating fully, or might have new partners.

Anonymous testing account for a small but significant portion of all HIV test and might reach a subset of persons who might not otherwise be tested (61,62). Persons who test for HIV anonymously should be strongly encouraged to transfer to a confidential system; however, if they decline, HIV partner services can still be offered and performed (CDC, 2008).

The participants who collaborated with the interview proceeded on their own will be informed that the information would be used for diagnosis, treatment, and statistical purposes. The confidential interviews took place on the telephone or in a private room in a clinical setting in order to safeguard and protect the privacy of the participants due to the nature and sensitivity of the information. The information was stored in computer systems that are password protected and supported by Secure Socket Layer (SSL) 128 bit encryption using VeriSign certification for safety reasons (DPH, n.d.). Public health officers, state officials, and other designated individuals will have access to a password-protected set of dynamic web pages and web-based tools (DPH, n.d.). Future versions of SENDSS will allow users to download data from SENDSS into their own computers (DPH, n.d.). The information is never destroyed; it is a permanent repository for health information for reportable diseases.

Summary

Included in this chapter is a detailed description of the methodology used to test the study hypotheses. The information on the original data collection process has been

described as well as the setting and sample. Instrumentations and materials used to collect the data have been included along with a thorough explanation of the data collection process and the proposed statistical approaches for this secondary data analysis. Ethical considerations for the protection of the participants and their rights have also been included. Chapter 4 will include the findings from the analysis used to test research questions and hypotheses.

Chapter 4: Results

Introduction

The purpose of this research study was to examine the relationship between drug use and sexual risk taking among MSM in the Metro Atlanta area (Fulton and Dekalb Counties) who have been infected with syphilis. The focus was to determine if there was a direct relationship between the predictor and outcome variables. This study used secondary data obtained from SIR, which contained information obtained during interviews with MSM who were infected with syphilis during the past 2 years. The research questions and their associated hypotheses were as follows:

Research Question 1: Is there an association between drug use among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behaviors (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) individually or collectively while controlling for race, a history of imprisonment and previous STIs?

Null Hypothesis 1 ($H1_0$): There is no significant association between drug use among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behaviors (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) individually or collectively while controlling for race, a history of imprisonment and previous STIs?

Alternative Hypothesis 1 ($H1_a$): There is a significant association between drug use among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behaviors (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) individually or collectively while controlling for race, a history of imprisonment and previous STIs?

Research Question 2: Does type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties)?

Null Hypothesis 2 ($H2_o$): Type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) does not predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties).

Alternative Hypothesis 2 ($H2_a$): Type of drug use (i.e., club drugs, injection drugs, heroine or crack cocaine, or no drug use) does predict engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for

drugs/money) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties).

This chapter will provide a thorough overview of the findings of this study. The initial section summarizes the data collection procedures and demographic characteristics. The analysis of the variables will follow. The results section contains information that describes the participants' race, age, county of residence, and drug use information. Organized by research questions and hypotheses, statistical analysis will be reported via IBM Statistical Package for Social Sciences (SPSS) version 21. A summary will conclude the chapter.

Data Collection

This research was composed of secondary data that were originally collected by Public Health officials in Fulton and Dekalb counties as they interviewed people who had tested positive for syphilis among the MSM population. Data for this analysis were provided by the Georgia Department of Public Health's STD office and were provided in Excel format.

These data are based on those that are most recently available and were collected between 2010 and 2012, depending on the date the participant was diagnosed with syphilis. There were discrepancies in data collection differing from the plan presented in Chapter 3. After reviewing the dataset that was collected and provided to me by the Georgia Department of Public Health, it was determined that the records were incomplete and not suitable for testing or yielding the proper results. My Research Question 1 was

designed to determine if there was an association between club drug use (cocaine, nitrates/poppers, ecstasy, methamphetamines, and Viagra) among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behavior (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) while controlling for injection drug use and a history of imprisonment and previous STIs. Because the dataset did not contain enough information on those individuals who participated in the specified club drugs, the sampling was too small for analysis. Therefore the question was modified to test the association between drug use (all types, not just club drug use) and those risky sexual behaviors.

My Research Question 2 was designed to determine if a particular type of club drug predicted engaging in risky sexual behaviors. Once again, because the dataset did not contain information on those individuals who participated in the specified club drugs the sampling was too small for analysis. Therefore, Research Question 2 could not be tested.

Taken from the original data, 153 individuals made up the study sample. Each participant was at least 16 years of age or older, had tested positive for syphilis, had undergone syphilis related interviews using the standardized SIR that is used by STD officials, and were residents of either Dekalb or Fulton counties. Information about the participants' drug use and race were also recorded. Some of the participants had to be extracted from the study population because they did not meet the age requirement (the

16 year olds) and some races had too few participants and could not be represented.

Therefore, the number of participants in the study dropped from 153 to 144.

The characteristics of the study participants are described in Table 1. Information retrieved from the SIR contained the county of residence for each participant, race, drug use information, and age.

Table 1

Characteristics of Study Participants (n=144)

Characteristics	<i>n</i>	%
County of residence		
Dekalb	70	49
Fulton	74	51
Race		
Black	119	83
White	25	17
Drug use		
Yes	73	51
No	71	49
Age group		
18-28	74	51
29-39	45	31
40-50	25	12

Of the 144 participants, there was an even distribution in terms of their residencies. Seventy participants (49%) resided in Dekalb County and 74 (51%) resided in Fulton. The racial information indicated that there were 119 (83%) Blacks and 25 (17%) Whites. There was an even distribution in admitted drug use among the participants. Seventy three (51%) participants engaged in drug use while the remaining 71 (49%) did not. The largest group of participants was between the ages of 18 and 28 with 74 participants (51%). The 29 to 39 year old group had the second highest number

of participants for a total of 45 (31%). The 40 to 50 year old group had the lowest number of participants and only accounted for 25 (12%).

Results

Drug Use And Risky Sexual Behaviors

A hierarchical regression analysis was performed on all participants using race, incarceration history, or previous STI history in Model 1 to predict the likelihood of engaging in risky sexual behaviors (Sex with anonymous partners “SEX_ANON”, had sex while high “SEX-HIGH”, sex with known drug users “SEX_IDU”, and exchanged sex for drugs or money “SEX_EXCHANGE”). Drug use was then added to the analysis in Model 2 to determine if it increased the participants’ involvement in those risky sexual behaviors. Each table reflects a different dependent variable. In this analysis (Table 2), the dependent variable was having sex with anonymous partners.

Table 2

*Hierarchical Regression Analysis of Variables and Engaging in Having Anonymous Sex
(n=144)*

Dependent variables	Independent variables (Covariates)	No drug use Sig (Model 1)	Drug use Sig (Model 2)
SEX_ANON			
	STIHISTORY	.631	.520
	INCARCERATION	.026	.985
	RACE	.055	.230

The results from this analysis show that two of the covariates in Model 1 (STI history and race) had p values $> .05$, which indicated that they had no statistical significance. The null hypothesis was not rejected. Incarceration was the only covariate whose p value was $< .05$. The null hypothesis was rejected for this variable. Having a history of incarceration was predictive of engaging in sex with anonymous partners.

In Model 2, drug use increased the numbers of participants who engaged in anonymous sex. Included in them are those who have been previously incarcerated and among each race. Even though the numbers increased, none were statistically significant because their p values are $> .05$. The null hypothesis was not rejected. Drug use was not a

significant predictor for engaging in sex with anonymous partners over and above the variables in Model 1.

In the following analysis (Table 3), the dependent variable was having sex while high.

Table 3

Hierarchical Regression Analysis of Variables and Engaging in Sex While High (n=144)

Dependent variable	Independent variable (Covariates)	No drug use Sig (Model 1)	Drug use Sig (Model 2)
SEX_HIGH	STDHISTORY	.442	.507
	INCARCERATION	.000	.596
	RACE	.180	.652

The results from this analysis showed that in Model 1 and 2 of the three covariates (STI history and race) had p values $> .05$, which indicated that they had no statistical significance. The null hypothesis was not rejected. Having a history of incarceration had a p value $<$ than $.05$ and indicated that it had some statistical significance. The null hypothesis was rejected for this variable. Having a history of incarceration was shown to be predictive of having sex while high.

Model 2 showed that drug use had some influence on the number of participants who had sex while high. All participants showed an increase. Because all of their p values were $> .05$, none were significant. Therefore, the null hypothesis was not rejected.

In this analysis (Table 4), the dependent variable was having sex with known drug users.

Table 4

Hierarchical Regression Analysis of Variables and Engaging in Sex With Known Drug Users (n=144)

Dependent variable	Independent variable (Covariates)	No drug use Sig (Model 1)	Drug use Sig (Model 2)
SEX_IDU	STIHISTORY	.107	.114
	INCARCERATION	.202	.808
	RACE	.053	.014

The results from this analysis showed that in Model 1, all three covariates had p values $> .05$, which indicated that none of them had any statistical significance. The null hypothesis was not rejected. None of the covariates were predictive of having sex with known drug users.

Model 2 showed that drug use had some influence on the number of participants who had sex with known drug users. Included in those participants were those with previous histories of STIs and those who had been previously incarcerated. Because their p values were $> .05$, neither of the 2 were significant. The null hypothesis was not rejected in relation to these two covariates. However, the covariate Race did have a p value $< .05$, which indicated that it was statistically significant. Race is predictive of having sex with known drug users. According to the demographics of the participants, Blacks were more likely to engage in sex with known drug users.

In this analysis (Table 5), the dependent variable was exchanging sex for drugs/money.

Table 5

Hierarchical Regression Analysis of Variables and Exchanging Sex for Drugs or Money (n=144)

Dependent variable	Independent variable (Covariates)	No drug use Sig (Model 1)	Drug use Sig (Model 2)
SEX_EXCHANGE	STIHISTORY	.372	.388
	INCARCERATION	.934	.551
	RACE	.138	.209

The results from this analysis showed that all three covariates had p values $> .05$, which indicated that none of them had any statistical significance. The null hypothesis was not rejected. None of the covariates were predictive of participating in exchanging sex for drugs/money.

Model 2 showed that drug use had some influence on the number of participants who participated in exchanging sex for drugs/money. Included in those participants were those who had previous STI histories and among all races. Those who had been previously incarcerated were not influenced by drug use. Because their p values were $> .05$ they were not significant. The null hypothesis was not rejected.

Summary

Data presented in this chapter provided a brief overview of the data collection process, described the demographics, and presented the findings that were used to determine if there was an association between drug use among MSM who test positive

for syphilis in Metro Atlanta (Fulton and Dekalb counties) and engaging in risky sexual behaviors (i.e. having sex with an anonymous partner; having sex while intoxicated or high; having sex with someone known to inject drugs; or exchanging sex for drugs/money) individually or collectively while controlling for a history of imprisonment and previous STIs. Hierarchical regression analysis was used to examine such relationships. It allowed for specifying a fixed order of entry for variables in order to control for the effects of covariates or to test the effects of certain predictors independent of the influence of others.

Hierarchical regression analysis was used to determine if the independent variable of prior drug use predicted the engagement of participating in risky sex among a designated sample of MSM after controlling for STI history, incarceration history, and race (Black and White). The results showed that prior drug use was not predictive of sexual risk behavior, but having a history of incarceration was predictive of engaging in sex with anonymous partners and having sex while high, but not having sex with known drug users or exchanging sex for drugs or money was.

Chapter 5 provides a detailed interpretation of the findings, limitations of the study, recommendations for further studies, implications for positive social change, and conclusions.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This study was done to determine if there was a relationship between drug use among MSM in the Metro Atlanta area (Fulton and Dekalb counties) who had previously tested positive for syphilis and those MSM engaging in risky sexual behaviors. Drug use was measured by self-admission on behalf of the participants during syphilis interviews by public health officials. The sexual behaviors that were studied included having sex with anonymous partners, having sex while high, having sex with a known drug user, and exchanging sex for drugs/money. The risk and protective factor theory served as the theoretical framework for this study. According to this theory, substance abuse and other problem behaviors can be mitigated by limiting the number or preventing the development of risk factors and by bolstering protective factors within individuals (Temple & Stuart, 2009). The study was conducted because there may be some correlation between prior drug use and high risk sexual practices, which could contribute to rising rates of HIV and other STIs among MSM. If a correlation was found, altering drug use behavior could contribute to a reduction in HIV rates among MSM who had previously tested positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties). Through hierarchical regression analysis, drug use was not found to be related to risky sexual behaviors among MSM who tested positive for syphilis after controlling for STI history, incarceration history, and race (Black and White). The covariate of prior incarceration was predictive of engaging in sex with anonymous partners and having sex

while high, but not having sex with known drug users or exchanging sex for drugs or money. In addition, the covariate race was predictive of having sex with known users.

Interpretation of Findings

I tested the association between drug use among MSM who tested positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behaviors (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) individually or collectively while controlling for race, a history of imprisonment, and previous STIs.

There were no significant associations between drug use among MSM who tested positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behaviors (i.e., having sex with an anonymous partner, having sex while intoxicated or high, having sex with someone known to inject drugs, or exchanging sex for drugs/money) individually or collectively while controlling for race, a history of imprisonment, and previous STIs. These findings are inconsistent with the reported literature (Wells et al., 2011; Jerome, Halkitis, & Siconolfi, 2009).

Previous researchers demonstrated a consistent association between substance use and sexual risk behavior among MSM (Wells et al., 2011); however, there is a dearth of information available on the topic in Georgia. In a study conducted by Jerome et al. (2009) to determine the pattern of club drug use and the relative influence of club drug use on sexual risk taking, participants were chosen from Project BUMPS, a large scale (*n*

= 450), longitudinal, mixed method investigation conducted between 2000 to 2004 in New York City. The participants were divided into two groups, the seroconverted and the seronegative. Five specific club drugs were the subject of focus (methamphetamine, MDMA, ketamine, GHB, and powdered cocaine) and the data were collected in four waves (baseline, Months 4, 8, and 12). Additionally, the researchers sought to identify psychosocial factors (proximal drug use) that predispose men to use. Both groups indicated having used, on average, four of the five club drugs, with 44% ($n = 198$) of the seroconverted men and 38% ($n = 171$) of the seronegative men reporting having used all five club drugs (Jerome et al., 2009). The researchers also found that behavioral outcomes of club drug use and HIV seroconversion result from complex interactions between physical, emotional, and social motivations.

My study was designed to examine the association between club drug use among MSM who test positive for syphilis in the Metro Atlanta area (Fulton and Dekalb counties) and engaging in risky sexual behaviors (i.e., having sex with an anonymous partner, having sex while intoxicated or high; having sex with someone known to inject drugs, or exchanging sex for drugs/money) individually or collectively while controlling for race, a history of imprisonment, and previous STIs. There were a smaller number of participants as compared to the aforementioned study, and they were taken from an already existing public health database. The information on the participants was gathered and analyzed as a cross-sectional study and did not show an association between drug use and risky sexual behaviors.

Theoretically, the risk and protective factor theory embodies the idea that individuals come to the table with biological and psychological characteristics that make them vulnerable to, or resilient in the face of, potential behavioral health problems (SAMHSA, n.d.). In my initial preparation for the study, I was more interested in the distal aspects of drug use. I wanted to know the outside influences that enticed the MSM to engage in drug use. I wanted to know if there was some degree of peer influence, a desire for social acceptance, or if they were merely seeking the feelings that the drugs produced. Those participants who had previous histories of incarceration were found to have an increased amount of participation in risky sexual behaviors when drug use was added to the equation in Model 2. Moore and Elkavich (2008) reported that the challenges that lead a person to prison, with drug addiction being listed, are not abated by incarceration; they are often worsened. Former inmates may have lost family and social ties and are certainly less employable than before because many employers do not hire convicted felons (Moore & Elkavich, 2008). Race was found to be predictive of engaging in sex with known drug users. According to previous research, Blacks are incarcerated more often than their Hispanic or White counterparts (Western & Pettit, 2010). Due to drug sentencing disparities, Blacks serve virtually as much time in prison for a drug offense (58.7 months) as Whites do for a violent crime (61.7 months). "Get tough on crime" and "war on drugs" policies are contributing factors of arrest (NAACP, 2009-2014). This research verifies previous research that Blacks have increased health risks that are related to or may develop as a result of being incarcerated.

Limitations

There were some limitations associated with this study. First, the information was self-reported during interviews by the MSM. There was no way for the interviewer to determine if the information was accurate or if some reports were false. The participants could have reported false information in order to have more favor with the interviewer or to appear as what is socially recognized or acceptable (Johnson & Fendrich, 2005). This behavior most likely occurs when answering sensitive questions (King & Brunner, 2000) and affects the validity of a questionnaire (Huang et al., 1998).

The selection process for the participants in the study may have also contributed to a limitation. If the participants of the study were hand chosen rather than computer generated, it might have contributed to the insufficient amount of admissions of the various types of club drugs used. Many of the participants admitted to engaging in drug use, but very few reported using the various club drugs such as cocaine (5), nitrates/poppers (3), ecstasy (3), methamphetamines (7), and Viagra (1), thus making the sample size for club drug users very small and insufficient for conducting an analysis. The initial purpose of the study was to determine if there was an association between those specific club drugs and engaging in risky sexual behavior and also to determine if a specific type of drug use predicts engaging in risky sexual behavior. However, this study did not examine club drug use, rather drug use in general. Other drugs such as marijuana or heroin may have produced sexual risks that may be quite different than those of just general drug use or club drug use.

The population size also placed limitations on the study. The sample contained more Blacks and Whites and had small representation from the other races. The numbers that represented the other races were so small that they could not be analyzed and were eliminated from the study. A larger sample size would be more representative of the population.

Recommendations for Further Studies

Drug use among MSM is becoming quite widespread. There are reasons to be concerned about recreational drug use among MSM: The drug use culture is changing, the nature of the association between substance abuse and sexual risk behavior remains unclear, and there is likely to be increased need for health service interventions to address the impacts of rising recreational drug use in this population likely to require the expertise and joint effort of sexual health, mental health, and substance abuse professionals (NASTAD, 2005). Because the original data set was insufficient for hypothesis testing due to the inadequate amount of representation of club drug use, further research is still necessary to determine if one particular drug has more association with sexual risk taking than others among the population observed.

The participants for this study were chosen from a SEE. Future research studies should consider a more expansive study and not limit participants to those who have prior syphilis diagnoses. This method may allow for the inclusion of more MSM as well as those living with HIV.

The population represented from these study results only included Blacks and Whites from Fulton and Dekalb counties. If future studies would include other counties in Georgia with more diverse ethnicities then the study results might include a variety of races rather than just two. A broader representative sample may allow for greater generalizability of the findings.

Implications for Positive Social Change

Club drugs are often used in combination with each other, are a frequent feature of gay-oriented night clubs, bars, and circuit parties, and are commonly used as an enhancement to sexual encounters for MSM (Halkitits & Parson, 2002). According to the CDC (2013), sexual behaviors that are risk factors for STIs include having unprotected vaginal, anal, or oral sexual contact, having multiple sex partners, using drugs and alcohol, and engaging in commercial or coerced sex. In 2011, there was an epidemiologic shift in syphilis rates differing from its 2002 rates when older men (30-39) had the highest rates; increasing cases have been reported in young MSM (CDC, 2003, 2011). MSM accounted for 72% of all primary and secondary syphilis cases in 2011 (Su et al., 2011).

Based on results that were presented in similar studies in different geographical areas, it was initially thought that all findings from this research would be consistent with the majority of the reported literature. The findings from this study have yielded the opposite results; there was no association between drug use and risky sexual behavior among MSM. However, the covariate prior incarceration was predictive of engaging in

sex with anonymous partners and having sex while high and the covariate of race was predictive of having sex with known drug users.

Given the nature of the results of this study, there is room for this research to present an opportunity for positive social change on behalf of those who have been previously incarcerated and were at greater risk of engaging in sex with anonymous partners and having sex while high by using public health interventions to better target incarcerated MSM. As these individuals revolve through correctional systems, they exhibit the highest-risk sexual behaviors (Chen, Callahan, & Kerndt, 2002).

Incarceration is strongly associated with sexually transmitted infections including HIV (Kahn, Wohl, & Miller, 2008). The association between incarceration and STI/HIV infection may exist, in part, because incarceration disrupts stable sexual partnerships that protect against new, multiple, and concurrent sexual partnerships, determinants of STI/HIV infection (Kahn et al., 2008). The absence of a partner, combined with freedom from restriction on sexual behavior, may lead newly released prisoners to risky sexual partnerships (MacGowan et al., 2003).

Steps toward a positive social change can begin with the incarcerated by providing them with protective factors. Through public health officials, information can be presented to them so that they can make more informed decisions regarding their sexual choices. Public health and prison officials can come together to provide access to condoms within prisons to prevent the spread of disease. The information learned while incarcerated can also allow the inmates to make better sexual decisions when they

are released back into their respective communities, which will also reduce the likelihood of exposing new or previous partners to STIs.

Through this research it is now known that race contributes to having sex with known drug users. Information should be made available in the Black communities so that this population can be better educated and thus begin to make better choices to positively benefit them and their families. Unfortunately, the rate of incarceration is historically high; perhaps the most important social fact is the inequality in penal confinement (Western & Pettit, 2010). This inequality produces extraordinary rates of incarceration among young African American men with no more than a high school education (Western & Pettit, 2010). For this population, serving time in prison has become a normal life event and jails and prisons are recognized as setting where society's infectious diseases are highly concentrated (NAACP, 2009-2014). The findings of this study indicate that this event leads to risky sexual behaviors that could increase rates of HIV and STIs such as syphilis in the community.

Conclusions

Club drugs have been associated with risky sexual behavior for several reasons, including the following: clubs and parties often provide more opportunities for 'hook-ups', all drugs and alcohol intoxication diminish decision-making abilities, and club settings typically encourage sexy style and excessive behaviors (LGBT Drug Rehab, 2010-2013). Sexual risk behaviors have accounted for most HIV infections in MSM (CDC, 2012). MSM accounted for 72% of all primary and secondary syphilis cases in

2011 (Su et al., 2011). In 2010, MSM accounted for 63% of all new HIV infections and MSM who use drugs accounted for another 3% (CDC, 2012).

This study was done to describe the demographics and present the findings that were used to determine if there was an association between drug use among MSM who tested positive for syphilis in Metro Atlanta (Fulton and DeKalb counties) and engaging in risky sexual behaviors (i.e. having sex with an anonymous partner; having sex while intoxicated or high; having sex with someone known to inject drugs; or exchanging sex for drugs/money) individually or collectively while controlling for a history of imprisonment and previous STIs. Contrary to previously reported literature, the results have shown that there was no association between drug use and risky sexual behaviors in this sample of MSM infected with syphilis. However, there was some association between prior incarceration being predictive of engaging in sex with anonymous partners and having sex while high and also some association between race and having sex with known drug users. There is a need for public health interventions that should target incarcerated MSM because as these individuals revolve through the correctional systems they exhibit the highest-risk sexual behaviors (Chen, Callahan, & Kerndt, 2002). These sexual behaviors during incarceration have not been widely documented. Limitations that have attributed to the collection of such useful information included the unlikely sharing of information about illegal drug abuse or sexual behaviors (Dolan, Wodak, & Penny, 1995). At the end of 2010, an estimated 96,225 adult and adolescent injection drug users (IDUs) were living with diagnosed HIV infection classified as stage 3 (AIDS) in the

United States and 6 dependent areas (CDC, n.d.). Approximately 52% of IDUs living with stage 3 (AIDS) at the end of 2010 were Black/African American, 27% were Hispanic/Latino, and 19% were White (CDC, n.d.). These statistics plus information revealed in this research indicate the need for targeted intervention among incarcerated and Black MSM populations. It is essential for health advocates to push to educate those who are incarcerated about their health and sexual behaviors since this is the only education that many of them will receive. By providing this education, they can learn and make more informed choices that will help to minimize the transmission of HIV thereby reducing the rates along with syphilis, and any other STIs. This reduction in transmission of some STIs can also be minimized by avoiding sexual relationships with known drug users. As more education is provided through safer sex campaigns, the more likely the information is to be absorbed and the mindset of people will change. With this change, more positive outcomes will manifest in the lives of African Americans and throughout the communities in which they live.

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Appendix A: Supplemental Interview Record

APR. 16. 2012 8:26AM GWINNETT BOARD HEALTH P. 1

SUPPLEMENTAL INTERVIEW RECORD

Sexual History							
Marital Status: S <input type="checkbox"/> M <input type="checkbox"/> W <input type="checkbox"/> D <input type="checkbox"/> Sp <input type="checkbox"/> U <input type="checkbox"/> Primary Language: English <input type="checkbox"/> Spanish <input type="checkbox"/> Other _____ SS# _____ Living Situation: House <input type="checkbox"/> Apt <input type="checkbox"/> Jail <input type="checkbox"/> Homeless <input type="checkbox"/> Transitional (Shelter, Drug Rehab, Grp Home, HalfWay) <input type="checkbox"/> Other _____ Country of Birth: _____ Time: In U.S. _____ In State _____ At Current Address _____ Living With: _____ Relationship _____							
Other Interview Period Address (Include City)		Living With	Date (mm/yyyy)	Reason for Moving			
			From: ___/___/___ To: ___/___/___				
			From: ___/___/___ To: ___/___/___				
Education: _____ Occupation/Means of Support: _____ Work Phone: _____ Hours: _____ to _____ How Long? _____ Cell/Page# _____ Code _____ Emergency Contact: _____ Phone _____ Relationship _____							
Sexual Practices		Within past 3 months		Within Past 12 Months			
Has the patient:		Y - Yes N - No R - Refused Answer D - Did not Ask					
Had sex with a male?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
Had sex with a female?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
Had sex with an anonymous partner?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
Had sex while Intoxicated and/or high on drugs?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
Had sex with a person known to her/him to be an IDU?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
Exchanged drugs/money for sex?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
(Female only) Had sex with a person who is known to her to be an MSM?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
Drug Use Behaviors		Within past 3 months		Within Past 12 Months			
Engaged in injection drug use?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
During the past 12 months, which of the following Injection or non-Injection drugs have been used? Other, specify _____		Cocaine <input type="checkbox"/> Heroin <input type="checkbox"/> Crack <input type="checkbox"/> Nitrites/Poppers <input type="checkbox"/> Ecstasy <input type="checkbox"/> Methamphetamines <input type="checkbox"/> Erectile dysfunction medications (e.g., Viagra) <input type="checkbox"/> None <input type="checkbox"/>					
Other Risk Factors		Within past 3 months		Within Past 12 Months			
Been Incarcerated?		Y/N/R/D <input type="checkbox"/>		Y/N/R/D <input type="checkbox"/>			
Signs and Symptoms		Sign/Symptoms	Earliest Observation Date	Anatomic Site	Clinician Observed?	Patient Described?	Duration (days)
		1. <input type="checkbox"/>	____/____/____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
		2. <input type="checkbox"/>	____/____/____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
		3. <input type="checkbox"/>	____/____/____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
		If other, please specify _____					
Previous STD History		Previously STD History? Condition	Dx Date (mm/yyyy)	RX Date (mm/yyyy)	Confirmed?		
		1. <input type="checkbox"/>	____/____/____	____/____/____	<input type="checkbox"/>		
		2. <input type="checkbox"/>	____/____/____	____/____/____	<input type="checkbox"/>		
		3. <input type="checkbox"/>	____/____/____	____/____/____	<input type="checkbox"/>		
Out-Of-Area Travel							
Place	Reason	Dates	Companions	Stayed with	Local Sex Partners		
		To			Y N U R		
		To			Y N U R		

Worker

Lot Number

Case Number

Date

Appendix B: Consent for instrument use



Brenda Fitzgerald, MD, Commissioner | Nathan Deal, Governor

2 Peachtree Street NW, 15th Floor
Atlanta, Georgia 30303-3142
www.health.state.ga.us

Tarneisha S. Means, MSPH
PhD Candidate
Walden University
Tarneisha.means@waldenu.edu

Dear Mrs. Means:

I am pleased to provide you with permission for utilization of the Supplemental Interview Record (SIR) as an instrument for the purpose of supporting your dissertation entitled *Drug Use and Sexual Risk Behaviors of MSM with Syphilis in Metro Atlanta*.

If you require any further information and/or additional support materials, please feel free to contact me.

Best regards,

A handwritten signature in blue ink that reads 'Michelle L. Allen'.

Michelle L. Allen
State STD Director
Georgia Department of Public Health
Office of Infectious Disease and Immunization Program
2 Peachtree Street, NW Suite 13-440
Atlanta, GA 30303-3142
404.463.2579(phone)
770.342.4277 (fax)
Michelle.Allen@dph.ga.gov



We Protect Lives.

Appendix C: Consent for data usage



Brenda Fitzgerald, MD, Commissioner | Nathan Deal, Governor

2 Peachtree Street NW, 15th Floor
Atlanta, Georgia 30303-3142
www.health.state.ga.us

Tarneisha Means, MSPH
PhD Candidate
Walden University
Tarneisha.means@waldenu.edu

Dear Mrs. Means:

I am pleased to provide you with the data to assist in the secondary analysis of your studies supporting your dissertation entitled *Drug Use and Sexual Risk Behaviors of MSM with Syphilis in Atlanta*.

If you have any further data inquiries or need additional support materials, please feel free to contact me.

Best regards,

A handwritten signature in black ink that reads 'Michelle L. Allen'.

Michelle L. Allen
State STD Director
Georgia Department of Public Health
Office of Infectious Disease and Immunization Program
2 Peachtree Street, NW Suite 13-440
Atlanta, GA 30303-3142
404.463.2579(phone)
770.342.4277 (fax)
Michelle.Allen@dph.ga.gov



We Protect Lives.

Curriculum Vitae

Tarneisha S. Means, MSPH

Professional Summary

I'm a dedicated Public Health professional with over ten years of experience in Health Education, STD/Aids research, local government programs and management. Qualifications include excellent service management skills, local public health regulations, compiling health data and the ability to work with a diverse work group to obtain organizational goals.

Education**Doctorate of Public Health – Completed Oct. 2014**

Walden University -Minneapolis, MN

Master of Science in Public Health - Completed Feb. 2008

Walden University - Minneapolis, MN

Bachelor of Science in Health Education - Completed Sept. 1997

Georgia College & State University - Milledgeville, GA

Skills

- Developed and coordinated new initiatives, special activities, and programs impacting local public health
- Researched and evaluated public health policies that are essential to the agency's mission
- Planned, formulated, analyzed, evaluated, and/or implemented program policies for public health programs.
- Compiled quarterly data summary reports and share findings with stakeholders
- Applied safe and effective practice in Public Health service
- Identified and solved critical issues in the Public Health Field
- Applied new ideas and techniques in achieving goals
- Developed community relationships and non profit organizations as needed

Experience**Atha Road Elementary School-Monroe, GA****Volunteer Paraprofessional****2013-2014**

- Worked with individual students or small groups of students to reinforce learning of material or skills initially introduced by the teacher
- Helped students master equipment or instructional materials assigned by the teacher
- Kept bulletin board, door, and other classroom learning displays up to date.

East Metro Health District-Lawrenceville, GA
Communicable Disease Specialist - Team Supervisor 2006-2012

- Provided professional and administrative supervision to Communicable Disease Specialists and support staff responsible for case management
- Encouraged and facilitated cooperation, pride, trust, and group identity; fostered commitment and team spirit; worked cooperatively with others to achieve goals
- Assisted communicable disease staff in performing epidemiological case investigations as reported by law
- Provided active surveillance of targeted populations, suspect disease identification, treatment referral, follow-up assurance, contact tracing, partner notification, communicable disease (CD) control case intervention and health education

East Metro Health District-Lawrenceville, GA
Communicable Disease Specialist 2002-2006

- Provided population based disease control through program activities performed within a highly integrated system of information collection, analysis and distribution for the sake of early identification, effective intervention and sustained prevention of controllable diseases within the district
- Responsible for gathering, analyzing, and monitoring data regarding communicable diseases within a health district
- Provided case management services, home visits, clinic referrals, patient education/counseling to MSM and other patients with various communicable diseases such as sexually transmitted diseases including syphilis, HIV/AIDS, pertussis, rubella, hepatitis, chlamydia, and gonorrhea
- Provided direct diagnosis and therapeutic services for Public Health patients both in the clinic and field settings
- Scheduled appointments for participants who were in need of treatment based on their treatment retention plan. Surveillance activities were also performed as required by the Division of Public Health's investigations occurring within the district

Hancock County Hospital Authority-Sparta, GA
Board Member-Secretary 1999-2001

- Ensured that the hospital and staff were in compliance with state and federal law
- Oversaw the day-to-day business of providing medical care
- Responsible for hiring the hospital's CEO and determining the compensation package.
- Granted and revoked privileges to doctors while making sure that anyone who practiced medicine in the organization had the required licenses and accreditation.
- Continuously sought ways to enhance community relations in order to meet the needs of the community.

Tri-County Health Systems-Warrenton, GA**Board Member****1997-2001**

- Worked with other board members to ensure the organization was in compliance with state and federal laws
- Made executive decisions that contributed to the successful operation of all three medical facilities.
- Participated in the selection of physicians for each facility
- Worked to ensure that the needs of the community were met

Hancock County Health Department-Sparta, GA**Public Health Educator****1997-2001**

- Promoted continuity of care and services through appropriate follow-up; Identifies patient needs beyond risk reduction and health education and refers them to health care and/or social services as needed
- Assisted in the development, research, and purchase of linguistically and culturally appropriate health education materials and the development and implementation of group education programs
- Built a supportive association with patient to improve the patient's utilization of necessary primary care, mental health care, and social services, which will improve the patient's health status
- Developed a successful nonprofit with effective associations and communications strategies with government institutions, peer agencies and other stakeholders

Trainings

- Valuing Cultural Diversity, 2001
- Small Pox Recognition and Response, 2002
- Intro to Sexually Transmitted Disease Intervention (ISTDI), 2003
- Foodborne Outbreak, 2005
- HIV Training, 2005
- Storm Spotter Class, 2005
- TB Training, 2005
- Hepatitis B Conference, 2005
- Darkfield Microscope Training, 2005
- One Day Hot Topic & Viral STDs, 2005

Community Affiliations

- Hunts Chapel A.M.E. Church, Sparta, GA
Member, 1985-2014
- Alpha Kappa Alpha Sorority Incorporated

Epsilon Omega Omega Chapter, Macon, GA

Member, 2001-2003

Chi Tau Omega Chapter, Conyers, GA

Member, 2010-Present

- Bethany Missionary Baptist Church, Monroe, GA
Member, 2014-Present