Fall 2006

Perceived Threat of Hiv/Aids Between Men Who Have Sex With Men and Heterosexual Males

Traci Laquey Cleveland

THE PERCEIVED THREAT OF HIV/AIDS BETWEEN MEN WHO HAVE SEX WITH MEN AND HETEROSEXUAL MALES

by

TRACI LAQUEY CLEVELAND

(Under the direction of Helen M. Graf)

ABSTRACT

This study compared the perceived threat of HIV/AIDS and explored the sexual risky behaviors between men who have sex with men (MSM) and heterosexual males. Participants were asked to complete a 33 question survey which included 22 Likert-type scale questions developed to measure the perceived threat of HIV/AIDS, 8 dichotomous questions designed to measure sexual risk behavior and 3 demographic variables: age, sexual orientation and race. The case group consisted of 52 MSM and the control group consisted of 96 heterosexual males. No statistical significant difference was found between the perceived threat of HIV/AIDS; however, a statistical significant difference was found among sexual risky behaviors. Findings from this study indicate that HIV/AIDS prevention efforts should continue to address sexual behavior practices of MSM. Increased sexual risky behavioral practices could lead to higher STD and HIV incidence and prevalence rates.

INDEX WORDS: HIV/AIDS, Perceived threat, Risky sexual behaviors, Men who have sex with men (MSM), Heterosexual males

PERCEIVED THREAT OF HIV/AIDS BETWEEN MEN WHO HAVE SEX WITH MEN ANDHETEROSEXUAL MALES

by

TRACI LAQUEY CLEVELAND

B.S., Georgia Southern University, 2003

A Thesis Submitted to the Graduate Faculty of Georgia Southern University in Partial Fulfillment of the Requirements for the Degree

MASTER OF PUBLIC HEALTH

STATESBORO, GA,

2006

THE PERCEIVED THREAT OF HIV/AIDS BETWEEN MEN WHO HAVE SEX WITH MEN AND HETEROSEXUAL MALES

by

TRACI L. CLEVELAND

Major Professor: Helen M. Graf

Committee: Joanne Chopak-Foss
Laura Gunn

Electronic Version Approved:
August 2006

DEDICATION

To my late Aunt Goldie

ACKNOWLEDGEMENTS

I would first like to acknowledge Dr. Graf for all the encouragement and continual support; without you this process would have been much more difficult and far beyond my reach. You have pushed me to succeed in so many areas beyond education; I have grown so much in the time I have known you. Thank you for never giving up on me and being there when I needed you. Dr. Gunn, in the short time I have known you, you have made a huge impact on my life. The encouragement you have given me, words cannot even explain how it has helped me through my graduate career. Thank you for being there when I needed someone to listen and providing me with your much needed wisdom throughout this process. Dr. Chopak-Foss, thank you for being apart of my committee and being patient, I really appreciate all that you have done to help me complete this process. Dr. Graf, Dr. Gunn and Dr. Chopak-Foss you will always be remembered and I thank GOD for blessing me with you in my life. Last, but certainly not least, I would like to give thanks to my mother, Frankie Mattox, my aunt Dorothy Edmond and my aunt Theresa Brown for being my rocks throughout my life, pushing me to succeed and never letting me give up. Without you I do not know where I would be in life; you mean the world to me, and I love you all!

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

INTRODUCTION

Background of the Problem

Acquired Immunodeficiency Syndrome (AIDS) was first recognized in 1981 when several cases of Pneumocycstis Pneumonia were reported in Los Angeles, in five previously healthy homosexual individuals (Bellenir & Dresser, 1995; CDC, 1981a). Within thirty days of the Pneumocycstis Pneumonia reports, there were 26 reports of Kaposi Sarcoma, a rare malignant neoplasm seen predominantly in elderly men in the United States (CDC, 1981b). The fact that the reports were all cases of homosexuals suggested an association between homosexual lifestyles or diseases acquired through sexual contact (CDC, 1981a). By the end of 1981, there were 189 reported cases of AIDS of which 97% of the cases were among men who have sex with men (MSM) (CDC, 1991). Less than ten years later, 161,073 AIDS cases were reported to the Center for Disease Control and Prevention (CDC, 1991).

Since the first reported AIDS cases, there have been a total of 877,275 cases reported in the United States of which 718,002 (81.8%) cases were among men and 159,271 (18.2%) cases were among women (CDC, 2004a). Acquired Immunodeficiency Syndrome is the fifth leading cause of death for men in the United States (CDC, 2004a). Over half of the individuals reported with AIDS (440,060) have died since the beginning of the epidemic (CDC, 2004a). Among these cases 381,611 males and 66,448 females have died (CDC, 2004a). Georgia currently ranks ninth (26,008 cases) among the top ten states with the highest number of AIDS cases with New York ranking first with 155,755 cases (CDC, 2004b). States are currently not required to report incidence cases of Human Immunodeficiency Virus (HIV); therefore, making HIV incidence cases hard to track. However, there are currently 25 states in the United States that have

confidentiality reporting (CDC, 2003b). These reports make it possible to estimate the number of incidence cases and persons living with HIV. There is an estimated 800,000 to 900,000 people currently living with HIV in the U.S., with approximately 40,000 new HIV incidences annually (CDC, 2004b). Seventy percent of new HIV infections each year occur among men; men who have sex with men (MSM) represent the largest proportion of new infections (420,790) (CDC, 2004b).

During the mid to late 1990's, the advances in HIV treatments have led to dramatic declines in AIDS deaths and slowed the progression from HIV to AIDS (CDC, 2004 a). From 1995 to 1998, the annual number of AIDS incidence cases declined 38% from 69,242 to 42,832 and deaths declined 63% from 51,670 to 18,823 (CDC, 2003a). With better treatment options, an increasing number of people are living with AIDS in the United States.

Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome combination therapy, highly active antiretroviral therapy (HAART), a Protease Inhibitor based combination therapy, has transformed clinical outcomes (Diclemente, Funkhouser, Wingwood, Fawal, Holmberg & Vermund, 2002). Highly active antiretroviral therapy has been clinically proven to reduce the level of virus present in the body (Diclemente et al, 2002). This treatment has improved the health of HIV infected persons (Huebner & Gerend, 2001). Due to the fact that HAART has proven to lower the viral load to undetectable levels, it is speculated that HAART may have an affect on transmission. With lower concentration levels in semen and vaginal fluids, it is possible that unprotected sex may be less risky; however, this information is not yet substantiated (Huebner & Gerend, 2001). Post Exposure Prophylaxis (PEP), which decreases the

chance of an HIV negative individual from becoming infected with HIV, when exposed to the virus, is currently being used for prevention practices by participating physicians (Huebner & Gerend, 2001). In order for HAART to be effective there are strict regiments involved, requiring 100% adherence (Vincke, & Bolton, 2002). Missing one dose or non-adherence could lead to drug resistant viral strains (Huebner& Gerend, 2001).

Increases in sexually transmitted disease rates among certain populations support the inclination of behavior change. Data from an annual behavioral survey and from a sexually transmitted disease surveillance program found increases in Gonorrhea among MSM (CDC, 1999). Rectal gonorrhea incidences from 1990 through 1993 decreased from 42 to 20 cases per 100,000 adult men; however, from 1994 through 1997 incidences increased from 21 to 38 cases per 100,000 adult men. This increase corresponded with the availability of HAART (CDC, 1999).

A concern among public health officials is that the effectiveness of HAART will lead to a lowered perceived risk and an increase in high-risk behaviors (Huebner & Gerend, 2001). Past studies support the implication of a lowered risk perception resulting in an increase in high-risk behaviors. In a study of 248 men, 11% stated that they have engaged in unprotected sex because of the treatments available and 16% stated that they are not concerned with getting HIV (Dilley, Woods, Sabatino, Rinaldi, Lihatsh & McFarland, 2003). From another sample of men, 26% stated that if they were to have unprotected sex they plan to take PEP (Dilley et al, 2003).

Remembering the accelerated spread of AIDS in the 1980's, behavioral changes that encourage unprotected sexual intercourse could lead to an increase in the incidence

rate (Dilley et al, 2003). With a possibility of increases in sexually risky behaviors coupled with drug resistant viral strains, it is evident that continual research is needed to present health providers and educators with suggestions to improve prevention education, prevention messages, as well as effective risk reduction education.

Statement of the Problem

The increase in prevalence rates of AIDS and decrease in death rates of AIDS patients are attributed to the clinical effectiveness of HAART (Diclemente et al, 2002). Despite advances, MSM still account for the majority of new AIDS infections (CDC, 2004b). Research has shown that since the availability of HAART, there have been increases in sexual practices that lead to HIV transmission (Diclemente et al, 2002; Dilley, Woods, & McFarland, 1997; Dilley et al, 2003; Huebner & Gerend, 2001; Kelly, Hoffman, Rompa & Gray, 1998). This trend may have decreased the concern for contracting HIV among HIV negative MSM, while HIV positive MSM are less concerned about transmitting HIV; particularly those who receive Protease Inhibitor medications (Kelly, Hoffman, Rompa, & Gray, 1998). Although HAART has proven to reduce the amount of virus present in the body, it is still possible to transmit the virus to infected and uninfected persons (Diclemente et al, 2002). Small changes in behavior could result in an increase in the number of new infections (Dilley et al, 2003). Increases in high-risk behavior among infected individuals could lead to more new infections and drug-resistant viral strains of HIV (Diclemente et al, 2002). Continuing research efforts to study perceptions and risk behaviors could help improve preventive messages and education efforts in correcting the misconception involving treatment and transmission.

Purpose of the Study

The purpose of this study was to compare the perceived threat of HIV/AIDS between MSM and heterosexual males by using selected constructs from the Health Belief Model. This study also documented sexually risky behaviors. By surveying individuals within these two populations, it was possible to compare differences in perceived threat by measuring perceived susceptibility, severity and sexual behaviors between the two groups. Data from this study could provide insight on the impact of current perceived threat levels of acquiring HIV and risky sexual behavior among MSM and heterosexual males.

Select constructs of the Health Belief Model (HBM) were used as the conceptual framework for this study. The HBM has been applied to a variety of areas such as cigarette smoking, condom use and HIV/AIDS (Strectcher & Rosenstock, 1997). The HBM consists of several components such as perceived susceptibility, severity, benefits, barriers, cues to action and self-efficacy to predict health behavior (Strecther & Rosenstock, 1997).

Ingledue, Cottrell, & Bernard (2004) utilized the HBM to measure perceived threat of cervical cancer/Human Papillomavious (HPV) infection by surveying 428 college women. The study revealed a low level of perceived threat coupled with high-risk sexual behaviors. This study measured each component of the perceived threat, susceptibility and severity, in order to obtain an overall threat to cervical cancer/HPV. This study also looked at behaviors associated with susceptibility and severity such as receiving a pap test and number of sexual partners. DiClemente, Funkhouser, Wingwood, Fawal, Holmberg & Vermund (2002) used the HBM to measure perception

of susceptibility and severity of infection among individuals receiving drug therapy treatment for HIV/AIDS in order to predict condom use (DiClemente et al, 2002). This study revealed that there was no association between drug therapy use and likeliness to participate in high-risk sexual behaviors (DiClemente et al, 2002).

When studying the perceived threat of HIV/AIDS among MSM and heterosexual males, the researcher utilized perceived susceptibility and severity to directly explain perceived threat. In order for one to perceive an illness/disease to be a threat they must first perceive themselves to be susceptible to the disease as well as perceive the disease to be severe (Strecther & Rosenstock, 1997). The health belief model indicates that if an individual perceives an illness/disease to be a threat, then they will behave in a manner that will directly lessen their chances of getting the disease, in this case HIV.

Literature Review

HIV is a type of retrovirus called lentivirus meaning "slow", thus explaining the ten year incubation period from infection to the onset of AIDS (Bellenir & Dresser, 1995). This disease damages and destroys the CD4 cells of the immune system interfering with its ability to fight other viruses and cancers that a healthy immune system could resist (Mayo Clinic, 2004). Acquired Immunodeficiency Syndrome develops when the immune system is severely damaged (Mayo Clinic, 2004). The CDC defined AIDS by the presence of HIV infection followed by the development of an opportunistic infection or CD4 lymphocyte count of 200 or less. A healthy individual has between 600 to 1200 CD4 cells present in the body (Bellenir & Dresser, 1995; Mayo Clinic, 2004). HIV can spread through sexual contact with vaginal fluid and semen, blood, syringes or needles, and breast milk of a nursing mother (Mayo Clinic, 2004). There is currently no

cure available for HIV/AIDS; safer sex is important to lower the risk of becoming infected with the disease.

The development of antiretroviral therapy, medication that interferes with replication of retroviruses, has improved the quality and length of life of HIV infected individuals (National Institute of Health, 2004). The purposes of antiretroviral therapy are to suppress the blood serum viral load of HIV to undetectable levels, maintain immune system function, prolong life, and increase quality of life (CDC, 1998a). There are currently twenty drugs available that are approved by the FDA for treating HIV infected individuals (National Institute of Allergy and Infectious Disease, 2003). These drugs interfere with the enzyme that HIV needs to replicate itself by developing faulty DNA building blocks, stopping the replication process, and interfering with the fusion process to a host cell (National Institute of Allergy and Infectious Disease, 2003). Highly active antiretroviral therapy, the use of three or more antiretroviral drugs, is currently recommended (CDC, 1998a). Adherence to daily regimens is important; missed treatments could decrease effectiveness (NIH, 2004). Present concerns of HAART are that treatments are not being used correctly and non-compliance may compromise future benefits and development of new antiretroviral therapies (CDC, 1998a).

Post exposure prophylaxis (PEP) is another type of treatment used to reduce the chances of becoming infected with HIV (CDC, 1998b). The use of PEP is most effective in occupational post exposure occurrences because of the fast access rate to treatment; in non-occupational exposures (such as sexual contact) treatment may not be as effective due to treatment delay (CDC, 1998b). This particular treatment option is not without

risks that may include drug toxicity, reduced effectiveness of prevention measures, and antiretroviral resistant HIV strains (CDC, 1998b).

The wide availability of treatment may inhibit the efforts of public health workers to prevent new HIV infections. Recent outbreaks of STDs among MSM and heterosexuals indicated a possible resurgence of high-risk sexual behaviors (CDC, 2004d; CDC, 2003a). The perception that treatment can prevent HIV infection may explain increases in risky behavioral activities such as unprotected sex (CDC, 1998b). A study found that HIV positive men are more likely to believe in the ability of HAART to improve health status than HIV negative men thus affecting intentions to use condoms (Hueber, & Gerend, 2001). This belief may be due to MSMs' knowledge that decreased viral load may result in a reduced risk in sexual transmission (DiClemente et al, 2002).

In May 2002 through December 2002, 2,491 HIV positive MSM were interviewed of which 63% reported non-steady partners; 36% of those with non-steady partners reported not knowing the HIV status of their partners (CDC, 2004d). Twenty-five percent of those who reported non-steady partners and not knowing the status of their partners reported not using condoms (CDC, 2004d). Condom use for insertive anal intercourse was found to be significantly higher among HIV negative men than HIV positive men (CDC, 2004d). Men who have sex with men have been found to engage more frequently in unprotected receptive sex placing them at a higher exposure rate to HIV and STDs (Stokes, Vanable & McKian, 1997). A study, in a 1987 Mortality and Morbidity Weekly Report, stated that unprotected receptive sex carries the highest risk for HIV infection (Auerbach, Wypijewska, Brodie, & Keith, 1994). An association between treatment and failure to use condoms was reported among MSM, but not among

heterosexual men and women (DiClemente et al, 2002). An overview of data suggest that the belief of HAART's ability to prevent transmission rather than the belief in improved health are relevant to sexual behaviors (Huebner & Gerend, 2001).

Research that centers around the impact HIV treatments have had on prevention attitudes have focused primarily on gay men; investigating how combination therapies have affected their attitudes and their risk behaviors. In Demmer's study (2002) of 196 HIV-infected men and women found that HIV prevention planners need to address the attitudes and behaviors that are the result of the latest combination therapies. Demmer (2002) denoted a prior study of well-educated gay men who were knowledgeable about combination therapies that indicated a reduced concern about HIV and sexual risk as a result of treatment advances. The findings revealed that the respondents were more likely to perceive HIV to be less threatening. Thirty-three percent of respondents believed HIV to be less threatening than the past; another 33% reported that HIV was no longer that big of a deal (Demmer, 2002). A majority of the respondents (91.3%) believed that safer sex was still important; however, 19% believed that new treatments made safer sex less important and 23% reported they practiced safer sex less often (Demmer, 2002).

Dilley conducted two similar studies in 1997 and 2003; the latter showed no upward trends in high-risk behaviors though it did suggest changes in attitudes toward risk and treatment. Dilley concluded that improved treatment of HIV does influence sexual behaviors, 26% of men surveyed in Atlanta stated that they would use post exposure treatment if they were to have unprotected intercourse and 18% of 3, 450 French men stated that "availability of treatments encourage them to protect themselves less than before" (Dilley et al 2003).

Problems with past research include issues of generalization (Stokes, Vanable, & McKian, 1997). Research has mainly studied gay men at HIV testing sites who are infected with HIV/AIDS (Stokes, Vanable, & McKian, 1997). Future research suggestions include examination of whether HIV treatment advances have influenced the attitudes and risk behaviors of not only HIV negative, but HIV positive gay men also (Demmer, 2001). To understand and prevent the transmission of HIV, researchers have examined the sexual behaviors of MSM (Stokes, Vanable, & McKian, 1997). Little information is available about the general sexual behaviors of subgroups (Stokes, Vanable, & McKian, 1997). Gay and Bisexual men were considered to fit into one group, MSM do not necessarily fit into gay and bisexual groups (Stokes, Vanable, & McKian, 1997). Differences in sexual behaviors have been noted between gay and bisexual men, in which bisexual men tend to have more casual partners and fewer long-term partners (Stokes, Vanable, & McKian, 1997). Bisexual men are also less likely to engage in anal intercourse in which they are the receiving party (Stokes, Vanable, & McKian, 1997). Understanding differences in these subgroups of men will help design programs for reducing the spread of HIV (Stokes, Vanable, & McKian, 1997). For reasons that bisexual men may never identify themselves as being gay or bisexual, prevention messages that are not gay-oriented will most likely be successful in reaching this group of men (Stokes, Vanable, & McKian, 1997).

In Oregon, a community level HIV risk reduction program called 'Mpowerment' was developed to reach young gay men in the community (Kegeles, Hayes, & Coates, 1996). This program placed emphasis on these men taking control of the decision making process with another group of gay men providing limited guidance. The success

in this particular program was due partly to the vested interest of the participants and the ability to address issues of importance beyond traditional health education efforts. Each program and prevention message was designed and implemented by those involved in the program. With prolonged involvement in the program, there was a decline in unsafe sexual practices and a greater adherence to safer sex messages (Kegeles, Hayes, & Coates, 1996). Findings from this study revealed a 27% reduction in unprotected sex among men in general, a 45% reduction among non-primary partners and a 24% reduction among steady partners (Kegeles, Hayes, & Coates, 1996). Suggestions from this study were that future risk prevention programs need to incorporate the community in the decision making process and that HIV prevention activities need to address personal compelling needs of the population.

Transmission prevention beliefs are paramount to understanding HIV related sexual risk behaviors of MSM. Research findings revealed that the belief in HAART's ability to prevent transmission of HIV was related to unprotected intercourse (Hueber & Gerend, 2001). Prevention education needs to communicate accurate information about combination therapies and continue to emphasize the need for safer sex practices. The CDC (2000) proposed that the medical profession has the opportunity to support behavioral risk reduction through counseling and intervention in which safer sexual practices are encouraged. Further research is needed in order to understand how improved treatments are influencing attitudes and behaviors (Demmer, 2002). The CDC (1998b) suggested that research needs to further investigate reasons for the rate of demand for antiretroviral combination therapy to delineate the proportion of requests due to high-risk behaviors. There is a continued need to address safer sex practices; however,

suggestions from research point to curtailing prevention messages to at-risk populations and addressing the issue of risky behaviors in relation to the knowledge of combination therapies.

METHODOLOGY

Research Design

This research employed a quantitative, cross-sectional design study. This study utilized a comparative explanatory format to describe and compare differences in perceived threat of HIV/AIDS between men who have sex with men (case group) and heterosexual males (control group). Participants responded to self-report behavioral questions and attitudinal questions. Advantages inherent to this study design include the ability to obtain data from large number of participants in a relatively short period of time, collect data on attitudes and behaviors, and generate hypotheses for future research (Altman, 1991). Disadvantages to this study design are that the researcher will not be able to measure change, establish cause and effect, and low response rate or non-response (Altman, 1991).

Research Questions

The purpose of this study was to compare the perceived threat of HIV/AIDS between MSM and heterosexual males. This study also documented sexually risky behaviors among participants. In order to meet the proposed purpose of the study, the following research questions were formulated:

1. Is there a difference in the perceived threat of HIV between MSM and heterosexual males?
2. Is there a difference in sexually risky behaviors between MSM and heterosexual males?
3. Is there a correlation between perceived threat of HIV and sexually risky behaviors among MSM and heterosexual males?

Sampling Methodology/Subjects

A non-probability, convenience sampling methodology was utilized for this study. The case subjects were selected from intact groups of gay-oriented student organizations at public and private colleges and universities in the state of Georgia. The researcher was able to identify sixteen gay-oriented student organizations in Georgia. Every effort was made to involve all sixteen gay-oriented organizations in this study, however only five organizations responded and agreed to be part of the study after five attempts to contact the other organizations. The five participating organizations included the Gay-Straight Alliance at Georgia Southern University, the Rainbow Oxford Student Alliance at Oxford College, the Gay Lesbian Straight Alliance at Kennesaw State University, the Lambda Alliance at University of Georgia, the Lesbian and Gay Law Student Alliance at Georgia State University. Of those eleven organizations that were not a part of this study, two responded but stated that they did not want to participate in the study, three were not active for the Spring 2005 semester, and six did not respond to phone calls or emails.

The control group was composed of heterosexual males attending physical activity classes at Georgia Southern University, one of the universities that contributed information from a gay-oriented organization. Four physical activity classes responded to the invitation to be part of this study. These classes were invited to participate based upon class size, and males who were enrolled. Advantages of non-probability convenience sampling are that it allows the use of intact groups and permits the researcher to collect information from large groups in a relative small amount of time (McDemott & Sarvela, 1999). A major disadvantage to this methodology is it provides

the researcher with the least amount of ability to generalize findings to the population (McDemott & Sarvela, 1999).

Instrumentation

A self-report survey with 31 questions was utilized for this study (see Appendix C). Questions that assessed the sexual behaviors of respondents were adapted from several surveys used by the center for AIDS Prevention Studies located in San Francisco (Gomez & Marin, 1996). Behavioral self-report questions followed a format with response choices of 'Yes,' 'No,' and 'Don't Know'. Perceived susceptibility and severity questions were compiled from several studies (DiClemente, Boyer, & Morales, 1988; Demmer, 2002; Dilley et al, 2003; Huebner & Gerend; & Kelly et al, 1998). This section used a Likert-type response scale of 5 to 1: 5 =Strongly Agree, 4 = Agree, 3 = Don't Know, 2 = Disagree, and 1 = Strongly Disagree. Reliability reports from studies with questions derived from DiClemente et al. (1988) reported an internal consistency at 0.55; Dilley et al (2003) reported a Cronbach's alpha of 0.70 which indicated high inter-item correlation, and items that focused on influences of new treatments revealed an internal reliability at alpha=0.82 (DiClemente et al, 1988 & Dilley et al, 2003). Validity reports from Huebner and Gerend (2001) calculated construct and predictive validity at r=0.74. The reliability score for perceived threat was calculated to be a Cronbach alpha of 0.62 and 0.68 for sexually risky behavior. The Cronbach alpha subscales were calculated independently based upon appropriate survey items.

Data Collection Procedures

Surveys were administered to male members of gay-oriented student organizations and male members of physical activity classes whose leaders and instructors responded positively to the researcher's invitation to participate. For student organizations, the survey was mailed via United States Postal service and administered to the group by the organization's president. The surveys for the control group were sent via intracampus mail and administered by the classroom instructor. The researcher was not able to visit other campuses due to transportation limitation, so in order to keep data collection consistent, the researcher did not participate in data collection at Georgia Southern University. Each organization that participated in this study was given instructions via email or mail on how to administer surveys to participants. The surveys were returned through the United States postal services to the researcher in the provided envelope. The participants were told the purpose of the study and informed of their rights as study participants. Participants were instructed to fold surveys lengthwise and to place surveys in the provided envelope to assure anonymity during the collection process. Data was then scored and entered into SPSS statistical software for analysis.

Data Analysis

Descriptive statistics were tabulated to report means and percentages for demographic data to describe the characteristics of the study population. The Pearson Correlation Coefficient test was used to determine relationships between variables within groups (Neutens & Rubinson, 2002). Correlation values range between -1.0 to + 1.0 with -1.0 indicating the greatest negative association between the variables, +1.0 representing the strongest positive relationship, and a correlation coefficient of zero indicating no relationship between the perceived threat and risky behavior variables

within groups. Chi-Square tests were calculated to determine an association between variables within groups (Neutens & Rubinson, 2002). T-Tests were used to determine statistical significant differences of perceived threat of HIV/AIDS between groups. A significant difference was determined by a p-value less than or equal to 0.05 (Neutens & Rubinson, 2002). Differences between groups may indicate that there is a reduced perceived threat of HIV/AIDS since the development of highly active antiretroviral therapy.

RESULTS

Demographics of Participants

Study participants were students enrolled in public and private universities in Georgia. There were 150 participants, of which 52 were men who have sex with men (MSM), 96 were heterosexual males and two did not identify their sexual orientation. The case group encompassed members of gay-oriented student organizations, while the control group included heterosexual males who attended physical activity classes at Georgia Southern University. The response rate was 85% which includes both MSM and heterosexual males. Demographic characteristics of the study participants are reported in Table 1. Table 2 provides a summary of how many surveys were sent to each group, the number of surveys received and the response rate.

Table 1. Demographic Data of Study Participants Reported using Descriptive and Frequency Statistics.

Sexual Orientation	Variable	Overall	Percentage Frequency
MSM (n=52)			
	Race		
	Black	23	44.2
	White	24	46.2
	Asian	2	3.8
	Native American	1	2.0
	Other	2	3.8
	Overall		100.0

Table 1 (cont). Demographic Data of Study Participants Reported using Descriptive and Frequency Statistics.

Sexual Orientation	Variable	Overall	Percentage Frequency
Heterosexual Males (n=96)			
	Race		
	Black	40	41.7
	White	55	57.3
	Asian	1	1.0
	Native American	0	0.0
	Other	0	0.0
	Overall		100.0
Age (n=149)			
Range	18 – 45 years old		
Mean	20.01 years old		

Table 2 provides a response rate of potential participants from the organizations that responded to the researcher's invitation.

Table 2. Response Rate of Potential Participants

Sexual Orientation	Total Sent	Total Received	Response Rate
MSM	69	52	75.3%
Heterosexual	105	96	93.3%
Total	174	148	85.1%

There were three research questions for this study: 1) Is there a difference between perceived threat of HIV between MSM and heterosexual males? 2) Is there a difference in sexually risky behaviors between MSM and heterosexual males? 3) Is there a correlation between perceived threat of HIV and sexually risky behaviors among MSM and heterosexual males? In order to answer these questions, perceived threat and sexually risky behavior means were calculated. The survey instrument included twenty-two questions designed to measure participants' level of perceived threat of HIV/AIDS and eight self-report questions measured the level of sexually risky behavior (see Appendix C for scoring procedures). Perceived threat of HIV/AIDS and sexually risky behavior means were then compared among groups. The perceived threat means were divided into four levels of threat (high, moderate to high, moderate to low, low) while sexually risky behavior means were comprised of eight possible risky behaviors, ranging from zero to eight (0=no report of risk behaviors to 8= report of participating in all of the listed risk behaviors).

The mean overall level of perceived threat of HIV was 49.29 for MSM and heterosexuals combined, indicating that the participants perceived HIV/AIDS to be a moderate to low threat level. The mean overall sexually risky behavior for MSM and heterosexuals was 3.09. Further analysis by sexual orientation determined the mean level of perceived threat of HIV/AIDS for MSM was 51.21, with a slightly lower median (48.50). The means of both study groups fall within the moderate to low perceived threat level. Although heterosexuals (49.09) appear to have a slightly lower mean of perceived threat than MSM (51.21), it is not statistically significant (p=0.29). The overall means

for sexually risky behavior for MSM (3.52) and heterosexual males (2.83) indicate that heterosexual males engage in fewer risky behaviors (p=0.023).

Almost twenty-seven percent (26.9%) of MSM and 16.5% of heterosexuals stated they agreed or strongly agreed 'AIDS is a less serious threat than it used to be' (43.4%). When participants were asked if they were not worried about getting AIDS, almost half (48.1%) of MSM stated they either agreed or strongly agreed while slightly fewer heterosexuals (42.7%) agreed or strongly agreed with the statement. Thus, slightly more heterosexual males than MSM worried about getting AIDS. Approximately nineteen percent (19.2%) of MSM stated they agreed or strongly agreed that AIDS is now nearly cured while only 7.3% of heterosexuals strongly agreed or disagreed. Furthermore, summary statistics of this study show that more MSM (42.3%) than heterosexuals (29.1%) agreed or strongly agreed that safer sex is as important now as ever. For each research question, appropriate statistical analyses were run in order to determine the overall outcome. Based upon research findings, supporting evidence for all conclusions is presented below.

Research Question 1

Is there a difference in perceived threat of HIV between MSM and heterosexual males?

A comparison of the two groups of individuals based on their numeric perceived threat score of HIV/AIDS was conducted by using an independent samples T-test (see Appendix C for scoring procedures). There was no statistically significant difference in overall perceived threat level of HIV/AIDS between MSM and heterosexuals (p-value = 0.069). The 95% CI (-6.49, .251) also indicated that there was no statistically significant difference because it contains zero, indicating no difference in the two groups. Table 3

reports T-test results for perceived threat questions. The overall mean perceived threat score between MSM and heterosexuals was not statistically significant, however individual t-tests indicated significant differences between MSM and heterosexuals by specific questions. For example, MSM were more likely than heterosexuals to agree that AIDS is nearly cured (p=0.009). Furthermore, more MSM compared to heterosexuals stated that they are afraid of getting AIDS (p=0.04). There was one in particular contradicting result. More MSM compared to heterosexuals stated that if a cure for AIDS was announced they would still practice safer sex, regardless of a cure (p=0.028); however, these individuals also revealed that they would stop practicing safer sex if a cure was announced which was also significant (p=0.014).

Table 3. Statistical Significant Differences Between MSM and Heterosexual Males in Perceived Threat of HIV/AIDS

Variable	Mean	SD	P-value
AIDS is nearly cured	2.43+ 1.93	1.26 0.98	0.009*
AIDS is less serious threat	2.25 + 1.85	1.33 1.08	0.051
HIV positive status not "big deal" due to better treatments	2.80 + 1.68	7.38 0.88	0.367
Safer sex important now as ever	1.75 + 1.80	1.02 1.14	0.173
Safer sex less important due to better treatments	2.79 + 2.41	1.70 1.58	0.714
New medications to lower virus load make safer sex unimportant	1.63 + 1.64	0.93 0.76	0.995

Table 3 (cont). Statistical Significant Differences Between MSM and Heterosexual Males in Perceived Threat of HIV/AIDS

Variable	Mean	SD	P-Value
Just as likely to practice safer sex as always	2.35 + 2.18	1.55 1.34	0.494
Less likely to practice safer sex due to better treatments	1.63+ 1.68	0.89 1.24	0.060
Stop practicing safer sex if cure for AIDS available	2.31 + 1.83	1.38 0.93	0.014*
Still practice safer sex if cure for AIDS available	2.94 + 2.41	1.41 1.38	0.028*
Afraid of getting AIDS	2.76 + 2.24	1.52 1.45	0.041*
Less likely to get AIDS than most people	3.41 + 3.30	1.46 1.41	0.646
Not concerned w/ being infected w/HIV	2.04 + 2.0	0.99 1.09	0.787
If exposed to HIV, can take drugs to prevent infection	2.27 + 2.33	1.02 1.08	0.750
Use PET if have unprotected sex	3.35 + 3.33	1.37 1.32	0.921
Unprotected person on PEP cannot get infected w/HIV	3.33 + 3.70	1.45 1.61	0.268
Sex w/ HIV/AIDS person on antiviral drugs is safer than one not on drugs	3.12 + 3.35	1.42 1.19	0.286
Not worried about getting AIDS	3.12 + 2.92	1.46 1.63	0.463
Condom use lower risk of getting AIDS	2.06 + 1.94	1.41 1.35	0.610
Treatments make me less concerned about becoming HIV positive	1.88 + 1.81	0.97 0.99	0.682
More willing to take chance of getting Infected due to new treatments	1.82 + 1.67	0.97 0.90	0.335
Less likely to get HIV from someone on new drug treatments	2.12 + 2.08	1.21 0.95	0.850

Table 3 (cont). Statistical Significant Differences Between MSM and Heterosexual Males in Perceived Threat of HIV/AIDS

Variable	Mean	SD	P-Value
Overall perceived threat score	51.21 + 49.09	11.16 9.15	0.069

Note:
SD = standard deviation
+ = MSM
* denotes significance at alpha level of 0.05 as determined by independent T-tests.
Mean = 5 = strongly agree, 4 = agree, 3 = don't know, 2=disagree, 1 = strongly disagree

Research Question 2

Is there a difference in sexually risky behaviors between MSM and heterosexual males?

As with the first research question, the emphasis was to determine differences between the two study groups, this time with respect to the number of sexually risky behaviors. An independent t-test was utilized to test for significant differences. There was a statistically significant overall difference in total number of sexually risky behaviors between MSM and heterosexuals (p value = 0.023). Men who have sex with men were more likely to practice unsafe sexual behaviors.

Odd ratios were calculated to determine which sexual orientation group was more likely to engage in more sexually risky behaviors. Since there are only eight dichotomous sexually risky behavior questions, there are only eight possible numbers of risky behaviors. Table 4 presents odds ratios and 95% Confidence Intervals corresponding to each sexual risky behavior questions.

Table 4. Odds Ratio Calculations for Sexually Risky Behaviors Between MSM and Heterosexual Males

Variable	N	Odds Ratio	95% CI
Are you currently sexually active?	148	0.95	(0.429, 2.11)
Have you ever had sexual intercourse?	147	0.22*	(0.61, 0.72)*
How many sexual partners have you had in last 3 months?	138	0.82	(0.41, 1.66)
Used a condom last time had sexual intercourse.	133	0.85	(0.41, 1.75)
Use condoms with your primary partner.	132	0.49	(0.24, 1.01)
Use condoms with those other than your primary partner.	102	0.37	(0.12, 1.16)
I know the HIV status of my primary partner.	122	1.04	(0.47, 2.31)
I know the HIV status of my non-primary partner(s).	84	1.41	(0.57, 3.48)

Note CI = Confidence Interval
*denotes statistical significance at alpha level 0.05

The majority of the questions did not reveal a significant difference between MSM and heterosexuals; however, confidence interval's inclusion of one for the odds ratio pertaining to the question asking if participants were currently sexually active indicates that MSM are more likely to have had sexual intercourse than heterosexuals. Although non-significant, the odd ratio of 0.49 revealed that MSM are more likely than heterosexuals to use condoms with their primary partners. Due to a large number of

'don't know' responses for the questions asking participants if they used condoms with those other than their primary partner and if they knew the HIV status of their non-primary partners were analyzed as a multi-category response. No significant differences were found for the question asking if participants used condoms with their primary partners [yes*don't know (OR 1.02; CI 0.48, 2.17) and no*don't know (OR 0.36; CI 0.11, 1.24)] nor if they knew the HIV status of their non-primary partners [yes * don't know (OR 1.31; CI 0.64, 3.04) and no * don't know (OR 1.02; CI 0.43, 2.41)].

Research Question 3

Is there a correlation between perceived threat of HIV and sexually risky behavior among MSM and heterosexual males?

The first step in determining whether sexually risky behaviors can be predicted by perceived threat of HIV/AIDS was to measure their numerical association with one another. Pearson correlation coefficients were computed between the overall scores of these two variables for each of the sexual orientation groups. Weak positive associations between perceived threat and risky sexual behaviors exist for both MSM and heterosexuals. The correlation coefficients of 0.076 (heterosexuals) and 0.155 (MSM) were found to be non-significant at the 0.05 alpha level of significance based on p-values of 0.460 and 0.273, respectively. Therefore, no relationship exists between perceived threat of HIV/AIDS and risky sexual behaviors in either of the sexual orientation groups. Table 5 shows the Pearson Correlation Coefficient and the corresponding significance test results.

Table 5. Results of Pearson Correlation Coefficient Association Analysis of Perceived Threat of HIV and Sexually Risky Behaviors

Sexual Orientation	Mean Perceived Threat	Mean Risky Sexual Behavior	Correlation Coefficient	P-Value
MSM	51.21	3.52	0.16	0.27
Heterosexuals	49.09	2.33	0.07	0.46

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The primary purpose of this study was to determine the perceived threat of HIV/AIDS between men who have sex with men and heterosexual males. A secondary purpose was to explore sexually risky behaviors of each sexual orientation group. Data analysis ascertained that there is no difference in the perceived threat of HIV/AIDS between the two study groups. Heterosexual males were found to engage in lower sexual risk behaviors than MSM. There is no direct correlation between the perceived threat of HIV/AIDS and sexually risky behaviors.

This study utilized two constructs of the Health Belief Model (HBM) which imply that an individual who perceives him/herself to be susceptible to a disease and perceives the disease to be severe will most likely engage in behaviors that lessen his/her chances of contracting the disease (Glanz, Lewis, & Rimer, 1997). In this study, however, there was no relationship between perceived threat and sexual behaviors. The mean perceived threat of both groups indicated that the study population perceived HIV/AIDS to be a moderate to low level. Based upon the HBM, interpretation of the study results would predict participants to engage in high-risk behaviors. However, this idea was found to be unsupported through this study; both groups were found to be engaging in low sexually risky behaviors.

Limitations to the study

Accurate data analysis was dependent upon the honesty of the participants and how they perceive their threat toward HIV/AIDS. The honesty of respondents who completed the surveys could have been an issue in this study. Since the subject matter of

this study was somewhat sensitive, it was imperative to the success of this study for participants to respond truthfully. However, with any study that involves sensitive personal information, it is likely that some individuals will tend to be dishonest in their responses for possible fear of disclosure of identity. To avoid this issue, every effort was made to assure anonymity of participants' identity and responses.

Another limitation was the conceptual framework of the study. Only two constructs of the HBM were utilized in this study, perceived susceptibility and severity. The researcher also did not participate in data collection. However, every effort was made to ensure that surveys were administered consistently. Each organization received instruction on how to administer surveys via email or mail. Each organization was instructed to make clear to each participant that their involvement in this study was completely anonymous and that participation was voluntary. After completion of the surveys, participants were instructed to fold surveys length-wise and place surveys into an envelope provided by the researcher.

The low number of participants was a limitation to this study. There was great difficulty in identifying potential case participants due both to the low number of gay-oriented student organizations in Georgia and the low response to invitations to take part in this research study. Attempts were made to contact and include every gay-oriented student organization in Georgia. Reasons for non-participation ranged from no interest to in-active groups.

The study groups utilized in this research study were not selected randomly which affected the ability to generalize results to the larger population. This limitation made it impossible to make inferences to the entire populations; therefore, the findings were

limited to study participants. If study groups were selected randomly, it would have made this a stronger study and results more reliable; however, this study can be utilized as a guide in which to generate further hypotheses on related research questions.

Future Recommendations

Past studies have focused mainly on MSM and were concerned with the differences in behavior, knowledge and perception as it relates to individual HIV-status. Unlike most studies, this study was not concerned with the HIV-status of participants as it related to their engagement in sexually risky behaviors and their perceived threat of HIV/AIDS. A major purpose of the study was to determine if there was a need to focus educational efforts on men who have sex with men over heterosexual males. According to the results from this study, there is no need to focus primarily on one group more than the other. If the results were generalizable, educational and health promotion efforts for heterosexual males should be given the same importance level and attention as MSM.

The participants in this study were found to perceive HIV/AIDS to be a moderate to low threat. This perception is in concurrence with other study findings. Previous research studies indicated that MSM and heterosexuals are not concerned with transmission risk; yet, are less willing to take chances of getting infected (Do, Hanson, Dworkin, & Jones, 2001; Van der Straten, Gomez, Saul, Quan, & Padian, 2000). Taking this data into consideration is also important so that public health educators do not concentrate primarily on education alone (Waldo, Stall, & Coates, 2000). In the Waldo et al (2000) study, it was revealed that knowledge had little to do with decisions to engage in sexually risky behavior, but education played a role in participants' likeliness to worry less about condom failures. These issues bring forth major concerns about public safety

in regards to HIV/AIDS incidence and prevalence rates. With increasing rates and continual advances in technology, further research should investigate how media affects the way people perceive medical progress with HIV/AIDS. Future research could ascertain how media could possibly better serve as a national educator to the general public by providing a more realistic picture of what is really going on with HIV/AIDS today. The Health Belief Model could also be used to further research this phenomenon by utilizing the cues to action and looking at how media, and education, affect perceived threat directly.

Differences of sexual behavioral practices were determined between MSM and heterosexual males where MSM were found to be more likely to engage in sexually risky behaviors. Safer sex practices should remain a key component in eliminating the spread of disease, yet more effort should be taken to address sexual behavioral practices among MSM. In order to address further the relationship among perceived threat of HIV/AIDS and sexual behaviors, future research could involve the practice of qualitative research. A follow-up qualitative study could further investigate the phenomenon suggested in the Ostows (2002) study. Ostows (2002) revealed that individuals experienced "condom use fatigue" and "burnout" (Ostow, Fox, Chmiel, Silvestre, Visscher, Vanable, Jacobson, & Strathdee, 2002). Qualitative studies might also be able to divulge whether or not knowledge has little to do with an individual's decision to engage in risky sexual behavior. A qualitative study will be able to explore these suggestions more in-depth and ascertain whether or not they truly do exist.

New medical and technological advances have pushed the media to get more involved, which could have an effect on how information is perceived by the viewing

audience. The majority of the participants in this study perceived HIV/AIDS as being a moderate to low threat. This should raise red flags in the public health sector and prompt researchers to further investigate this phenomenon. Even though this study's results are not generalizable to the larger MSM and heterosexual male populations, the results can prompt further investigation of extended research questions or similar questions applied to participants under a more appropriate study design. More in-depth research could possibly reveal greater need for a new direction in HIV/AIDS education.

REFERENCES

AID Atlanta (2004). Retrieved November 15, 2005 from http://www.aidatlanta.org/aboutus/welcome.shtml.

AIDS Survival (2004). Retrieved November 15, 2005 from http://www.aidssurvivalproject.org/aboutus/aspstory.html.

Altman, D.G. (1991). Practical statistics for medical research. London: Chapman & Hall.

American Cancer Society (2005). Detailed guide: Kaposi's sarcoma: What is kaposi's sarcoma?. Retrieved November 9, 2005 from http://www.cancer.org/docroot/ Cri/content/CRI_2_4_1x_What _is_Kaposis_Sarcoma_21.asp?sitearea=.

Auerbach, J.D., Wypijewska, C., Brodie, H., & Keith, H. (1994). AIDS & Behavior: An intergarated approach. Washington, DC: National Academies Press.

Bellenir, K., & Dresser, P.D. (1995). HIV- infection & AIDS/ how HIV causes AIDS. AIDS Source Book. Detroit, MI: Omnigraphics Inc. Penobscot Building, pp 175-195.

Braitstein, P., Chan, k., Beardsell, A., McLeod, A., Montaner, J.S.G., O"Shayghnessy, M.V., & Hogg, R.S. (2002). Prescribing practice in a population-based HIV postexposure prophylaxis program. AIDS, 16(7), 1067-1070.

Center for Disease Control and Prevention (1981a). Pneumocystis pneumonia-los angeles. Morbidity Mortality Weekly Reports, 5 (30), 250-252. Retrieved September 16, 2004 from www.cdc.gov/hiv/pubs/mmwr/mmwr05jun81.pdf.

Center for Disease Control and Prevention (1981b). Kaposi's sarcoma and pneumocystis pneumonia among homosexual men-new york city and california. Morbidity Mortality Weekly Reports, 4 (30), 305-308. Retrieved September 16, 2004 from www.cdc.gov/hiv/pubs/mmwr/mmwr4july81.pdf.

Center for Disease Control and Prevention (1981c). Follow-up on sarcoma and pneumocystis pneumonia. Morbidity Mortality Weekly Reports, 409-410. Retrieved September 16, 2004 from www.cdc.gov/hiv/pubs/mmwr/mmwr28aug81.pdf.

Center for Disease Control and Prevention (1991) Current trends update: Acquired immunodeficiency syndrome---United States, 1981-1990. Morbidity Mortality Weekly Reports, 40(22), 358-363,369. Retrieved September 10, 2004 from http://www.cdc.gov/mmwr/preview/mmwrhtml/00001998.htm.

Center for Disease Control and Prevention (1998a). Report of the NIH panel to define principles of therapy of HIV infection. Morbidity Mortality Weekly Reports, 47(RR-5), 1-41. Retrieved September 9, 2004 from http://www.cdc.gov/mmwr/preview/mmwrhtml/00052295.htm.

Center for Disease Control and Prevention (1998b). Management of possible sexual, injecting-drug use or other non-occupational exposure to HIV including considerations related to antiretroviral therapy. Morbidity Mortality Weekly Reports, 47(RR-17), 1-19. Retrieved October 5, 2004 from http://www.cdc.gov/mmwr/PDF/RR/RR4717.pdf.

Center for Disease Control and Prevention (1999). Increases in unsafe sex and rectal gonorrhea among men who have sex with men – San francisco, california, 1994-1997. Morbidity Mortality Weekly Reports, 3(48). Retrieved September 10, 2004 from http://www.cdc.gov/mmwr/PDF/wk/mm4803.pdf .

Center for Disease Control and Prevention (2000). Adoption of protective behaviors among persons with recent HIV infection and diagnosis --- Alabama, new jersey, and tennessee, 1997—1998. Morbidity Mortality Weekly Reports, 49(23), 512-515.

Center for Disease Control and Prevention (2003a) Advancing HIV prevention: new strategies for a changing epidemic---United states, 2003. Morbidity Mortality Weekly Reports, 52(15), 329-332. Retrieved September 10, 2004 from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5215al.htm.

Center for Disease Control and Prevention (2003b) Increases in HIV diagnoses---29 states, 1999-2002. Morbidity Mortality Weekly Reports, 52(47), 1145-1148. Retrieved September 10, 2004 from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5247a2.htm.

Center for Disease Control and Prevention (2004a). Basic statistics. Retrieved September 10, 2004 from http://www.cdc.gov/hiv/stats.htm

Center for Disease Control and Prevention (2004b). A glance at the HIV epidemic. Retrieved September 10, 2004 from http://www.cdc.gov/nchstp/od/news/At-a-Glance.pdf.

Center for Disease Control and Prevention (2004c). Trends in primary and secondary syphilis and HIV infections in men who have sex with men san francisco and los angeles, california, 1998-2002. Morbidity Mortality Weekly Reports, 53(26), 575-578. Retrieved September 10, 2004 from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5362al.htm.

Center for Disease Control and Prevention (2004d). High-risk sexual behavior by HIV-positive men who have sex with men --- 16 Sites, united states, 2000—2002. Morbidity Mortality Weekly Reports, 53(38), 891-894. Retrieved October 19, 2004 from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5338a1.htm

Center for Disease Control and Prevention (2005). Cytomegalocirus (CMV) infection. Retrieved November 15, 2005 from http://www.cdc.gov/ncidod/diseases/cmv.htm

Demmer, C. (2002). Impact of improved treatments on perceptions about HIV and safer sex among inner-city HIV infected men and women. Journal of Community Health, 27(1) 63-74.

DiClemente, R.J., Boyer, C.B., & Morales, E.S. (1988). Minorities and AIDS: knowledge, attitudes, and misconceptions among black and latino adolescents. American Journal of Public Health, 78(1) 55-57.

Diclemente, R.J., Funkhouser, E., Wingwood, G., Fawal, H., Holmberg, S., & Vermund, S.H. (2002). Protease inhibitor combination therapy and decreased condom use among gay men. Southern Journal of Medicine, 4(95).

Dignan, M. B. (1995). Measurement and Evaluation of Health Education (3rd Ed). C Springfield, IL: Charles C Thomas Publishers.

Dilley, J.W., Woods, W.J., & McFarland, W. (1997). Are advances in treatment changing views about high-risk sex?. New England Journal of Medicine, 7(337), 501-502.

Dilley, J.W., Woods, W.J., Sabatino, J., Rinaldi, J., Lihatsh, T., & McFarland, W. (2003). Availability of combination therapy for HIV: effects on sexual risk taking in a sample of high-risk gay and bisexual men. AIDS CARE, 1(15), 27-37.

Do, A.N., Hanson, D.L., Dworkin, M.S., & Jones, J.L. (2001). Risk factors for and trends in gonorrhea incidence among persons infected with HIV in the united states. AIDS, 15(9), 1149-1155.

Elford, J., Bolding, G., Maguire, M., & Sherr, L. (1999). Sexual risk behavior among gay men in a relationship. AIDS 13(11) 1407-1411.

Elford, J., Bolding, G., Maguire, M., & Sherr, L. (2001). Gay men, risk and relationships. AIDS, 15(8), 1053-1055.

Fournier, S. Maillard, A., & Molina, J.M., (2001). Failure of post exposure prophylaxis after sexual exposure to HIV. AIDS, 15(3), 430.

Gay Men Health Crisis (2004). Retrieved November 15, 2005 from http://www.gmhc.org/about.html.

Glanz, K., Lewis, F.M., & Rimer, B.K. (Eds.). (1997). Health behavior and health education: Theory, research, and practice education (2nd ed.).San Francisco, CA: Jossey-Bass.

Gómez, C., & Marín, B.V. (1996). Gender, culture, and power: barriers to safe sex. Journal of Sex Research, 33(4), 355-362. Retrieved October 5, 2004 from www.caps.ucsf.edu/projects/marinmale.html.

Harvey, J (Ed). (1998). Evaluation Cookbook. Edinburg, Scotland: Learning Technology Dissemination Initiative Heriot-Watt University.

Hays, B., Paul, J., Ekstrand, M., Kegeles, S.M., Stall, R., & Coates, T.J. (1997). Actual versus perceived HIV status, sexual behaviors and predictors of unprotected sex among young gay and bisexual men who identify as HIV-negative, HIV-positive and untested. AIDS, 11(12), 1495-1502.

Huebner, D.M., & Gerend, M.A. (2001). The relation between beliefs about drug treatments for HIV and sexual risk behavior in gay and bisexual men. Annals of Behavioral Medicine, 4(23), 304-309.

Ingledue, K., Cottrell, R., & Bernard, A. (2004). College women's knowledge, perceptions, and preventive behaviors regarding human papillomavirus infection and cervical cancer.

Institute of Medicine. (2001). No time to lose: Getting more from HIV prevention. Retrieved February 23, 2006 from https://www.nap.edu/readingroom.

Isaac, S. & Michael, W. B. (1990). Handbook in Research and Evaluation for Education and the Behavioral Sciences (2nd Ed). San Diego, CA: EdITS Publishers.

Kalichman, S.C., Rompa, D., Austin, J., Luke, W., & Difonzo, K. (2001). Viral load, perceived infectivity and unprotected intercourse. AIDS, 28(3), 303-305.

Kegeles, S. M., Hays, R. B., & Coates, T.J (1996). The mpowerment project: A community-level HIV prevention intervention for young gay men. American Journal of Public Health, 86(8), 1129-1136.

Kelly, J.A., Hoffman, R.G., Rompa, D., & Gray, M. (1998). Protease inhibitor combination therapies and perceptions of gay men regarding AIDS severity and the need to maintain safer sex. *AIDS*, 12, F91-F95.

Laurence, J. (1999). Post-exposure prophylaxis: a new form of prevention? AIDS Patient Care and STDS, 13(5), 261-263.

Low-Beer, S., Weber, A.E., Bartolomew, K., Landolt, M., Oram, D., Montaner, J.S.G., O'shaughnessy, M.V., & Hoggs, R.S. (2000). A reality check: the cost of making post-exposure prophylaxis available to gay and bisexual men at high sexual risk. AIDS, 14(3), 325-326.

Margolis, A.D., Wolitski, R.J., Parsons, J.T., & Gomez, C.A. (2001). Are healthcare providers talking to HIV-seropositive patients about safer sex?. AIDS, 15(7) 2335-2337.

Mayo Clinic Staff (2004). HIV/AIDS. Retrived October 19, 2004 from http://www.mayoclinic.com/invoke.cfm?id=DS00005.

McDemott, R.J., & Sarvela, P.D. (1999). Nonprobability samples. In Health Education Evaluation and Measurement: A practitioner's Perspective. (2nd ed). (pp266-267). United States of America: McGraw Hill Companies.

McKenzie, J.F., & Smeltzer, J.L. (2001). Health Behavior Models. In planning, implementing, and evaluating health promotion programs: A primer. (3rd ed). (pp. 153-154). Needham Heights, MA: Allyn & Bacon.

National Institute of Health (2004). HIV and its treatment: what you should know. Retrieved October 3, 2004 From http://aidsinfo.nih.gov/other/cbrochure/english/cbrochure_en.pdf

National Institute of Allergy and Infectious Disease (2003). Treatment of HIV infection. Retrieved October 3, 2004 from http://www.naid.nih.gov/factsheets/treat-hiv.htm.

Neutens, J.J., & Rubinson, L. (2002). Research techniques for the health sciences (3rd ed). San Francisco, CA: Benjamin Cummings.

Ostows, D.E., Fox, K.J., Chmiel, J.S., Silvestre, A., Vissich, B.R., Vanable, P.A., Jacoson, L.P., & Strathdee, S.A. (2002). Attitudes towards highly active antiretroviral therapy are associated with sexual risk taking among HIV-infected and uninfected homosexual men. AIDS, 15(5), 775-780.

Pinkerton, S.D., Holtgrave, D.R., & Bloom, F.R. (1998). Cost effectiveness of post exposure prophylaxis following sexual exposure to HIV. AIDS, 12(9), 1067-1078.

Schreibman, T., & Friedland, G. (2003). HIV infection prevention: strategies for clinicians. CID, 36, 1171-1176.

Siegal, K., & Lekas, H.M. (2002). AIDS as a chronic illness: psychosocial implications. AIDS, 16(4), S69-S76.

Stokes, J.P., Vanable, P., & McKiran, D.J. (1997). Comparing gay and bisexual men on sexual behavior, condom use & psychosocial variables related to HIV/AIDS. Archives of Sexual Behaviors, 26(4), 383-397.

Stop AIDS Project (2004). Retrieved November 15, 2005 from http://www.stopaids.org/about_us/index.html.

Strathdee, S.A., Martindale, S.L., Cornelisse, P.G.A., Miller, M., Craib, K.J.P., Schechter, M.T., O'Shaughnessy, M.V., & Hogg, R.S. (2000). HIV infection and risk behaviours among young gay and bisexual men in vancouver. Canadian Medical Association Journal, 162(1), 21-26.

Strecher, V. J.,& Rosenstock, I.M. (1997). The health belief model. In Glanz, K., Lewis, F.M., & Rimer, B.K. (Eds.), Health Behavior Health and Education: Theory, Research, and Practice (pp.41-58). San Franscisco, CA: Jossey-Bass.

The Body (2005). Pneumocystis pneumonia (PCP). Retrieved November 9, 2005 from http://www.thebody.com/nmai/pcp.html

Van der Straten, A., Gomez, C.A., Saul, J., Quan, J., & Padian, N. (2000). Sexual risk behaviors among hetersosexual HIV serodiscordant couples in the era of post-exposure prevention and viral suppressive therapy. AIDS, 14(4), F47-F54.

Vincke, J., & Bolton, R. (2002). Therapy adherence and highly active antiretroviral therapy: comparison of three sources of information. AIDS Patient Care & STDs, 10(16), 487-489.

Waldo, C.R., Stall, R.D., & Coates, T.J. (2000). Is offering post-exposure prophylaxis prevention for sexual exposures to HIV related to sexual risk behavior in gay men?. AIDS, 14(8), 1035-1039.

Watstein, S. B. & Chandler, K. (1998). The AIDS dictionary. Cathy Rinon & Hermitage Publishing Services.

APPENDICES

APPENDIX A

THEORETICAL CONSTRUCT, SIGNIFICANCE OF STUDY, LIMITATIONS, DELIMITATIONS, ASSUMPTIONS AND DEFINITIONS OF TERMS

Theoretical Construct/Model

The framework applied in this study was the Health Belief Model (HBM). The Health Belief Model was developed in the 1950's by a group of psychologists to explain why people do and do not participate in programs to prevent or detect disease (McKenzie & Smeltzer, 2001; Glanz, Lewis & Rimer, 1997). According to this model, when the perception of threat is high it will result in a behavioral change (Strecher & Rosenstock, 1997). Perception of threat is a sequential function of perceived severity and susceptibility. Perceived susceptibility combined with high perceived severity is a strong predictor of intention to engage in health related behaviors (Strecher & Rosenstock, 1997). For this reason, a perceived susceptibility and severity is necessary before a commitment to changing risky behaviors (Strecher & Rosenstock, 1997).

This model emphasizes the perceived threat of a disease and how other factors affect the perception of threat. Cues to action and modifying factors play a direct role in how an individual perceives a disease. In the context of this study, knowledge, awareness of antiretroviral therapy options, and past experiences with the disease play a direct role in perceiving HIV/AIDS to be a threat. This has not been thoroughly researched due to difficulty to conduct an explanatory study that would explain the importance of cues to action (Strecther & Rosenstock, 1997). This study focused mainly on certain aspects of the HBM; perceived susceptibility and severity, perceived threat and sexual behavior. The questions utilized in this study answered perceived susceptibility and severity. These questions, when aggregately scored, determined the perceived threat of respondents. This study attempted to ascertain the impact antiretroviral therapy has had on the perception of threat and subsequently the amount of sexually risk behaviors.

Significance of Study

With advances in HIV treatment and technology, individuals are living healthier and longer lives. The concern is directed towards the threat of HIV/AIDS and the impact treatment options, such as antiretroviral therapy and post exposure prophylaxis, have had on sexually high-risk behaviors. Increases in STD rates have provided evidence that many individuals are returning to the practice of unsafe sexual behaviors (CDC, 2003b & CDC, 2004b). Because HIV is a preventable disease, on-going preventative education is necessary, as well as education that corrects any misconceptions about treatment. Therefore, it is of importance to continue with research efforts to determine what impact treatment has had on the perception of threat of HIV. This study attempted to reveal differences in perceived threat of HIV due to the introduction of antiretroviral therapy between MSM and heterosexual males. This study also provided areas of concern that should be addressed in preventative educational messages.

Limitations

This study was limited:

1. To the honesty of respondents who completed the surveys.
2. To availability of resources.
3. By the number of surveys completed.

Delimitations

This study was delimited:

1. By geographic location of respondents who completed the surveys.
2. By not knowing the HIV status of respondents.
3. To the lack of pilot test.

4. To the lack of randomization of subjects.

Assumptions

It was assumed that:

1. Both groups were similar in characteristics such as race, age, education and lifestyle.
2. Respondents were honest in answering surveys.
3. Respondents are knowledgeable about antiretroviral therapy.
4. Respondents are aware of post exposure prophylaxis treatment.

Definitions of Terms

AIDS: Acquired Immunodeficiency Syndrome is an infectious disease characterized by failure of the immune system (Watstein & Chandler, 1998). The presence of HIV infections followed by one of the two: development of opportunistic infections or a CD4 count 200 or below (Mayo Clinic, 2004).

Antiretroviral Therapy: Reduces the replication rate of retroviruses and are widely used in treatment of HIV-infected persons (Watstein & Chandler, 1998).

CD4 Lymphocytes: White blood cells that coordinate the entire immune system (Mayo Clinic, 2004). White blood cells killed or disabled during HIV infection. Normally orchestrate the immune system response signaling other cells in the immune system to perform their special functions (Bellenir & Dresser, 1995).

HARRT: Highly Active Antiretroviral Therapy is the use of three or more antiretroviral drugs in a combination: this combination is suggested to be prescribed using two nucleosides combined with PI or two nucleosides with non-nucleoside reverse transcriptase inhibitors (CDC, 1998a).

HIV: Human Immunodeficiency Virus progressively destroys the body's ability to fight infections and certain cancers by killing cells of the immune system (Watstein & Chandler, 1998).

Insertive: When the penis is inserted into the anus of his partner, carries high-risk of HIV infection often causes small tears in the rectal tissue which infected semen can enter the bloodstream (Watstein & Chandler, 1998).

Lentivirus: Slow virus characterized by a long interval between infection and onset of symptoms (Bellenir & Dresser, 1995).

Opportunistic Infections: An infection that occurs when the immune system is impaired (Mayo Clinic, 2004). An illness caused by an organism that usually does not cause disease in a person with a normal immune system (Bellenir & Dresser, 1995).

Prophylaxis: Any intervention intended to preserve the health and prevent the initial occurrence of a disease (Watstein & Chandler, 1998).

Retrovirus: A virus that carries their genetic material in the form of RNA and that has the enzyme reverse transcriptase (Bellenir & Dresser, 1995).

Risk Behaviors: Condom use and the number of sex partners (CDC, 2000). Activities that may entail the risk of exposure to a pathogen or an injury (Watstein & Chandler, 1998)

Safer Sex: Consistent condom use during intercourse (CDC, 2004d)

Viral load: Quantity of free virus in plasma measured by the concentration of HIV RNA (Watstein & Chandler, 1998)

APPENDIX B

LITRERATURE REVIEW

Human Immunodeficiency Virus

Human Immunodeficiency Virus (HIV), identified in 1983, is a type of Retrovirus called lentivirus meaning "slow" thus explaining the ten year incubation period to the onset of AIDS (Bellenir & Dresser, 1995). A retrovirus is a virus that carries their genetic material in the form of RNA and that has the enzyme Reverse Transcriptase (RT) and can only replicate inside a host cell (Bellenir & Dresser, 1995). The RT enzyme is produced by retroviruses to allow them to convert RNA into DNA (Bellenir & Dresser, 1995). Human Immunodeficiency Virus targets cells that have docking molecules on their surfaces called Cluster Designation Four, as known as CD4 cells (Bellenir & Dresser, 1995). These cells are white blood cells that normally initiate immune responses; however, they are disabled and killed when an individual becomes infected with HIV (Bellenir & Dresser, 1995). The virus attaches and enters the CD4 cell inserting its genetic material to making copies of itself (Mayo Clinic, 2004). The new HIV cells break out and search for new CD4 cells (Mayo Clinic, 2004). Fewer than ten billion new particles are produced daily compared to the two billion CD4 cells produced by the body (Mayo Clinic, 2004). The destruction of CD4 cells interferes with the body's ability to fight other viruses and cancers that a healthy immune system could resist (Mayo Clinic, 2004). HIV can spread through sexual contact by vaginal fluid and semen, blood, syringes or needles, and breast milk of a nursing mother (Mayo Clinic, 2004).

Acquired Immunodeficiency Syndrome

Acquired Immunodeficiency Syndrome (AIDS) is the later stages of a HIV infection which develops when the immune system is severely damaged (Mayo Clinic,

2004). In 1993, the CDC defined AIDS by the presence of a HIV infection followed by the development of an opportunistic infection or CD4 lymphocyte count of 200 or less (Mayo Clinic, 2004). A healthy individual has between 600 to 1200 CD4 cells present in the body (Bellenir & Dresser, 1995; Mayo Clinic, 2004). An opportunistic infection occurs when the immune system is impaired by an illness caused by organisms that usually do not cause disease in a person with a normal immune system (Bellenir & Dresser, 1995; & Mayo Clinic, 2004). There are several types of opportunistic infections commonly associated with AIDS. These infections consist of bacterial, fungal, protozoan, and viral infections; as well as malignancies and neurological conditions.

There are three commonly known conditions that are prevalent in those living with AIDS: pneumocystis carinii pneumonia, Kaposi's sarcoma, and cytomegalovirus.

Pneumocystis carinii pneumonia (PCP) is an illness caused by fungus called pneumocystis carinii (CDC, 1999). Pneumocystis carinii pneumonia is the most common serious infection among people with AIDS in the United States (CDC, 1999). Pneumocystis carinii does not harm individuals with a healthy immune system, only those who suffer from severe damage to their immune system (CDC, 1999). Pneumocystis affects the lungs, causing a form of pneumonia; symptoms consist of difficulty breathing, fever, and a dry cough (The Body, 2005). Pneumocystis carinii pneumonia can be prevented; the best way to prevent PCP is to use strong antiviral therapy (The Body, 2005).

Kaposi sarcoma was first described in 1872, it is a rare cancer seen mostly in elderly men, organ transplant patients, or young adult African men (American Cancer

Society, 2005). In the last 20 years; however, the vast majority of Kaposi's sarcoma cases have been seen in individuals infected with AIDS, especially among homosexual men (American Cancer Society, 2005). This disease typically causes tumors that develop in the tissues below the skin surface or in the mucous membranes of the mouth, nose, or anus (American Cancer Society, 2005). The lesions appear as raised blotches that tend to be purple, brown, or red. Sometimes the disease causes painful swelling, especially in the legs, groin area, or skin around the eyes (American Cancer Society, 2005).

Cytomegalovirus (CMV), a member of the herpes virus group, is another commonly known opportunistic infection widely seen in patients with AIDS (CDC, 2005). This virus lies dormant within the body over a long period resides in cells without causing detectable damage or clinical illness (CDC, 2005). Severe impairment of the body's immune system by medication or disease consistently reactivates the virus from the latent or dormant state (CDC, 2005). Cytomegalovirus infection is sexually transmitted and can also be transmitted via breast milk, transplanted organs, and rarely from blood transfusions (CDC, 2005). Currently, no treatment exists for CMV infection in the healthy individual; there are treatments available for those who suffer from suppressed immune systems (CDC, 2005).

With more people living with AIDS, due to advances in treatment, AIDS is considered being classified as a chronic illness (Siegal, & Lekas, 2002). A chronic illness is typically defined as incurable with slow disease progression and symptom management rather than a cure (Siegal, & Lekas, 2002). Chronic illnesses can be characterized by periods of remission and reoccurrence (Siegal, & Lekas, 2002). Individuals that suffer from chronic illnesses also often bring about identity changes as

the patient attempts to integrate the illness into their life and self perception (Siegal, & Lekas, 2002). The HAART era has allowed individuals living with AIDS to see themselves as a person living with a chronic illness rather than dying from a terminal disease (Siegal, & Lekas, 2002). Highly Active Antiretroviral Therapy has slowed the progression of the disease from HIV to AIDS and made it possible to reduce viral loads to undetectable levels, with continuation of treatment (Siegal, & Lekas, 2002).

Highly Active Antiretroviral Therapy

The introduction of Highly Active Antiretroviral Therapy (HAART) has changed the view of AIDS clinically, lowering death rates and increasing prevalence rates. Antiretroviral therapy is medication that interferes with the replication of retroviruses; it has helped improve the quality and length of life of HIV infected individuals (National Institute of Health, 2004). The purpose of antiretroviral therapy is to suppress the viral load of HIV present in the blood to undetectable levels, maintain immune function, prolong life, and increase quality of life (CDC, 1998a). There are currently twenty drugs available and approved for treating infected individuals. These drugs are placed into three categories of antiretroviral drugs known as Reverse transcriptase inhibitors (RTI), proteases inhibitors, and fusion inhibitors (National Institute of Allergy and Infectious Disease, 2003). Reverse transcriptase inhibitors interfere with the enzyme that HIV needs to make copies of itself (NIAID, 2003). There are two classes of RTI: nucleoside/nucleotide drugs develop faulty DNA building blocks halting the virus from replicating copies of itself and non-nucleoside RT inhibitors bind to the reverse transcriptase stopping the virus from making copies (NIAID, 2003). The protease inhibitor (PI) interferes with the protease enzyme that HIV uses to produce infectious

viral particles (NIAID, 2003). Fusion inhibitors are the newest class of antiretroviral drugs serving the purpose of stopping the fusion process to a host cell (NIAID, 2003).

Monotherapy, the use of one antiretroviral drug to treat HIV/AIDS individuals, is no longer recommended (CDC, 1998a). This type of therapy runs a great risk for developing drug resistance (CDC, 1998a). Currently, it is recommended to use three or more antiretroviral drug in a combination also known as HAART (CDC, 1998a). These combinations are suggest to be prescribed using two nucleosides combined with PI or two nucleosides with non-nucleoside reverse transcriptase inhibitors (CDC, 1998a). There are three factors that physicians consider before placing a patient on HAART: symptoms, viral load, and CD4 count (NIH, 2004). However, HAART should be initiated before individuals experience extensive immune system damage (CDC, 1998a). Significant indicators of how well treatment is working are a decrease in viral load to undetectable levels and stable CD4 counts (NIH, 2004). While an infected individual is on drug therapy, it is important to get viral load tests in the initial two to three weeks and three to four months afterwards (NIH, 2004). If viral loads are detectable after four to six months, this load represents a strong warning of drug resistance. It is important for individuals to adhere to treatment regimens daily, missed treatments could make treatment more difficult in the future (NIH, 2004).

Post Exposure Prophylaxis

Post exposure prophylaxis (PEP) is an antiretroviral treatment used to reduce chances of becoming infected with HIV (CDC, 1998b). Post exposure prophylaxes are prescribed to those who experience an accidental exposure to HIV (Braitsein, Chan, Beardsell, McLeod, Montaner, O'Shaughnessy, & Hogg, 2002). Prescriptions of two or

three drug therapy combinations are distributed according to risk (Braitstein et al, 2002). High risk exposures are those exposures when the source person is HIV positive or at high-risk of being infected and injury yields a high possibility of producing an infection; and moderate exposures are similar, however injury is less likely to produce an injury (Braitstein et al, 2002). Every individual seeking PEP treatment is giving a five day starter kit, up to seventy-two hours after exposure (Braitstein et al, 2002). During these five days, the physician assesses the situation to decide whether to prescribe another twenty-three days of drug therapy. This particular treatment option is not without risk (Braitstein et al, 2002). Potential risks include drug toxicity, reduced effectiveness of prevention measures, and antiretroviral resistant HIV strains; therefore, it is necessary to adhere to treatment regimens (CDC, 1998b).

Prevention

In 1998, the number of AIDS cases declined almost two-thirds from its record high in 1995 (Institute of Medicine, 2001). This decline can be attributed to advances in antiretroviral therapies and HIV prevention efforts carried out by governmental, nonprofit, and private agencies (Institute of Medicine, 2001). Most notable were prevention efforts that lead to behavioral changes among at-risk populations; despite these successes challenges still remain in prevention efforts (Institute of Medicine, 2001). Populations that were once in great need of prevention services are no longer the population in need. Women, heterosexual exposures, and black men who have sex with men are recently experiencing high rates of AIDS incident cases (Institute of Medicine, 2001). The Institute of Medicine created a review board to assess prevention practices in the United States in order to provide a new framework of prevention (Institute of

Medicine, 2001). The review board identified five major problems with current prevention efforts: 1) funding for prevention services are being awarded to states that have greater number of AIDS cases, 2) prevention efforts are not directed to HIV infected persons, 3) prevention research findings are not translated at the community level which hamper prevention programs, 4) there is a need for new prevention tools and technologies to aid in prevention efforts, and 5) social and political barriers remain a major issue in prevention strategies reaching its full potential (Institute of Medicine, 2001). In order to address these concerns, the Institute of Medicine review board suggested that the found problems with prevention strategies be corrected by developing an adequate surveillance system that goes beyond the twenty-five states with confidential reporting. Other recommendations of the IOM included redirecting funds according to cost-effectiveness rather than the number of AIDS cases, direct prevention to changing behaviors of those infected with HIV, translate findings from research for community organizations, and invest in new technologies to aid in prevention efforts (Institute of Medicine, 2001).

The Center for Disease Control and Prevention, in attempt to address issues of prevention, developed what they call Advancing HIV Prevention (CDC, 2004). This initiative "is aimed at reducing barriers to early diagnosis of HIV infection and increasing access to quality medical care, treatment, and ongoing prevention services for those diagnosed with HIV"; emphasizing the use of proven public health approaches in order to reduce the incidences and spread of disease (CDC, 2004a). These new efforts will include but not be limited to appropriate routine screening, identification of new cases, partner notification, and increased availability of sustained treatment as well as prevention services for those infected (CDC, 2004a).

The integration of prevention and clinical care has been identified as a key element of future prevention activities (Schreibman, & Friedland, 2003). The clinical care setting provides an opportunity to create a foundation for prevention related activities by providing counseling services in an effort to know patients' sexual behavior practices, the number of sexual partners and discuss safer sex (Margolis, Wolitski, Parsons, & Gomez, 2001; Schreibman, & Friedland, 2003). Although physicians feel that disease prevention and health promotion are part of their job, a recent study revealed that physicians are not discussing safer sex practices with HIV infected patients (Margolis et al, 2001). Out of 250 men, one in four stated that their physicians did not discuss condom use or other safer sex practices with them (Margolis et al, 2001). Findings from studies suggest that behavioral intervention at the clinical setting have been successful in reducing unprotected sex encounters, and patients were more likely to use condoms consistently (Schreibman, & Friedland, 2003). Schreibman and Friedland (2003) note that physicians may not be discussing safer sex practices with patients because of lack of training, inadequate knowledge of sex and drug related behaviors, and poor discussion skills (Schreibman, & Friedland, 2003). Suggestions for prevention messages at the clinical level are that prevention messages need to be tailored to progression of disease state, due to the fact that behaviors may change over time according to the disease and social situations (Schreibman, & Friedland, 2003).

Another issue with prevention is the use of HAART and PEP medical intervention. Concerns have risen that offering treatment to individuals will lead to increases in sexual risk behaviors (Waldo, Stall, & Coates, 2000). A recent study sought to determine the effects of knowledge of the availability of PEP will have on gay men in

San Francisco (Waldo, Stall, & Coates, 2000). They surveyed men before and after a major outreach campaign to make PEP availability more knowledgeable in the San Francisco area (Waldo, Stall, & Coates, 2000). Findings from this study indicated that those surveyed after the campaign were more likely to engage in unsafe sexual practices; however, findings were statistically insignificant when known and unknown HIV status were tested separately (Waldo, Stall, & Coates, 2000). This study revealed that knowledge has little to due with the decision to engage in risky sexual behaviors; however, knowledge did indicate that individuals worry less about condom failure (Waldo, Stall, & Coates, 2000). This indicated that PEP may be viewed as more of a safety net than a prevention method (Waldo, Stall, & Coates, 2000). A study analyzing the cost effectiveness of PEP following sexual exposure found that offering PEP to high risk individuals is a cost effective measure (Pinkerston, Holtgrave, & Bloom, 1998; Low-Beer, Weber, Bartholomew, Landolt, Oram, Montaner, O'Shaughnessy & Hogg, 2000). The use of PEP outside of occupational exposures has not be substantiated, however its great success in these environments have eluded to possible success in non-occupational encounters; further research is needed within this area (Waldo, Stall, & Coates, 2000; Fournier, Maillard, & Molina, 2001; Laurence, 1999;& Braitstein, Chan, Beardsell, McLeod, Montaner, O'Shaughnessy, & Hogg, 2002).

AIDS Service Organizations

Declines in AIDS deaths can also be attributed to prevention efforts carried out by AIDS service organizations. Majority of these organizations were developed in the beginning of the AIDS epidemic and were solely dedicated to preventing HIV transmission.

The Stop AIDS project was established in 1985 in San Francisco is recognized internationally as a successful model of grassroots (Stop AIDS Project, 2004). The mission of the Stop AIDS project is to prevent HIV transmission among gay and bisexual men (Stop AIDS Project, 2004). Efforts have brought gay men together to discuss challenges and issues of HIV/AIDS prevention (Stop AIDS Project, 2004). The Stop AIDS project provides several general AIDS prevention programs as well as specifically designed programs to population needs, age, and race (Stop AIDS Project, 2004).

The Gay Men Health Crisis is a non-profit, volunteer supported organization committed to the fight against AIDS (Gay Men Health Crisis, 2004). The mission is to reduce the spread of HIV, help people with HIV maintain and improve their health, as well as working to keep HIV an urgency at the national and local levels (Gay Men Health Crisis, 2004). Gay Men Health Crisis advocates aggressively at the state, federal and local levels for fair and effective HIV and AIDS related policies (Gay Men Health Crisis, 2004). The Gay Men Health Crisis offers an array of program and services every year to the general population regardless of HIV status, sexual orientation or gender (Gay Men Health Crisis, 2004).

AID Atlanta, founded in 1982, is largest AIDS services organization in the southeast (AID Atlanta, 2004). AID Atlanta has grown to be the leader in the fight against AIDS in Atlanta (AID Atlanta, 2004). Initially, the objective of this organization was to educate physicians and other health care workers about the disease (AID Atlanta, 2004). Later the organization redirected its attention to support services for people diagnosed with AIDS and AIDS education (AID Atlanta, 2004). AID Atlanta works with other agencies in areas of fundraising, development, advocacy, education, and

delivery of client services (AID Atlanta, 2004). AID Atlanta also provides education regardless of HIV status; efforts are concentrated on awareness, education and behavior change as well as diagnosis, access to treatment, and ongoing prevention services (AID Atlanta, 2004).

AIDS Survival was developed in 1986 by a group of individuals living with AIDS (AIDS Survival, 2004). They first met to discuss the availability of programs geared for individuals already infected by HIV and living with AIDS (AIDS Survival, 2004). This organization differs from other organizations because efforts go beyond client services placing high priority on advocating for human rights and fair treatment from all people living with HIV/AIDS (AIDS Survival, 2004). The mission statement of AIDS Survival is built upon self empowerment to provide support and information to make well informed choices (AIDS Survival, 2004). AIDS Survival's motto is the well known saying, "give someone a fish and they will eat for a day. Teach someone to fish and they will eat for a lifetime (AIDS Survival, 2004)."

Perceived Risk of HIV Infection

The advances in treatment have led to an indication that a relapse in sexually risky behaviors will resurface. There have been investigations to determine whether treatment has had an effect on individuals' perception toward safer sex. These studies have produced controversial findings, while some research supports speculations, others disprove speculations of treatment having an effect on safer sex practices. Men who have sex with men have been found to be more likely to have unprotected sex and practice other sexually risky behaviors (Elford, Bolding, Maguire, & Sherr, 200). Increases in STDs, such as gonorrhea, have supported the idea of increases in unprotected

intercourse and sexual practices among MSM (Do, Hanson, Dworkin, & Jones, 2001). Currently, no association of in increases of Gonorrhea and availability of HAART has been found (Do, Hanson, Dworkin, & Jones, 2001). However, among HIV infected individuals sexual behaviors may be associated with stage of disease or severity of the disease (Do, Hanson, Dworkin, & Jones, 2001). Human Immunodeficiency Virus infected MSM have been found to engage in unprotected insertive intercourse, and HIV negative MSM are more willing to engage in unprotected anal intercourse as well as more willing to take risk (Do, Hanson, Dworkin, & Jones, 2001; Van Der Straten, Gomez, Saul, Quan, & Padian, 2000). Recent studies have revealed that the majority of those infected with HIV; MSM and heterosexuals are not concerned with transmission risk despite undetectable viral loads, however, few are willing to take chances of getting infected (Do, Hanson, Dworkin, & Jones, 2001; Van Der Straten, Gomez, Saul, Quan, & Padian, 2000; Kalichman, Rompa, Austin, James, Webster, & Difonzo, 2001). Although HIV positive individuals are reporting having unprotected intercourse more frequently, these encounters have been noted most likely to occur with steady partners and less frequently with causal partners (Do, Hanson, Dworkin, & Jones, 2001; Van Der Straten, Gomez, Saul, Quan, & Padian, 2000; Kalichman, Rompa, Austin, James, Webster, & Difonzo, 2001; & Elford, Bolding, Magurie, & Sherr, 1999). More common is the idea of serodiscordant partnerships (Van der Straten, Gomez, Saul, Quan, & Padian, 2000). Serodiscordant partners are the involvement of HIV positive individual is in a relationship with a HIV negative person or status is unknown (Van der Straten et al, 2000). Research is indicating that these relationships may be differentially influenced by the new medical advances; research is needed that compares the sexual behaviors of HIV

negative and HIV positive persons (Hays, Paul, Ekstrand, Kegeles, Stall, & Coates, 1997; Van der Straten et al, 2000). Finding from Ostow et al (2002) indicated that condom use 'fatigue' and 'burnout' is more pronounced among seropositive men and their partners when compared to HIV negative men and is the key factor in the decision to engage in risky behaviors (Ostow et al, 2002).

A new phenomenon that is being promoted here in the United States is the idea of negotiated safety first seen in European countries (Elford, Bolding, Graham, Maguire, & Sherr, 2001). Negotiated safety requires both partners to be confident they are HIV negative, and that they both comply with their agreement only to have unprotected intercourse with each other; it has been proven effective (Elford et al, 2001). This idea is being promoted in prevention education efforts by the CDC in several programs (CDC, 2004). Negotiated safety takes into account the insertive partner's viral load when deciding whether or not to use condoms during receptive intercourse (Ostow et al, 2002).

Future Suggestions

Prevention programs need to incorporate the community into the decision making process and HIV prevention activities need to be surrounded more around the personal compelling needs of the population (Kegeles, S, Hayes, R., & Coates, T., 1996). Majority of those who are HIV infected report regular partners and the partner knew of their HIV status; this suggests that serodiscordance is a commonality in sexual relationships of gay men (Strathdee, Martindale, Cornelisse, Miller, Craib, Schechter, O'Schechter, & Hogg, 2000). Intervention programs need to direct attention to safer sex within relationships and gain an understanding of the group differences when designing programs that address HIV prevention efforts (Stokes, Vanable, & McKian, 1997).

Further research is needed in order to understand how improved treatments are influencing attitudes and behaviors (Demmer, 2002). The rate of demand for antiretroviral combination therapy and the proportion of requests due to high-risk sexual behaviors also need to be examined in future research (CDC, 1998b). On-going research is still needed in order to understand how improved treatments are influencing attitudes and behaviors (Demmer, 2002).

APPENDIX C

SETTING OF STUDY, RESEARCH DESIGN, RESEACH QUESTIONS, SCORING PROCEDURES, INFORMED CONSENT FORM, QUESTIONNAIRE AND PARTICIPANTS REPONSES TO PRECEIVED THREAT QUESTIONS

Setting of study

Participants in this study were students at private and public colleges and universities in the state of Georgia.

Research Design

This research employed a quantitative, cross-sectional design study. This study utilized a comparative explanatory format to describe and compare differences in perceived threat of HIV/AIDS between men who have sex with men (case group) and heterosexual males (control group). Participants responded to self-report behavioral questions and attitudinal questions. Advantages inherent to this study design include the ability to obtain data from a large number of participants in a relatively short period of time, collect data on attitudes and behaviors, and generate hypotheses for future research (Altman, 1991). Disadvantages to this study design are that the researcher will not be able to measure change or establish cause and effect, and a low response rate or non-response (Altman, 1991).

Table 6. Description of Statistical Testing for Research Questions

Research Question	Variables	Variable Type	Statistical Test Employed	Justification of Statistics
Is there a difference in the perceived threat of HIV between MSM and heterosexual males?	Perceived threat of HIV for MSM and heterosexual males	Continuous & Categorical	T-Test	Compare means of different groups and to determine differences between groups
Is there a difference in risk behaviors between MSM and heterosexual males?	Risk behaviors of MSM and heterosexual males	Categorical	T-Test Chi-Square Odds Ratio	Determine any associations between variables & quantify those associations
Is there a correlation between perceived threat of HIV and risk behaviors among MSM and heterosexual males?	Perceived threat and risk behaviors scores	Continuous	Pearson Correlation	Show a relationship and an association between two variables

Scoring Procedures

A Likert scale was utilized to measure perceived threat. Guidelines for scoring, setting range, and interpreting results of the Likert scale were followed using methods proposed by Dignan (1995), Harvey (1998) and Isaac and Michael (1990). Dignan describes the ultimate goal of Likert scales is to calculate a total score (1995). According to Harvey (1998), Likert scale total scores are best interpreted using interquartile range, dividing the total data set into four equal sections. The four sections are roughly equivalent of the four data points in a Likert scale (strongly agree, agree, disagree, and strongly disagree). The middle data point (undecided or no opinion) is eliminated mathematically (Isaac & Michael, 1990). Unfavorable attitudinal statements are reverse scored (Neutens $ Rubinson, 2002). The higher the total number, the more favorable the opinion of the participant (McDermott & Sarvela, 1999).

Following the guidelines listed above, the scoring and range for measuring perceived threat in the study was as follows. Total possible scoring for this study was 0-88 for perceived threat level. To obtain this range, questions designated for perceived threat, 1-22, were multiplied by five (strongly agree) which was the highest possible score for each individual question. The lowest possible score was 22 questions multiplied by one (strongly disagree). This would give you a total range of 110 (5 x 22) to 22 (1 x 22). From this range of total possible score, 22 was subtracted (to eliminate scoring for middle data point) leaving the data range will be 0-88. To create equal quartiles the range was divided by four, creating equal intervals of 22: high perceived threat (0-22), moderate to high perceived threat (23-44), moderate to low perceived threat

(45-66), and low perceived threat (67-88) Before scoring each survey, questions 4, 7, 9, 10, 15, 16, 17 and 19 were reversed scored.

There were a total of eight sexually risky behavior questions yielding a total possible number of eight risky behaviors; therefore, risky behaviors were totaled with a range of zero to eight (0=no report of risk behaviors to 8= report of participating in all of the listed risk behaviors).

Informed Consent Form

COLLEGE OF HEALTH AND HUMAN SCIENCES

JIANN-PING HSU SCHOOL OF PUBLIC HEALTH

February 18, 2005

Dear Participants:

My name is Traci Cleveland and I am a Georgia Southern University graduate student in the Jiann-Ping Hsu School of Public Health. To meet thesis requirements for my Master's Degree, I am currently conducting a research study entitled "Perceived Threat of HIV/AIDS between Men who have Sex with Men and Heterosexual Males." The purpose of this study is to compare the perceived threat of HIV/AIDS between men who have sex with men and heterosexual males. The benefits of this study to the participants and society include a more comprehensive understanding of how individuals perceive the threat of HIV/AIDS in the medical era of effective drug therapy (i.e. Highly Active Antiretroviral Therapy, HAART). Participation in this research will include completion of the attached survey. If at any time you feel uncomfortable in completing this survey and do not wish to have your survey included in the study, you may withdraw at anytime. This self-report survey should take no longer than 15 minutes to complete.

Responses to the survey questions are completely anonymous. If you have questions about this study, please contact the researcher or the researcher's faculty advisor, whose contact information is located at the end of the consent. For questions concerning your rights as a research participant, contact Georgia Southern University Office of Research Services and Sponsored Programs at 912-486-7758. There will be no compensation given for being part of this study. This study is completely voluntary; you do not have to participate in this research. If you wish not to be part of this study, do not answer the survey and return it to the facilitator. You do not have to answer any questions if you do not want to. There is no penalty for deciding not to be part of this study. You must be at least 18 years of age to participate in this study. When you have completed the survey, put the survey in the envelope provided.

Completion and return of the survey implies that you agree to participate and your data may be used in this research.

You will be given a copy of this consent form to keep for your records.

Title of Project: Perceived Threat of HIV/AIDS between Men who have Sex with Men and Heterosexual Males.
Principal Investigator: Traci Cleveland, 2419 Oak Grove Rd, Gainesville, GA 30507, 678-548-2703
Faculty Advisor: Helen M. Graf, PhD., P.O. Box 8076, Statesboro, GA 30460, 912-681-5137

Research
Questionnaire

The purpose of this study is to investigate the impact that antiretroviral drug therapy has had on the perceived seriousness of HIV/AIDS. Participation in this study is completely voluntary and you may withdraw at anytime. Completion of this self-report survey should take no longer than 15 minutes. Replying to the questions will be considered permission to use your responses in this study. Responses are anonymous and confidential. If you have any questions regarding this study, please feel free to call me, Traci Cleveland, at (678) 548-2703. If you have any questions or concerns about your rights as a research participant in this study, they should be directed to the IRB coordinator at the Office of Research Services and Sponsored Programs at (912) 486-7758.

Directions: Read each question and circle the response that best applies to you. PLEASE ANSWER EACH QUESTION HONESTLY AND COMPLETELY.

For the purpose of the following questions, safer sex is defined as the use of barrier protective devices that include the use of male and female condoms.

The following questions utilize the ranking system below:

Strongly Agree = 5 Agree = 4 Don't Know = 3 Disagree = 2 Strongly Disagree = 1

1.	AIDS is now very nearly cured.	5	4	3	2	1
2.	AIDS is a less serious threat than it used to be.	5	4	3	2	1
3.	Since there are better treatments for HIV, being HIV-positive isn't that big of a deal.	5	4	3	2	1
4.	Safer sex is as important now as ever.	5	4	3	2	1
5.	New medical treatments for HIV/AIDS make safer sex less important than it was.	5	4	3	2	1
6.	If someone is HIV positive, but taking new medications that reduces the amount of virus in the body, safer sex isn't important.	5	4	3	2	1
7.	I am just as likely to practice safer sex as I always was.	5	4	3	2	1
8.	I practice safer sex less often since new medical treatments for HIV/AIDS came along.	5	4	3	2	1
9.	If a cure for AIDS was announced, I would stop practicing safer sex.	5	4	3	2	1
10.	lf a cure for AIDS was announced, I would still practice safer sex.	5	4	3	2	1

PLEASE TURN TO THE NEXT PAGE

Strongly Agree = 5	Agree = 4	Don't Know = 3	Disagree = 2	Strongly Disagree = 1

12.	I am less likely than most people to get AIDS.	5	4	3	2	1
13.	I am not too concerned about being infected with HIV, the new treatments make HIV a manageable disease.	5	4	3	2	1
14.	If I am exposed to HIV, I can take the new drugs that will prevent me from becoming infected.	5	4	3	2	1
15.	I will use post exposure drug treatment if I engage in unprotected sex with someone who is infected with HIV.	5	4	3	2	1
16.	If a HIV infected person who is taking medications has unprotected sex (sex without a condom) with an uninfected person, they will not get HIV.	5	4	3	2	1
17.	Sex with someone who has HIV/AIDS and is on the new antiviral drugs is safer than with someone who is not on the drugs.	5	4	3	2	1
18.	I am not worried about getting AIDS.	5	4	3	2	1
19.	Using a condom during sex can lower the risk of getting AIDS.	5	4	3	2	1

Questions 20, 21, & 22 pertain to the following statement.

Because of new treatments for HIV positive people...

20.	I am much less concerned about becoming HIV positive.	5	4	3	2	1
21.	I am more willing to take a chance of getting infected when I have sex.	5	4	3	2	1
22.	I am less likely to get infected from someone on the new treatments than from someone who is not.	5	4	3	2	1

PLEASE TURN TO THE NEXT PAGE

Read each question and circle the response that best applies to you.

For the purpose of the following questions, sex is considered to be anal intercourse, oral sex and vaginal intercourse.

23.	Are you currently sexually active?	Yes	No	Don't know
24.	Have you ever had sexual intercourse (anal or vaginal intercourse)?	Yes	No	Don't know
25.	How many sexual partners have you had in the last 3 months?_____			
26.	Did you use a condom the last time you had sexual intercourse?	Yes	No	Don't know
27.	Do you use condoms with your primary partner?	Yes	No	Don't know
28.	Do you use condoms with those other than your primary partner?	Yes	No	Don't know
29.	I know the HIV status of my primary partner?	Yes	No	Don't know
30.	I know the HIV status of my non-primary partner(s)?	Yes	No	Don't know

DEMOGRAPHICS

31. Age:_____

32. Sexual Orientation:
0 Heterosexual
0 Bisexual
0 Gay

33. Race:
0 African American/Black
0 Caucasian/White
0 Asian/Pacific Islander
0 Native American/ Native Alaskan
0 Other _____

STOP HERE AND TURN IN SURVEY

Participant Responses to Perceived Threat Questions

Table 7. MSM and Heterosexuals Responses to Questions Used to Measure Perceived Threat of HIV/AIDS

	Strongly Agree n (%)	Agree n (%)	Don't Know n (%)	Disagree n (%)	Strongly Disagree n (%)
Q1					
MSM	4 (7.7)	6 (11.5)	14 (26.9)	12 (23.1)	16 (30.8)
Heterosexuals	1 (1.0)	6 (6.3)	18 (18.3)	31 (32.3)	40 (41.7)
Q2					
MSM	2 (3.8)	12 (23.1)	5 (9.6)	11 (21.2)	22 (42.3)
Heterosexuals	1 (1.0)	12 (15.5)	7 (7.3)	28 (29.2)	48 (50.0)
Q3					
MSM	0 (0.00)	7 (13.5)	2 (3.8)	17 (32.7)	25 (48.1)
Heterosexuals	0 (0.00)	6 (6.3)	8 (8.3)	31 (32.3)	51 (53.1)
Q4					
MSM	15 (28.8)	7 (13.5)	2 (3.8)	17 (32.7)	25 (48.1)
Heterosexuals	20 (20.8)	8 (8.3)	2 (2.2)	27 (28.1)	39 (40.6)
Q5					
MSM	0 (0.00)	6 (11.5)	3 (5.8)	14 (26.9)	28 (53.8)
Heterosexuals	0 (0.00)	1 (1.0)	6 (6.3)	51 (53.1)	37 (38.5)
Q6					
MSM	1 (1.9)	2 (3.8)	4 (7.7)	15 (28.8)	30 (57.7)
Heterosexuals	0 (0.0%)	2 (2.1%)	10 (10.4%)	35 (36.5%)	36 (37.5%)
Q7					
MSM	11 (21.2)	1 (1.9)	4 (7.7)	15 (28.8)	21 (40.4)
Heterosexuals	12 (12.5)	5 (5.2)	7 (7.3)	35 (36.5)	36 (37.5)
Q8					
MSM	0 (0.00)	4 (7.7)	2 (3.8)	17 (32.7)	29 (55.8)
Heterosexuals	0 (0.00)	1 (1.0)	4 (4.2)	43 (44.8)	47 (49.0)
Q9					
MSM	6 (11.5)	4 (7.7)	11 (21.2)	10 (19.2)	21 (40.4)
Heterosexuals	1 (1.0%)	6 (6.3)	10 (10.4)	38 (39.6)	41 (42.7)
Q10					
MSM	11 (21.2)	6 (11.5)	12 (23.1)	13 (25.0)	9 (17.3)
Heterosexuals	14 (14.6)	7 (7.3)	13 (13.5)	32 (33.3)	30 (31.3)
Q11					
MSM	9 (17.3)	10 (19.2)	8 (15.4)	8 (15.4)	16 (30.8)
Heterosexuals	10 (10.4)	16 (16.7)	6 (6.3)	19 (19.8)	45 (46.9)
Q12					
MSM	17 (32.7)	10 (19.2)	8 (15.4)	9 (17.3)	7 (13.5)
Heterosexuals	27 (28.1)	18 (18.8)	16 (16.7)	22 (22.9)	11 (11.5)
Q13					
MSM	0 (0.0)	7 (13.5)	5 (9.6)	22 (42.3)	17 (32.7)
Heterosexuals	3 (3.1)	10 (10.4)	8 (8.3)	37 (38.5)	38 (39.6)

Table 7(cont.) MSM and Heterosexuals Responses to Questions Used to Measure Perceived Threat of HIV/AIDS

	Strongly Agree n (%)	Agree n (%)	Don't Know n (%)	Disagree n (%)	Strongly Disagree n (%)
Q14					
MSM	0 (0.00)	6 (11.5)	17 (32.7)	13 (25.0)	15 (28.8)
Heterosexuals	2 (2.1)	10 (10.4)	35 (36.5)	20 (20.8)	29 (30.2)
Q15					
MSM	16 (30.8)	7 (13.5)	11 (21.2)	13 (25.0)	4 (7.7)
Heterosexuals	26 (27.1)	15 (15.6)	26 (27.1)	18 (18.8)	9 (9.4)
Q16					
MSM	13 (25.0)	15 (28.8)	9 (17.3)	4 (7.7)	10 (19.2)
Heterosexuals	29 (30.2)	29 (30.2)	17 (17.7)	12 (12.5)	9 (9.4)
Q17					
MSM	9 (17.3)	17 (32.7)	6 (11.5)	9 (17.3)	10 (19.2)
Heterosexuals	20 (20.8)	23 (24.0)	31 (32.3)	15 (15.6)	7 (7.3)
Q18					
MSM	12 (23.1)	13 (25.0)	3 (5.8)	15 (28.8)	8 (15.4)
Heterosexuals	28 (29.2)	13 (13.5)	4 (4.2)	25 (26.0)	26 (27.1)
Q19					
MSM	6 (11.54)	4 (7.7)	3 (5.8)	12 (23.1)	26 (50.0)
Heterosexuals	8 (8.3)	11 (11.5)	3 (3.1)	19 (19.8)	55 (57.3)
Q20					
MSM	0 (0.0)	6 (11.5)	3 (5.8)	21 (41.4)	21 (40.4)
Heterosexuals	1 (1.0)	10 (10.4)	3 (3.1)	38 (39.6)	44 (45.8)
Q21					
MSM	0 (0.0)	6 (11.5)	3 (5.8)	18 (34.6)	24 (46.2)
Heterosexuals	1 (1.0)	5 (5.2)	7 (7.3)	31 (32.3)	52 (54.2)
Q22					
MSM	2 (3.8)	7 (13.5)	7 (13.5)	14 (26.9)	21 (40.4)
Heterosexuals	0 (0.0)	6 (6.3)	29 (30.2)	28 (29.2)	3 (34.4)

APPENDIX D

TIME SCHEDULE OF STUDY

Time Schedule

Complete Revision of Thesis Proposal	September-November 2004
Final Proposal Defense	November 2004
Submit DIRB Forms	February 2005
Data Collection	March-April 2005
Data Analysis	May – August 2005
Submit Draft of Thesis to Director	February 2006
Defense of Thesis	March 2006
Submit Final Thesis to Dean	July 2006

APPENDIX F

BIOGRAPHICAL SUMMARY

Graduate School
Georgia Southern University

Traci Laquey Cleveland Date of Birth: January 23, 1980

2419 Oak Grove Road, Gainesville, GA 30507

Georgia Southern University 1998-2003
Bachelor of Science in Health Science

Thesis Title:

The Perceived Threat of HIV/AIDS between Men who Have Sex with Men and Heterosexual Males

Major Professor: Helen M. Graf, Ph.D