# HIV/AIDS-RELATED KNOWLEDGE, ATTITUDES, AND BEHAVIORS OF GRADUATE UNIVERSITY STUDENTS: A COMPARATIVE ANALYSIS

## A DISSERTATION

# SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

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## TEXAS WOMAN'S UNIVERSITY

# COLLEGE OF HEALTH SCIENCES

BY

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To the Associate Vice President for Research and Dean of the Graduate School:

I am submitting herewith a dissertation written by Robert A. Ibironke entitled "HIV/AIDS-Related Knowledge, Attitudes, and Behavior of Graduate University Students: A Comparative Analysis." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Ph.D., with a major in Health Education.

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## DEDICATION

This dissertation is dedicated to the memory of my late beloved sister, Mrs. Julianah Olaleye, and her late husband, Mr. Titus Olaleye, for inspiring me in a lifelong love of learning, ambition to excel, untiring determination, and a spirit of adventure. I am a better person as a result of their influence. A special dedication to my mother, Felicia Moradeun Ibironke, and her late brother, Samuel Aladegba, for their unconditional love and prayers. My mother taught me values and appreciation of life, humor, and nature. A special dedication to my wife, Elizabeth Felorunsho Ibironke, and my daughter, Caroline Adeyinka Ibironke, for their love, patience, understanding, encouragement, and untiring efforts in the task of preparing mailing lists for the research project. Without their assistance, the research could not have been completed as scheduled.

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#### Abstract

## COMPLETED RESEARCH IN HEALTH SCIENCES Texas Woman's University, Denton, Texas

## Ibironke, R. <u>HIV/AIDS-Related Knowledge, Attitudes, and Behaviors of</u> <u>Graduate University Students: A Comparative Analysis</u>. PhD in Health Education, 1994, 107 pp. (W. Cissell)

The purpose of this study was to measure graduate female students' HIV/AIDSrelated knowledge, attitudes, and behaviors and to compare these measures with undergraduate female students' knowledge, attitudes, and behaviors to determine if there were differences or ascertain whether relationships existed among these variables. This study also was to determine whether there were any correlations between graduate female students' HIV/AIDS-related knowledge, attitudes, and behaviors and their demographic characteristics (age, educational level, marital status, and ethnicity); to determine whether personal experiences with HIV/AIDSimpacted individuals or sources of information had any influence on graduate female students' knowledge, attitudes, and behaviors toward HIV/AIDS. The sample in this study consisted of 102 randomly selected graduate female students from Texas Woman's University in Denton, Texas. Data previously collected from a random sample of undergraduate female students in the Spring of 1992 at Texas Woman's University were compared with that gathered in this study. The students voluntarily completed a mailed, 88-item, anonymous HIV/AIDS Awareness

Questionnaire. The results of the data analyses were tested at .05, .017, and .01 levels of significance, using three 1-sample <u>t</u>-tests, Pearson Product Moment correlations, and Point-Biserial correlation coefficient (rpb). The study findings indicated that undergraduate female students were significantly more knowledgeable than graduate female students. No such significance was found between these two groups in regard to their attitudes or behaviors. The Pearson Product Moment correlation test revealed that no significant interrelationship existed between knowledge, attitudes, and behaviors related to HIV/AIDS. To determine whether there were any relationships among age, marital status, educational level, and ethnicity and knowledge, attitudes, and behaviors, the Point-Biserial correlation coefficient (rpb) test identified five significant relationships: between age and knowledge, between educational level and knowledge, between marital status and knowledge, between marital status and behavior, and between ethnicity and behavior. A Point-Biserial correlation test also revealed that no significant relationship was found between graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors and their personal experiences with HIV/AIDS-impacted individuals. Further, a Point-Biserial correlation test revealed in this study that the graduate female students did indicate that having a doctor/health education and exposure to other information had a significant influence on their knowledge, but did not have any influence on their behavior as it relates to HIV/AIDS.

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## CHAPTER I

#### INTRODUCTION

The rates of sexually transmitted diseases among American college and university students signify their vulnerability to infection with the Human Immunodeficiency Virus (HIV), the cause of Acquired Immunodeficiency Syndrome (AIDS). AIDS is the final stage of an infection caused by HIV. AIDS is an infectious disease. It cannot be spread by common, everyday contact nor is it spread through insect bites or by sharing an infected person's eating or drinking utensils. It is spread through the sharing of intravenous (I.V.) drug needles and syringes used for illicit drugs, as well as through certain sexual activities (practices) (Koop, 1986).

The primary means of transmission is through unprotected sexual intercourse. Another mode of transmission involves the passing of HIV from an infected mother to infant during pregnancy across the placenta. Once infected with HIV, an HIV-infected person may feel and look healthy and have no symptoms for years. But during this time, the virus can be passed to others through direct blood contact with an infected person's blood, semen or vaginal fluids, and blood products. HIV cripples the body's ability to fight off infection, allowing opportunistic diseases such as Kaposi's Sarcoma, pneumocystis Carinii,

and other infections to develop (Beste & Hummer, 1986). The AIDS virus itself has not, until recently, been considered a direct cause of death. However, central nervous system encephalopathy, causing dementia and progressive loss of motor control has been shown to be a direct result of the pathogenesis caused by HIV (Beste & Hummer, 1986).

The signs and symptoms of this infection include rapid weight loss for no apparent reason, profound and unexplained fatigue, recurring fever or night sweats, persistent diarrhea, persistent dry cough or shortness of breath, loss of appetite, swollen lymph glands in the armpits, groin or neck pain, memory loss, depression and other neurological disorders, and white spots or unusual blemishes on the tongue, in the mouth, or in the throat (Koop, 1986). HIV attacks a type of white blood cell called the T-cell, which is a vital part of the body's immune system. The virus infects the T-cells, multiplies inside them, and eventually destroys them.

The frequency of infection by Human Immunodeficiency Virus (HIV) is believed to be escalating; but because of the lack of sufficient surveillance data, the estimates of people with HIV infection are controversial at best. The Center for Disease Control (CDC) estimates that by 1993 the number of Americans testing seropositive for HIV will exceed three million (Allen & Curran, 1988). HIV has had a major impact on morbidity and mortality among young women. By 1987, AIDS had become the eighth leading cause of death among women of reproductive age (15 to 44 years of age) in the United States (Ellerbrock, Bush, Chamberland, & Oxtoby, 1991).

Understanding the epidemiology of HIV infection and AIDS in women is essential for developing better public health strategies and to allocate resources more effectively to prevent the spread of HIV to women and children (Ellerbrock et al., 1991).

Currently, three specific groups of people are identified as having a higher risk for the transmission of HIV because of their involvement in high-risk behaviors. It is no coincidence that these three populations also have the largest number of reported AIDS cases in the United States. They include: (a) men who have sex with men, previously referred to in the literature as gay and bisexual men, (b) intravenous drug users (IVDU) or those who share injectables, and (c) the heterosexual partners of either of the first two groups. The Center for Disease Control (CDC) has determined that these three groups are at "recognized risk" for the transmission of HIV (Center for Disease Control [CDC], 1989a). Twenty-seven percent of the AIDS cases have been diagnosed among heterosexual males and females. Five percent of these heterosexuals contracted AIDS through sex; whereas, 22% acquired the disease through intravenous drug use (Center for Disease Control, 1990a).

There are, however, several other groups, because of their behaviors, that have a greater risk for acquiring HIV. College students are one of those populations (Thurman & Franklin, 1990). College students have been singled out as a group for potentially having an increased risk of HIV infection, not simply because of the fact that they are in college, but because of the behavior patterns common to this age group. In general, college students have a belief in personal immortality; consequently, behaviors which later in life may lead to disease and disability are viewed with skepticism. Also, the pattern of immediate latency can cause many college students to mistakenly believe that they are immune to HIV (U.S. Department of Health and Human Services [U.S. DHHS], 1991).

College students also have a tendency to experiment with behaviors which may compromise their ability to make sound decisions. Illicit drug use and alcohol abuse may increase the potential for indiscriminate sexual behavior and, in turn, increase the risk of acquiring HIV (Haven & Stolz, 1989).

While students generally tend to have had slightly positive attitude changes concerning persons with HIV/AIDS, there has been very little behavior modification to decrease students' risk of HIV infection (Allard, 1989).

Despite the enormity of the problems associated with HIV infection and AIDS, medical researchers have yet to find highly effective treatments or a cure. In the absence of a vaccine or other medical intervention, the experts acknowledge that individual preventive behavior is the major resource to combat

the prevalence of HIV and AIDS. However, little research has been conducted on behavioral, educational, attitudinal, knowledge, and demographic factors associated with the spread of this disease. As a result, there is minimal understanding of mechanisms which may contribute to individual action aimed at preventing infection. Therefore, the purpose of this study was to assess and measure the HIV/AIDS related knowledge, attitudes, and behaviors of students attending Texas Woman's University, and to compare these measures along with demographic characteristics among graduate and undergraduate students attending TWU in Denton, Texas. A third purpose was to determine if personal experiences with HIV/AIDS and sources of information about HIV/AIDS influence graduate students' knowledge, attitudes, and behavior.

#### Statement of the Problem

A valid and reliable instrument, the HIV/AIDS Awareness Questionnaire, had been developed to measure HIV/AIDS-related knowledge, attitudes, and behavior at colleges and universities, and had been used at Texas Woman's University [TWU] (Brown, 1989; Mason, 1993). Although HIV/AIDS awareness programs and preventive education had been provided at TWU by some academic components and the TWU Task Force on HIV/AIDS (Kaplan, 1992), graduate students' current HIV/AIDS-related knowledge, attitudes, and behaviors had not been measured consistently across the university. Also, research had not

previously been conducted at the university to compare the HIV/AIDS-related knowledge, attitudes, and behaviors of students in relation to their educational level.

### Purposes of the Study

The purposes of this study were as follows:

1. To measure graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors and to analyze these measures in relation to demographic characteristics of respondents at TWU during the 1992-1993 academic year.

2. To compare measures of graduate students' knowledge, attitudes, and behavior to pre-existing measures of TWU undergraduate students' knowledge, attitudes, and behaviors to determine whether they are different.

3. To determine if personal experience with HIV/AIDS influences graduate students' knowledge, attitudes, and behaviors.

4. To identify common sources of HIV/AIDS information.

#### Hypotheses

The following null hypotheses were tested at the .05 level of significance:

1. There is no significant difference between TWU graduate and undergraduate female students' measures of HIV/AIDS-related knowledge, attitudes, and behaviors. 2. Measures of TWU graduate students' HIV/AIDS-related knowledge, attitudes, and behavior are not significantly interrelated.

3. Measures of TWU graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors are not related significantly to their demographic and/or educational characteristics (age, educational level, marital status, and ethnic background).

4. Measures of TWU graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors are not related significantly to their reported personal experiences with HIV/AIDS-impacted individuals.

## **Research Question**

The following research question was asked:

1. Which sources of information about HIV/AIDS do subjects indicate that they use?

#### Definition of Terms

The following terms were defined for the purpose of this study:

1. <u>Acquired Immune Deficiency Syndrome (AIDS)</u>. An infectious disease caused by the Human Immunodeficiency Virus (HIV). The final stage of an infection caused by HIV. After becoming infected with HIV, a person may remain healthy for years; but, eventually, the immune system becomes so weak that diseases and infections begin to attack the body. The revised definition of AIDS (CDC, 1992) includes HIV-infected people whose level of the body's master immune cells, called CD4s, dips to 200 per cubic millimeter; or one-fifth the level of a healthy person.

2. <u>Human Immunodeficiency Virus (HIV)</u>. A virus which causes AIDS (Koop, 1987). A member of the retrovirus family of lentiviruses; a slow virus (lente) that reproduces by inserting a mirror image coding of itself into the DNA of host cells (Brown, 1989).

3. <u>HIV Disease</u>. A range of specific symptoms associated with HIV infection but not yet resulting in a clinical diagnosis of AIDS (Williams, 1992).

4. <u>HIV/AIDS-Impacted</u>. Personal experience related to HIV/AIDS, such as being exposed to/infected with HIV, having the AIDS disease, or knowing and possibly being a caregiver for a person who has HIV disease/AIDS (Williams, 1992).

5. <u>HIV/AIDS-Related Attitudes</u>. Beliefs, emotions, and dispositions to behave; beliefs related to HIV/AIDS that predispose one to act and feel in certain ways (Brown, 1989), as measured by the HIV/AIDS Awareness Questionnaire.

6. <u>HIV/AIDS-Related Behaviors</u>. All of the behaviors associated with the transmission of HIV during sexual activities, intravenous and mood-modifying drug use, and health care delivery (Mason, 1993), as measured by the HIV/AIDS Awareness Questionnaire.

7. <u>HIV/AIDS-Related Knowledge</u>. Empirical understanding of HIV/AIDS-related concepts (Mason, 1993), as measured by the HIV/AIDS Awareness Questionnaire.

8. <u>TWU Student</u>. A person who is enrolled in an academic program at the graduate (master's or doctoral) or undergraduate (baccalaureate) level in the Texas Woman's University.

## Limitations

This study was limited by:

1. The degree to which the graduate and undergraduate students responded truthfully and honestly to the self-report HAAQ.

#### Delimitations

The study was delimited to the following:

1. Graduate students who are enrolled during the 1992-1993 academic year at the Denton campus of TWU.

2. Undergraduate students' data collected in the spring 1992 validation study of the HIV/AIDS Awareness Questionnaire (HAAQ), conducted by Mason (1993).

3. Graduate and undergraduate students who are 18 years of age and older at the time of data collection.

4. Data were collected using the 1992 version of HAAQ.

#### Assumptions

This study is subject to the following assumptions:

1. The accuracy of responses will not be affected in any way by the level of reading comprehension of the subjects.

2. All subjects have a basic level of HIV/AIDS awareness due to exposure to HIV/AIDS-related messages and programs in the public media.

3. Data collected from female undergraduate students in spring 1992 is comparable to data collected from female graduate students within the 1992-1993 academic year.

#### Rationale

Public health professionals, health educators, and medical researchers generally have agreed that the Human Immunodeficiency Virus (HIV) is present on college and university campuses. This particular virus is at the center of one of the most widely recognized public health issues of our time, and has become a significant threat to the health of college students (Richie, Stenroos, & Getty, 1990) because of their high levels of unsafe sexual behavior practices and alcohol and drug experimentation (Koop, 1987).

The battle against HIV and the acquired immune deficiency syndrome (AIDS) which it causes has entered its second decade. As of October 1992, over 230,000 people in the U.S. have been diagnosed with AIDS; more than 152,000

have died (CDC, 1992). As yet, there is neither a vaccine to prevent the spread of HIV infection nor curative therapy for HIV-infected persons (Winkelstein, 1987). Presently, health education is recognized as the primary effective means of checking the spread of HIV/AIDS (Cates & Bowen, 1989). However, necessary research for the development and/or evaluation of preventive HIV/AIDS education programs for college students has not been emphasized. Thus, the revision and use of existing instruments for assessing HIV/AIDS-related knowledge, attitudes, and risk behaviors of college students are legitimate concerns for health educators (Brown, 1989).

#### CHAPTER II

#### **REVIEW OF LITERATURE**

The purpose of this study was to measure and compare HIV/AIDS-related knowledge, attitudes, and behaviors of college students in relation to their demographic characteristics. This chapter contains a review of the literature pertinent to HIV/AIDS, the specific knowledge, attitudes, and behaviors of university students that may put them at increased risk of acquiring HIV/AIDS, the source of infection, and the value of education intervention in influencing a change in knowledge, attitudes, and behaviors.

This chapter is organized in the following fashion: National and International Overview of HIV/AIDS; Studies Concerning College Students Sources of Information About HIV/AIDS; Studies of College Students' Knowledge, Attitudes, and Behaviors Concerning HIV/AIDS; Studies Concerning Transmission Rates of HIV/AIDS Among Heterosexuals; Relationships of Knowledge, Attitudes, and Behaviors; Studies Concerning Personal Experiences With HIV/AIDS-Impacted Individuals; and Studies Concerning Educational Intervention Programs for College Students Regarding HIV/AIDS.

#### National and International Overview of HIV/AIDS

Since AIDS was first discovered, a constant array of print and electronic media have dealt with a myriad of HIV/AIDS related issues. Television programs, newspaper articles, conferences, professional articles, journals, workshops, and local community coverage have kept AIDS in the limelight throughout the United States. The literature suggests that the number of college students infected with HIV is increasing, as is the number of related deaths. The health crisis of HIV/AIDS is of immense significance in the United States and will remain so beyond this millennium. Selik, Chu, and Buehler (1993) analyzed underlying causes of death for adults between the ages of 25 to 44 using data prepared by the National Center for Health Statistics. They found 18,748 deaths nationwide in 1990. Most were caused by AIDS, but a few were caused by HIV-related infections that had not yet progressed to AIDS.

Nationally, AIDS and related infections were the first leading cause of death among young men 25 to 44 years of age, behind unintentional injuries, and it joins cancer, unintentional injury, heart disease, and suicide and homicide as one of the five leading causes of death among young women 25 to 44 years of age. Given these statistics and the fact that there is no known cure or effective method of treatment identified, prevention and education are currently our best tools to fight the AIDS epidemic. HIV education training is vital to all educators and professionals who are concerned about the health and future of college youth. Results from this study provide background information necessary for development of an HIV/AIDS curriculum for implementation within professional preparation programs.

The National Center for Disease Control (CDC) was first initiated to AIDS on June 5, 1981, when five unusual cases of pneumocystis Carinii were reported in the Morbidity Mortality Weekly Report (MMWR). Since these first documented cases, from California and New York, much has been learned about Acquired Immunodeficiency Syndrome, AIDS, and the virus that causes the syndrome, Human Immunodeficiency Virus, HIV. The MMWR published more than 170 articles, guidelines, and recommendations on AIDS and HIV infection between June 1981 and May 1990 (CDC, 1990a).

Becker and Joseph (1988) reviewed published reports encompassing two broad issues regarding HIV/AIDS: behavioral risk reduction and knowledge and attitudes. They found 36 separate studies concerning the issues even though their review was restricted to papers published up to the middle of 1987. Even with this vast amount of information the number of cases of HIV and AIDS continue to rise.

As of December 31, 1990, a total of 161,073 Americans died from AIDS (Ohio Department of Health, 1991). Dr. C. Everett Koop, the former Surgeon General of the United States, stated, however, that, "AIDS is preventable. It can be controlled by changes in personal behavior. It is the responsibility of every citizen to be informed about AIDS and to exercise the appropriate preventive measures" (U.S. DHHS, 1988). Dr. Koop was instrumental in the publication of <u>Understanding AIDS</u>, an eight-page brochure that was mailed to 107 million households nationwide in 1988 (CDC, 1990b).

Estimates of future death continue to rise as does the concern about the number of people who are infected with the AIDS Virus, HIV. Projections of HIV infection vary, but the CDC has extrapolated that approximately one million Americans currently are seropositive for the virus (CDC, 1991b). Previous projections placed the number of AIDS cases at or above 270,000 by the end of 1991 (CDC, 1987; Brown & Turner, 1989). The CDC projects that the number of cases could reach 390,000 to 480,000 in the United States by 1994 (CDC, 1990c).

The worldwide perspective paints a very similar picture. The number of reported cases to the World Health Organization (WHO) at the end of 1989 was 217,691 cases. These figures were tabulated by the WHO from 153 countries, which represent 85% of the world's nations. America accounted for 53% of HIV/AIDS patients, Africa 19%, 14% of the World's total reported in Europe, and 1% in Asia and Oceania (U.S. Agency for International Development, 1990). Heise (1988) reports that in some African cities, the infection rate is 100 times higher than the U.S. Cities and five times higher than New York. Heise also states that Bermuda and French Guiana have the highest infection rates in the world, a reported rate six times that of the United States. The validity of the

statistics outside the United States is underscored by the fact that the data reflect only officially recorded and clinically diagnosed cases of AIDS (Hessol, Rutherford, & Lifton, 1988).

These official cases are usually reported to the WHO long after the diagnosis of AIDS. Also, underreporting is the norm rather than the exception. This situation is due to three primary variables: lack of recognition of AIDS, limited surveillance infrastructures, and political unwillingness to report cases (U.S. Agency for International Development, 1990). By 1988, HIV/AIDS became the third leading cause of death among men 25 to 44 years of age, and it was estimated to be the second leading cause of death in 1989, surpassing heart disease, cancer, suicide, and homicide (CDC, 1991c). Among women 25 to 44 years of age, HIV/AIDS was the eighth leading cause of death in 1988. By 1991, it was estimated that HIV/AIDS would rank among the top five leading causes of death in this population (Chu, Buehler, & Berhelman, 1990).

The Center for Disease Control identified seven behaviors that affect the health of young persons in the United States. These behaviors are: drug use, alcohol consumption, tobacco use, imprudent dietary patterns, physical inactivity, unsafe sexual practices, and injury related behaviors (CDC, 1991d). Three of the seven, drug use, alcohol consumption, and unsafe sexual practices, either directly or indirectly affect the risk of acquiring HIV by adolescents.

# Studies Concerning College Students' Sources of

#### Information About HIV/AIDS

Public health officials, policy makers, and educators are seeking methods for influencing the public's knowledge, attitudes, and behaviors to prevent the spread of the HIV/AIDS epidemic. Accomplishing this is particularly challenging because the public encounters not only planned messages about AIDS, but also a variety of messages (e.g., television dramas, magazine articles) that were not designed to influence knowledge, attitudes, and behaviors. Nonetheless, the unintentional messages contribute a substantial amount of "incidental learning."

Messages about AIDS come from many sources and in varied formats. The sources may vary in terms of characteristics that influence audience receptivity. An understanding of audiences' information sources is critical to developing effective AIDS education and prevention programs. College students, a group at greater than average risk largely because of their patterns of sexual activities, are an important audience (Flay, DiTecco, & Schlegel, 1986). McDermott, Hawkins, Moore, and Cittadino (1987) investigated sources of AIDS information among the college student population, using a single open-ended question to identify their primary sources of information about AIDS. Eight sources were identified including television, newspapers, and magazines as the most frequently identified sources of information. Freimuth, Edgar, and Hammond (1987), in their Survey of College Students' Knowledge, Attitudes, and Behaviors Relative to AIDS, asked respondents to report the amount of information received about AIDS from 14 sources and to rate the degree to which the students "trust" those sources. Results indicated that perceptions of the quality of information received from sources differed from perceptions of the quality of the information. Although mass media sources (television, newspapers, magazines, and radio) were among the top of the information received, the most trusted sources were largely interpersonal (doctors, nurses, AIDS Hotline, and campus health center).

#### Studies of College Students' Knowledge, Attitudes,

#### and Behaviors Concerning HIV/AIDS

College students appear to be a select group at higher risk of HIV infection because of the college-age period of considerable personal and sexual exploration (Hirschorn, 1987; D'Augelli & Kennedy, 1989). Preliminary results of an assessment of HIV infection among college students performed by the Center for Disease Control in collaboration with the American College Health Association (ACHA) revealed a crude overall seroprevalence of .2% (CDC, 1989b). The AIDS Task Force of the American College Health Association stated in its general statement on Institutional Response to AIDS (1988), that "communities in higher education must respond effectively to the epidemic of HIV

infection." The college campus provides many students with a sense of new independence, self determination, and strong peer pressure to engage in risky sexual behaviors. Many college students experience, as well, an uncertainty about their own self-esteem and self-identity which can further complicate the decisionmaking process (Manning, Barenberg, Gallese, & Rice, 1989). Experimentation with sexual behaviors and/or drug use may put college students at a greater risk of infection. Feelings of being invincible are common among adults as they tend to deny personal risk. Koop (1986), Haven and Stolz (1989) state that drug experimentation during this period increases the risk of exposure to HIV. Richard Keeling (1989), Chairman, Task Force on AIDS of the American College Health Association states, "Students are commonly experimental; they may act out differing elements of their sexuality, exercising inconsistent judgement in their selection of sexual partners, and toy with recreational drugs." Hirschorn (1987) states that health educators believe it is crucial to reach college students, not only because of their behaviors, but also because graduate university students are theoretically more intelligent and receptive to new ideas than the general population.

Many people in the college community believe that HIV infection and AIDS are problems faced elsewhere. This belief is exacerbated by the lengthy latency between infection and the development of AIDS. The relative sense of invincibility seems to be validated (D'Augelli & Kennedy, 1989; Zylke, 1989). Lawrence, Levy, and Rubinson (1990) point out that the concern regarding HIV transmission among college students is a very real one. They state that approximately 20% of all AIDS cases are among the age group of 20-29. With an average latency period of about five years, many of this age group may have acquired HIV while in their college years. Hessol et al. (1988) also illustrate this concern by pointing out that, within 10 years of infection of HIV, without treatment, approximately 50% will acquire AIDS and an additional 40% or more will develop other clinical illnesses associated with HIV infection.

Simkins and Kushner (1986) reported in their study of 212 college-aged individuals that only one-fourth of the respondents were concerned about AIDS and had made changes in their sexual behavior accordingly. They also found that students were as concerned about herpes as they were about AIDS in spite of the potential ramifications of each disease.

Sexually transmitted diseases (STDs) are basically spread by the same behaviors that spread the HIV virus; consequently, they serve as good indicators of the general sexual behavior of a given population. In a study of Chlamydia Infection, the most common STD in the United States, White and Felts (1989) concluded that the university student population is a high risk group for this infection.

A number of studies looked at the knowledge, attitudes, and behaviors of college students. In a study of 232 college students, Simkins and Kushner (1986)

found their sample attitudes toward AIDS to be extremely laissez-faire and concomitant sexual activity was no different than from the previous year. The authors, however, point out that the sample was taken from the University of Kansas, a state with a very low incidence of AIDS, which they concluded may have fostered a belief of minimal personal susceptibility to the virus.

Kelly, St. Lawrence, Smith, Hood, and Cook (1987) used four separate patient vignettes to determine the attitude of medical students toward patients with AIDS. The study discovered that medical students' attitudes towards AIDS and homosexual patients to be negative. AIDS patients were generally described by the students to be deserving of the illness to be quarantined, to lose their job, and to die.

McDermott et al. (1987) studied the knowledge of 161 college students in Florida. They found, through a 20-item questionnaire, that the students' level of knowledge was high except for a few items which were consistently missed. Students typically experienced difficulty with casual sex as a possible mode of transmission and that AIDS could not develop from a case of genital herpes. This study also revealed the respondents' primary sources of AIDS information to be television, newspapers, and magazines. Less than four percent identified teachers and schools as sources of information regarding HIV/AIDS.

Goodwin and Roscoe (1988) studied almost 500 college students from the state of Michigan to determine their knowledge, fear of contracting AIDS, and

attitudes towards homosexuality. Results showed a marked difference between males and females. Females were more accepting of homosexuals, more knowledgeable and less fearful of AIDS and homosexuals than their male counterparts. Mangan (1988) points out that many students continue to perceive AIDS as a "gay disease" and consequently not a disease that will personally affect them. Educational programs at this level have faltered especially among male college students, and Hirschorn (1987) points out, this failure is partially due to a lack of perceived threat. The effectiveness of educational programs also is reduced because AIDS still carries the stigma of homosexuality.

Gaines, Iglar, Michal, and Patton (1988) found similar results in their study of 488 college students in Florida. Females in this study also showed increased knowledge levels. However, of the total population, over 50% indicated that they would not live in a resident hall if it was suspected that a resident had AIDS. Over 40% of the students surveyed believed that AIDS was God's way of punishing homosexuals. Similar attitudes were found by Dorman and Rienzo (1988) in their study of 333 students. Misinformation about modes of transmission was apparent and attitudes of this population reflected fear of contraction from infected classmates. Over 50% of the students were very worried about contracting AIDS. The authors also expressed concern that misinformation fueled prejudice and may contribute to inappropriate behavior like refusing to give blood.

Fennell (1989) also found considerable misinformation regarding the transformation of AIDS. In a study of 344 students from Ohio, less than 55% of the respondents correctly responded that AIDS could not be transmitted by mosquitoes and other insects and saliva. Also of considerable concern was the finding that only 64% knew condoms could provide some protection against AIDS. Of equal concern was the attitude that people did not need to use condoms when having sex with a friend. This attitude regarding condom use is a critical one because, as Yarber (1987) points out, "sexual abstinence as an AIDS prevention method was not considered as an acceptable option," among 500 college students and teenagers surveyed.

Thomas, Gilliam, and Iwrey (1989), in a study of 975 predominantly black college students, found that overall knowledge levels of the group were satisfactory. However, less than 30% knew that HIV was not transmitted by insect bites and less than 80% correctly responded that AIDS was not transmitted by toilet seats or kissing and coughing. Thomas et al. concluded that "students who reported engaging in high risk behaviors had statistically significantly lower mean knowledge scores than those who reported not engaging in those same high risk behaviors."

#### Studies Concerning Transmission Rates of

#### HIV/AIDS Among Heterosexuals

Since HIV was first reported in the United States in 1981, there have been numerous biomedical studies on the diagnostic and therapeutic aspects related to the care of AIDS patients (Osborn, 1986; Solomon & DeJong, 1986). The preponderance of AIDS researchers addressed the impact of the disease in homosexual men (Charles, 1985; Stall, McKusick, Wiley, Coates, & Ostrow, 1986). Researchers of behavior change, education, and health intervention have focused primarily on the high risk groups: homosexuals, bisexuals, and intravenous drug users (Charles, 1985; Williams, 1986). Recent research parallels the increased threat of HIV to the heterosexual population. AIDS among heterosexuals has been reported as a result of intravenous drug abuse, bisexual contact, blood transfusions, hemophilia, multiple sex partners (Castro, Hardy, & Curran, 1986), and repeated sexual exposure to an infected partner (Padian, 1987). In their HIV/AIDS Surveillance Reports, the Centers for Disease Control have grouped adults and adolescents over thirteen years old in the category of adults. In 1986, heterosexuals made up one percent of the AIDS cases (CDC, 1986). By 1988, they represented four percent of the AIDS cases (CDC, 1988). The Centers for Disease Control, in December 1990, reported heterosexual contact as the single mode of exposure for five percent of the more than 157,000 AIDS cases nationwide. In addition, multiple modes of exposure, such as bisexual and

heterosexual contact, contributed one more percent of the reported AIDS cases, and IV drug use and heterosexual contact another two percent. The proportion of heterosexual males and females with the disease had significantly increased. In addition, some of the four percent of cases which have been designated as "undetermined" because their mode of exposure to HIV is unknown, may be attributed to unrecognized or unreported heterosexual transmission (CDC, 1990a).

Although 90% of all "adult" AIDS cases are among males, the 10% attributed to females indicate dramatic increases of heterosexual transmission in women of all ages. The overall male to female ratio has increased from 13 to 1 (CDC, 1990a). Sex with an IV drug user was the source for 63% of women with AIDS nationwide. Bisexual men and an infected partner, whose status was known to be seropositive, were the source for 10% and 12% of other female heterosexual cases (CDC, 1990a). Male and female heterosexuals aged 13 to 19 were reported to represent 14% of all AIDS cases in that age category; whereas, those aged 20 to 24 are reported to represent 10% of all AIDS cases in that age category (CDC, 1990a). People aged 25 to 39 made up 62% of all the AIDS cases. Of these groups, 35% were white; whereas, 31% were black and 31% were Hispanic (CDC, 1990a).
#### Relationships of Knowledge, Attitudes, and Behaviors

Studies assessing the knowledge, attitudes, and behaviors of a variety of potentially high risk groups have been documented in the literature. Relationships between knowledge, attitudes, and changes in high risk behavior resulting from educational interventions, however, are not well documented. Research does show a relationship between knowledge, attitudes, and behavior and the length of health instruction (Fennell, 1990). Chiu (1988) concludes that changes in an individual's self-esteem can be enhanced by a brief exposure to an educational process.

Professionals in the field of public, medical, and health education have indicated that attitudes, beliefs, and values are important in predicting and explaining health behaviors (Emmons et al., 1986). The public reaction to AIDS, unlike the vast majority of other health concerns, seems to be based on feelings and values rather than on accurate cognitive data; consequently, understanding these attitudes and addressing them appropriately is of paramount importance (Gaines et al., 1988). Knowledge alone is not an indicator of long-term behavior change. Lack of knowledge, as well, is not a sufficient explanation for disparities in health behavior (McGinnis, 1990; White & Maloney, 1990).

Goodstadt (1986) concluded that the research data does suggest that exclusive dependence on knowledge change is likely to lead to little behavior impact. Mendelsohn (1981) suggests that people act on their beliefs, and because they do, and because beliefs are potentially modifiable, changing certain inappropriate health behaviors may be accomplished by changing inappropriate beliefs.

There has been recognition of the relationship between knowledge, attitudes, and behaviors, as well as recognition of the impact of the educational process on that relationship (Fennell, 1991). With education being considered one of the most effective approaches for checking the spread of the HIV/AIDS epidemic, strategies such as extensive condom distribution and instruction in their use; expanded Sexually Transmitted Diseases (STD) diagnostic and treatment services; and drug education, treatment, and rehabilitation may be effective ways to reach those students at risk (Cates & Bowen, 1989). The measuring of knowledge, attitudes, and behaviors of university students for individual educational empowerment is of paramount importance. Flaskerud and Nyamathis (1988) studied 369 Vietnamese women attending a Women's, Infant's, and Children (WIC) Program in Los Angeles to determine the effect of an AIDS Education Program. The AIDS Program consisted of a didactic slide-tape program delivered by a Vietnamese nurse educator along with informational and resource brochures. The respondents showed gain in knowledge, as well as positive changes in attitudes and intended practice. The authors conclude that a didactic program can result in elevated knowledge levels, attitudes, and intended behavior.

## Studies Concerning Personal Experiences

#### With HIV/AIDS-Impacted Individuals

AIDS has been increasing in prevalence and has affected families in many ways. Most notably, families have been the unit of care and support for a family member with AIDS (Anderson, 1989; Sussman, 1989). Research in the family caregiving literature suggests that family caregiving is stressful and takes its toll emotionally, financially, and socially. Some studies have referred to these family caregivers as the "hidden victims" of HIV/AIDS; those who suffer by being caregivers while the attention of health organizations and the public is placed on the suffering of the family members who are HIV/AIDS-infected (Rinnell & Dubin, 1988). As the number of AIDS cases continues to grow, families will increasingly assume the burden of providing care for family members diagnosed with AIDS (Sussman, 1989). Anderson (1989) has communicated that if a curative therapy is not found soon, it will be a rare family that has not been personally affected by HIV/AIDS. However, there has been little systematic research on how HIV/AIDS impacts the family (Macklin, 1989).

For every one person who suffers from AIDS or AIDS-related complexes, there are many other persons in the individual's family and social network who are also affected by the illness. An example of such individuals are parents of gay sons with AIDS. Since gay men were initially considered to be the primary risk group for contracting AIDS, attitudes toward homosexuality have been associated with AIDS as an illness and toward people with AIDS (Herek, 1988).

Level of education and cohort have been found to be predictors of attitudes toward homosexuality. Nyberg and Alston (1987) found that collegeeducated persons were more tolerant of homosexuality than non-college-educated persons. They also found that the older the respondent, the more negative his or her attitude toward homosexuality. However, in a survey of 402 parents of homosexual children, Robinson, Walters, and Skeen (1989) found that older parents tended to be more liberal and have more positive attitudes toward HIV/AIDS-impacted than younger parents, suggesting that older parents may have had more tolerant attitudes toward homosexuality than younger parents.

Studies Concerning Educational Intervention Programs

for College Students Regarding HIV/AIDS

In response to the concern of college students and HIV/AIDS, various educational approaches have been employed. Quinn, Thomas, and Smith (1990) surveyed selected health education professional preparation programs in terms of the content and competencies of their HIV/AIDS education programs. They found that of the 114 programs responding (68%) only 25 institutions reported offering a separate course on HIV/AIDS, and of that group, only two programs targeted the course to health education majors. Approximately 60% of the

respondents reported offering AIDS/HIV in-service training or workshops for school and community health educators. Concerns regarding the content and process of these workshops was expressed. The authors concluded "that educational programs targeted at the general student population may not be adequate in meeting the professional preparation needs of health educators charged to provide AIDS education."

Fennell (1991) described the effectiveness of a two-credit semester course on AIDS. The course had three primary objectives: (a) increasing knowledge, (b) increasing positive attitudes toward homosexuality, and (c) decreasing negative attitudes toward homosexuality. The number of females enrolled in the course doubled that of males. Fennell reported that the 30 classroom hours of instruction significantly influenced the participants to achieve the stated objectives. Fennell concluded that changes in attitudes and behaviors may be due to the longer period of classroom exposure.

Through a literature search, several studies were found that addressed the importance of AIDS health education in various populations (Strunin & Hingson, 1987; Solomon & DeJong, 1986; DiClemente & Temoshok, 1986). In their study, DiClemente and Temoshok (1986) surveyed adolescents' knowledge, beliefs, and attitudes about AIDS. They found that 90% of the adolescents in their sample believed that the school curriculum should include AIDS instruction. In a similar study, Strunin and Hingson (1987) studied adolescents' knowledge, beliefs,

30

attitudes, and behaviors related to AIDS. They found that 52% of the adolescents queried reported that AIDS had been discussed in school. The authors of this survey contend that many are still misinformed or confused about AIDS.

Three studies funded by the CDC were conducted by Solomon and DeJong between 1983 and 1986. Their purpose was to determine whether education could stimulate the utilization of certain behaviors germane to the regulation of sexually transmitted diseases. The studies focused on mostly black sample populations between 18 and 35 years of age who attended inner-city urban clinics. After examining their findings, they suggested that if AIDS health education is geared toward particular populations' needs and desires, positive outcomes in behavior, attitude, and knowledge about AIDS can result.

Relatively few studies were found in the literature that specifically focused on programs designed for teaching college freshman undergraduates about AIDS. Given the projected number of 16- to 29-year-olds considered at high risk for contracting AIDS, education is our most profound weapon against it, and more research on programs for preventing AIDS in college students is essential.

Montgomery (1987) found knowledge and education to be most significantly and consistently related to positive behavioral change among homosexual men at risk for AIDS.

#### Summary

The concern about college students acquiring HIV is increasing. Because clear information concerning the rate of HIV infection among the total population is speculative, the rates of HIV infection among college students can only be extrapolated. This review of literature revealed that there was little information about college students' knowledge, attitudes, and behaviors concerning HIV/AIDS. As the epidemic rages and more discoveries about HIV/AIDS are made, public health researchers and health educators are becoming concerned about college students and their risk for contracting the disease. Rates of sexually transmitted disease strongly suggest that college students are, in fact, engaging in behaviors that increase the risk of HIV transmission. The campus environment appears to foster an increased potential for HIV infection as described in <u>Healthy People</u> 2000:

Many students encounter new independence, self-determination, and strong peer pressure to adopt certain behaviors. Experimentation with sex, alcohol, and drug use puts these students at risk for HIV. Further, students may underestimate their risk of acquiring HIV infection. Risk is heightened by beliefs that they are invincible and impervious to infection. (U.S. DHHS, 1991)

From 1986 to the present, surveys and questionnaires have been administered to adolescent groups, homosexuals, heterosexuals, bisexuals, and college students, nationally and internationally. These studies have attempted to find out what college students know and how they feel about HIV/AIDS and the behavior which put them at high risk for contracting HIV/AIDS (Strunin & Hingson, 1987).

For the last five to six years, the college students' knowledge about HIV/AIDS seems to have increased. There are some misconceptions about the process of HIV/AIDS transmission held by this age group. There have been mixed results concerning college students' knowledge, attitudes, and behaviors. Some studies have found positive attitudes toward HIV/AIDS, while others have found negative attitudes concerning HIV/AIDS. The literature indicates that, with the college students having various misconceptions about HIV/AIDS, and little or no behavior changes relating to the transmission methods of HIV/AIDS, a need remains for HIV/AIDS educational intervention programs to be developed and presented (DiClemente, 1992).

Educating staff, as well as students, is imperative if the spread of HIV/AIDS is to be minimized on college campuses. Modes of transmission, prevention of transmission, and assessing personal risk are critical elements of any effective educational intervention (U.S. DHHS, 1989).

# CHAPTER III METHODOLOGY

The purpose of this study was to measure and compare measures of graduate students' level of HIV/AIDS-related knowledge, attitudes, and behaviors to pre-existing measures of TWU undergraduate students' knowledge, attitudes, and behaviors to determine whether they are different. The second purpose was to ascertain whether there were any relationships among graduates' age, graduate program level, marital status, knowledge, attitudes, and behavior; or any correlation between graduate students' knowledge, attitudes, and behaviors toward HIV/AIDS. In this chapter, the methods used in this study will be described, including population, instrumentation, procedures, and treatment of the data.

#### Population

The subjects in this study were graduate students enrolled at TWU during the Spring 1993 academic year. The sample in this study consisted of 102 randomly selected graduate students from a list obtained from the TWU office of Research and Statistics. Data collected from a random sample of undergraduate students in spring 1992 at TWU and analyzed by Mason (1993) was also used in the present analysis.

#### Instrumentation

The instrument that was used in this study was HIV/AIDS Awareness Questionnaire (HAAQ), which was originated as the AIDS Awareness Questionnaire by the Texas Woman's University Task Force on AIDS in 1988. Brown (1989) tested the AIDS Awareness Questionnaire and established concurrent validity and reliability for the AIDS-related knowledge and attitudes factors. As recommended by Brown (1989), the instrument was revised in 1993 by Mason and was retitled the HIV/AIDS Awareness Questionnaire to reflect the increased emphasis on HIV in the literature. Using Cronbach's alpha (SPSS, 1990), Mason (1993) established the reliability of the HAAQ as .88. She also used a panel of experts to establish the content validity for the HAAQ. (See the Appendix A for the HAAQ version.) As a result of this research, the HIV/AIDS Awareness Ouestionnaire was available in spring 1993 and was used to generate a score reflecting a respondent's knowledge or attitudes toward, and behavior in regard to HIV/AIDS. This questionnaire was used to assess students in graduate programs at TWU during the 1993 spring semester.

For the purposes of this study, the HAAQ begins with a section of items to collect demographic data: such as, age, gender, marital status, ethnicity, major area of specialization, and level of graduate program. This section was revised by this researcher to collect information specific to the hypotheses of this study.

Participants were asked about their best sources of information regarding HIV/AIDS. Possible response choices include 1 = "Yes" or 2 = "No" to each item indicating whether they have or do not have knowledge about HIV/AIDS through the following sources: TV, campus newspaper, family/friend, AIDS Hotline, doctor/nurse/health educator, formal classes, HIV/AIDS pamphlets, community newspaper, magazines, workshops/seminars/briefings. The body of the instrument as tested by Mason (1993) consists of 83 items divided into the following sections: Sources of HIV/AIDS-related information (#1); Part A -Knowledge Section (#2 to #34) -- This area includes transmission factors, condom use, symptoms, disease progression, and outcome. Response categories include 1 = "True," 2 = "False," and 3 = "Don't Know." Part B - Attitude Section (#35 to #45) -- In this section, respondents were asked to answer questions about whether or not a person infected with HIV/AIDS should be quarantined; whether or not one would work or attend classes with an HIV/AIDS-infected person: whether or not all persons should be required to be screened for HIV infection; whether or not pregnant women should be tested for HIV infection; whether or not he/she was "doing everything possible" to avoid becoming infected with HIV/AIDS. Response categories include 1 = "Agree," 2 = "Disagree," and 3 ="Uncertain." Part C - Behavior Section (#46 to #73) -- In this section, questions were asked to elicit information concerning condom use during sexual practices;

whether or not they are embarrassed using them or talking about them; whether or not they would have sex with a person (or people) that they had just met; whether or not the respondent had used I.V. or other injected illegal drugs for recreational purposes or before having sex; whether or not they would ask his/her sexual partners about his/her past sexual activities, past drug use, or HIV/AIDS infection test before having sex. This section also includes some additional questions about the participants' self-assessment of contracting the disease. These questions include whether or not the respondent had ever tested positive for HIV/AIDS; whether or not they had received blood transfusions between 1979 and 1985; whether or not they were at risk of becoming infected with HIV/AIDS; whether or not they had any sexually transmitted diseases (STDs) during the past five years; whether or not they had engaged in sexual intercourse with partner(s) who use I.V. (intravenous) injected drugs or shared drug equipment with another person during the last five years. Response categories include 1 = "Yes," 2 ="No," or 3 = "Don't Know." For the purposes of this study, items #84 to #88 were used to collect information concerning respondents' personal experiences with HIV/AIDS. The questions in this section were asked to elicit information as to whether or not they know for certain that a person she knows personally is HIV-infected or has AIDS; whether or not that person was someone she could live with or see everyday; whether or not that person is a member of her family; whether or not that person was someone she would like to take care of if he/she

became sick; and whether or not the respondents' behavior had changed in response to the AIDS epidemic. Response categories include 1 = "Yes" and 2 = "No."

### Procedures

Approval of the present research was secured prior to the distribution of the survey instruments. The approval by the Human Subjects Review Committee was based on the view that participants' privacy, welfare, and confidentiality were adequately protected. (Letter of approval to use the revised HAAQ was received and is included in Appendix C.)

A cover letter was enclosed with the mailed questionnaire. It explained the purposes of the study and the procedures for completing and returning the questionnaire. It also explained that participation in the study was entirely voluntary, refusal to participate would involve no penalty, and all informations were anonymous and confidential.

The 1992 revised version of the HIV/AIDS Awareness Questionnaire (HAAQ) was mailed with a cover letter and a stamped, addressed return envelope to a random sample of 250 TWU graduate students on the 15th of March, 1993.

During the early stages of data collection, it was discovered that an error had been made in the construction of the questionnaire. When the error was discovered, a complete set of replacement questionnaires were distributed. The individuals receiving the questionnaires were asked to complete and return the corrected surveys.

## Treatment of the Data

This study utilized descriptive analysis that included percentages and frequencies. The statistical tests used to treat the data were three 1-sample <u>t</u>-tests, Pearson's Product Moment correlation coefficient, and a Point-Biserial correlation coefficient. The level of significance was set at the .017 alpha level using the Bonferroni adjustment to guard against the type 1 error since three 1-sample <u>t</u>-tests were used.

# CHAPTER IV PRESENTATION OF THE RESULTS

The purpose of this study was to measure and compare graduate students' HIV/AIDS-related knowledge, their attitudes, and their behaviors to previously measured knowledge, attitudes, and behaviors of TWU undergraduate students to determine whether they are different. The HIV/AIDS survey for graduate students was distributed in the middle of March 1993 school year at TWU, in Denton, Texas. In addition, the study was to examine whether any relationship exists among graduates' age, graduate program level, marital status, ethnicity, knowledge, attitudes, and behaviors; or whether any correlation exists between graduate students' knowledge, attitudes, and behaviors toward HIV/AIDS.

The descriptive data and the results of the statistical analyses conducted are presented in this chapter. It is divided into sections describing the demographic characteristics of the research participants and a section which presents the results of tests of the hypotheses and the research question.

## Description of the Research Participants

Packets of questionnaires were distributed in the Spring semester of 1993 to 250 randomly selected graduate students who were enrolled at TWU, Denton Campus. Descriptive statistics collected included the respondents' marital status, ethnic background, and educational level, as well as their sources of information concerning AIDS and HIV. The percentages reported do not always total 100% due to rounding. The percentages, instead, reflect the portion of the female participants who responded to the particular item. Of the packets returned, 102 female subjects were studied.

Table 1 presents data on the distribution of selected demographic characteristics. These data indicate that the participants are exclusively female college students. The majority of the respondents were married (53.5%) and white (85%) with (37.6%) non-married and (15%) non-white.

## Table 1

## Distribution of Selected Demographic Characteristics

Variable	Category	Frequency	%
Marital Status	Never Married	35	34.7
$(\underline{N} = 101)$	Married	54	53.5
	Separated	0	0
	Divorced	10	9.9
	Widowed	2	2.0
Ethnic	Black	9	9.0
Background $(\underline{N} = 100)$	American Indian	2	2.0
	White	85	85.0
	Hispanic	2	2.0
	Asian	2	2.0

Table 2 presents the educational background of the respondents. There were 74% enrolled in masters degree programs compared with 26% of the respondents enrolled in doctoral degree programs. No analyses were done comparing the academic disciplines of the respondents because of low response rates from some academic majors.

Table 2

Variable	Category	Frequency	%
Level of Graduate	Masters	71	74.0
riogram	Doctoral	25	26.0

Educational Background of Respondents

<u>Note</u>.  $\underline{N} = 96$ .

Table 3 presents the subjects' responses concerning the source they used to obtain information about HIV/AIDS. The most frequently identified sources of information are TV (99.0%), magazines (91.6%), doctors/nurses/health educators (84.4%). The AIDS Hotline was identified by 26 subjects (32.1%) as their sources of information about HIV/AIDS.

## Table 3

Budjeets Reported Dest Soul		monnatio			00	
Source	y #	les %	#	No %	No #	o Response %
TV	99	99.0	1	1.0	2	2.0
Campus Newspaper	26	32.1	55	67.9	21	26.0
Family/Friend	69	78.4	19	21.6	14	15.6
AIDS Hotline	13	16.5	66	83.5	23	29.0
Dr./Nurse/Health Educator	76	84.4	14	15.6	12	13.0
Formal Classes	45	51.7	42	48.3	15	17.0
HIV/AIDS Pamphlets	78	83.0	16	17.0	8	8.0
Community Newspaper	64	71.9	25	28.1	13	15.0

Subjects' Reported	<b>Best Sources</b>	of Information	About HIV/AIDS

<u>Note</u>.  $\underline{N} = 100$ .

Workshop/Seminar/Briefing

Magazines

Table 4 shows the knowledge, attitude, and behavior scores of the graduate female students and undergraduate female students. The mean total knowledge for the graduates was 51.8557 with a standard deviation of 3.7193 and a standard error of 0.3776. The mean total knowledge score for the undergraduates was 53.9200.

91.6

53.9

87

48

8

41

8.4

46.1

7

13

7.0

15.0

The mean score for the graduates was 16.7320 with a standard deviation of 1.7884. The mean attitude score for the undergraduates was 17.1000.

The mean total behavior score for the graduates was 22.9756 with a standard deviation of 2.0607. The mean total behavior score for the undergraduates was 22.6600.

### Table 4

Descriptive Statistics for Knowledge, Attitudes, and Behavior About HIV/AIDS.

Group	Range (Low - High)	М	<u>SD</u>
Graduate Femal	es		
Knowledge	19 (45 - 64)	51.8557	3.7193
Attitude	8 (14 - 22)	16.7320	1.7884
Behavior	9 (19 - 28)	22.9756	2.0606
Undergraduate I	<sup>S</sup> emales <sup>a</sup>		
Knowledge		53.9200	
Attitude		17.1000	
Behavior		22.6600	

<sup>a</sup> These data are from Mason's study (1993). Not all data were available.

### Hypothesis Testing

In the discussion that follows, each hypothesis is stated, and the results of data analysis are presented. Three 1-sample <u>t</u>-tests were done to determine whether there was a significant difference between the graduate females' and the undergraduate females' level of knowledge, attitudes, and behavior about HIV/AIDS. The results were tested at the .017 alpha level for significance after using the Bonferroni adjustment. In addition, Pearson Product Moment correlations were used to address Hypothesis 2 and Point-Biserial correlations were used to address Hypotheses 3, 4, and the Research Question.

The reason for using Point-Biserial correlation coefficient was due to the dichotomous variables involved in this research. This descriptive statistic is used because the variable scores "1," "2," and "3"; "Yes" or "No"; "True," "False," or "Uncertain" are measured whether or not the respondents were making correct or incorrect responses to the questions asked. Thus, the Point-Biserial correlation coefficient was used for describing the data in this study: A "Yes" response means that the subjects were making the correct response to the item and had a higher mean score on the HAAQ Survey than the subject making the incorrect response of "No."

The Point-Biserial correlation coefficient (rpb) has been used when describing the relationship between a qualitative variable and a quantitative variable. This rpb statistic is derived from the formula for the Pearson Product Moment correlation (rp). Since Point-Biserial correlation coefficient is derived from the Pearson Product Moment correlation formula, its interpretation is the same as that for rp. Therefore, the rpb was used to describe the relationship between graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors and their demographic and/or educational characteristics; between graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors and their personal experiences with HIV/AIDS-impacted individuals; and between graduate students' sources of information and their HIV/AIDS-related knowledge, attitudes, and behaviors (Porter & Ham, 1986).

#### Hypothesis 1

Hypothesis 1 stated that there is no significant difference between TWU graduate and undergraduate female students' HIV/AIDS-related (a) knowledge, (b) attitudes, and (c) behaviors.

The <u>t</u> value of -5.471 (p < .0001) was significant for the knowledge scores. Undergraduate female students had a significantly higher level of knowledge of HIV/AIDS than did graduate female students. Hypothesis 1 (a) was rejected.

There was no significant difference between graduate female students' and undergraduate female students' attitudes toward HIV/AIDS ( $\underline{t} = -2.03$ ;  $\underline{p} = .0454$ ). Fail to reject Hypothesis 1 (b). There was no significant difference

between graduate female students' and undergraduate female students' behavior toward HIV/AIDS ( $\underline{t} = 1.39$ ;  $\underline{p} = .1693$ ). Fail to reject Hypothesis 1 (c).

#### Table 5

## Analysis of Knowledge, Attitudes, and Behaviors About HIV/AIDS

Variable	Group	M	t	Þ
Knowledge	Graduate Female	51.8557	-5.471	<.0001*
a.	Undergraduate Female	53.9200		
Attitudes	Graduate Female	16.7320	-2.030	.0454
	Undergraduate Female	17.1000		
Behaviors	Graduate Female	22.9756	1.39	.1693
	Undergraduate Female	22.6600		

\* Significant at .017 Level

## Hypothesis 2

Hypothesis 2 stated that measures of TWU graduate students' HIV/AIDSrelated knowledge, attitudes, and behavior are not significantly interrelated. To test Hypothesis 2, the total knowledge, attitudes, and behavior scores for graduate students were intercorrelated using the Pearson's Product Moment correlation technique. The correlation coefficient between graduate students' knowledge and attitude was .1788 (critical  $\underline{r} = .2319$  with 70 df). This indicates that there was not a significant relationship between graduate female students' knowledge and attitudes concerning HIV/AIDS. A non-significant negative correlation between total knowledge score and behavior was shown ( $\underline{r} = .035$ ). Thus, the hypothesis was not rejected. The correlation coefficient between graduate female students' HIV/AIDS-related behavior and attitude was .0730. This indicates that there was no significant relationship between graduate female students' behavior and attitudes concerning HIV/AIDS. The null hypothesis was supported.

Table 6 presents the correlation matrix of graduate students' HIV/AIDSrelated knowledge, attitudes, and behavior.

### Table 6

Pearson's Product Moment Correlation Matrix for Knowledge, Attitudes, and Behavior About HIV/AIDS

Variable	Knowledge	Attitude	Behavior
Knowledge			
Attitude	.1788		
Behavior	0348	.0730	

Note. Significant at .05 Level.

#### Hypothesis 3

Hypothesis 3 stated that measures of TWU graduate students' HIV/AIDSrelated knowledge, attitudes, and behaviors are not significantly related to their demographic and/or educational characteristics (age, educational level, marital status, and ethnic background). To test Hypothesis 3, the total knowledge, attitudes, and behavior scores were correlated with demographic variables, (a) age, (b) level of program, (c) marital status, and (d) ethnicity, by calculating a Point-Biserial correlation coefficient. A statistically significant positive correlation between total age and knowledge was shown. The correlation coefficient for this relationship was r = .2468 ( $r \ge .2319$  with 70 df,  $\propto = .05$ , 2-tailed test). Hypothesis 3 (a) was rejected. The correlation coefficient between graduate students' level of graduate program (doctoral/masters) and knowledge was r =.2561 ( $\underline{r} \ge .2319$  with 70 df,  $\propto = .05$ , 2-tailed test). This indicates that there was a statistically significant relationship between knowledge and graduate students' level of graduate program. Hypothesis 3 (b) was rejected.

A statistically significant positive correlation between marital status and knowledge was also shown ( $\underline{r} = .3210$ ,  $\propto < .05$ ). Hypothesis 3 (c) was rejected. A significantly negative correlation between marital status and behavior was shown. The Point-Biserial correlation coefficient for this relationship was -.2734 ( $\underline{r} \ge .2319$  with 70 df,  $\propto = .05$ , 2-tailed test). The non-directional hypothesis was rejected. The correlation coefficient between ethnic background and behavior was .2681 ( $\underline{r} \ge .2319$  with 70 df,  $\propto < .05$ , 2-tailed test). This indicates that there was a significant positive relationship between graduate students' HIV/AIDS-related behavior and ethnicity. The non-directional hypothesis was rejected.

Table 7 presents the Point-Biserial relationships between age, level of program, marital status, ethnicity, knowledge, attitudes, and behavior. Of 12 correlations, 5 or 42% were significantly different from zero. This indicates that there is a relation among several of the demographic characteristics of the sample and their knowledge, attitudes, and behavior scores.

### Table 7

Variable	Knowledge	Attitude	Behavior
Age	0.2468*	0.0792	- 0.0017
Program Level	0.2561*	0.0438	- 0.1262
Marital Status	0.3210**	0.0925	- 0.2734*
Ethnicity	0.0201	- 0.0766	0.2681*

## Point-Biserial Correlation Matrix

\* Significant at  $\propto < .05$ 

\*\* Significant at  $\propto < .01$ 

#### Hypothesis 4

Hypothesis 4 stated that measures of TWU graduate students' HIV/AIDSrelated knowledge, attitudes, and behaviors are not related significantly to their personal experiences with HIV/AIDS-impacted individuals. To test Hypothesis 4, the total knowledge, attitudes, and behavior scale scores of the HAAQ for graduate students were correlated with their personal experiences scale scores by calculating a Point-Biserial correlation coefficient. A positive correlation between graduate students' HIV/AIDS-related knowledge and their personal experiences with HIV/AIDS-impacted individuals was shown. This correlation was not, however, statistically significant. The coefficient for this relationship was .2141 ( $\mathbf{r} \geq .2319$  with 70 df,  $\propto = .05$ , 2-tailed test).

The correlation coefficient between the graduate students' attitudes and their personal experiences with HIV/AIDS-impacted individuals was .0235 ( $\underline{r} \ge$ .2319 with 70 df,  $\propto = .05$ , 2-tailed test). This indicates that there was a positive, but not significant, correlation between graduate students' attitudes and their personal experiences with HIV/AIDS-impacted individuals.

The correlation coefficient between graduate students' HIV/AIDS-related behavior and their personal experiences with HIV/AIDS-impacted individuals was -.0976 ( $\underline{r} \ge .2319$  with 70 df,  $\propto = .05$ , 2-tailed test). This indicates that there was a weak negative, and not significant, correlation between graduate students' behavior and their personal experiences with HIV/AIDS-impacted individuals. This hypothesis was supported.

Table 8 presents the Point-Biserial correlation matrix of graduate students' HIV/AIDS-related knowledge, attitudes, behavior, and their reported personal experiences with HIV/AIDS-impacted individuals.

## Table 8

Point-Biserial Correlation Matrix for Knowledge, Attitudes, Behavior and Personal

Experiences with HIV/AIDS-Impacted Individuals

Variable	Knowledge	Attitudes	Behavior
Do you know for certain that a person who you know personally is HIV infected has AIDS?	.2141	.0235	0976

\* Significant at  $\propto < .05$ 

\*\* Significant at  $\propto < .01$ 

### **Research Question**

Which sources of information about HIV/AIDS do subjects indicate that they use?

To answer the research question, the total knowledge, attitudes, and behavior scores were correlated with graduate students' best sources of information about HIV/AIDS by calculating Point-Biserial correlations among knowledge, attitudes, and behaviors related to HIV/AIDS by sources of information.

The correlation coefficient between doctor/health educator and knowledge was .3071 ( $\mathbf{r} \ge .2500$  with 60 df,  $\alpha = .05$ , 2-tailed test). This indicates that there was a significant correlation between doctor/health educator and graduate students' HIV/AIDS-related knowledge. The correlation coefficient between doctor/health educator and attitudes was .3061 ( $\mathbf{r} \ge .2500$  with 60 df,  $\alpha = .05$ , 2-tailed test). This indicates that there was a significant correlation between doctor/health educator and graduate students' attitudes concerning HIV/AIDS. The correlation coefficient between doctor/health educator and behavior was -.0772 ( $\mathbf{r} \ge .2500$  with 60 df,  $\alpha = .05$ , 2-tailed test). This indicates that there was no significant correlation between doctor/health educator and graduate students' HIV/AIDS-related behavior. Having a doctor or health educator as a major source of information on AIDS significantly influenced the respondents' knowledge of and attitudes toward AIDS, but did not influence their behavior as it relates to AIDS.

The correlation coefficient between formal classes and knowledge was .3448 ( $\underline{r} \ge .3248$  with 60 df,  $\propto = .01$ , 2-tailed test). This indicates that there was a statistically significant correlation between formal classes and graduate students' HIV/AIDS-related knowledge. The correlation coefficient between formal classes and attitudes was .3182 ( $\underline{r} \ge .2500$  with 60 df,  $\propto = .05$ , 2-tailed test). This indicates that there was a significant correlation between formal classes and graduate students' attitudes about HIV/AIDS.

The correlation coefficient between pamphlet and knowledge was .3213 ( $\underline{r} \ge .2500$  with 60 df,  $\propto = .05$ , 2-tailed test). This indicates that there was a significant correlation between pamphlets and graduate students' HIV/AIDSrelated knowledge.

The correlation coefficient between workshop and knowledge was .3259 ( $\underline{r} \ge .3248$  with 60 df,  $\alpha = .01$ , 2-tailed test). This indicates that there was a significant correlation between workshop and graduate students' HIV/AIDSrelated knowledge. The correlation coefficient between workshop and attitudes was .2638 ( $\underline{r} \ge 2500$ ,  $\alpha = .05$ , 2-tailed test). This indicates that there was a significant correlation between workshop and graduate students' HIV/AIDSrelated attitudes. The correlation coefficient between workshop and behavior was -.0687 ( $\underline{r} \ge .2500$  with 60 df,  $\alpha = .05$ , 2-tailed test). This indicates that there was no significant correlation between workshop and graduate students' HIV/AIDS-related behavior.

Table 9 presents the correlation matrix of graduate students' knowledge, attitudes, behavior, and their best sources of information about HIV/AIDS.

## Table 9

Point-Biserial Correlations Among Knowledge, Attitudes, and Behaviors Related to HIV/AIDS by Sources of Information.

Variable	Knowledge	Attitudes	Behaviors
Campus Newspaper	.1129	1545	.1031
Family/Friend	.1819	.2146	1031
AIDS Hotline	.0736	.1934	.0595
Dr./Nurse/Health Educ.	.3071*	.3061*	0772
Formal Classes	.3448**	.3182*	0374
Pamphlets	.3213*	.0603	1154
Community Newspapers	2302	.0896	1288
Magazines	.1852	2332	.1046
Workshops	.3259*	.2638*	0687

<u>Note.</u>  $\underline{N} = 62$ .

\* Significant at  $\propto < .05$  ( $\underline{r} \ge .2500$ )

\*\* Significant at  $\propto < .01$  ( $\underline{r} \ge .3248$ )

# Chapter V SUMMARY, DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The purpose of this study was to measure graduate students' HIV/AIDSrelated knowledge, attitudes, and behaviors, and to analyze these measures in relation to demographic characteristics of respondents from TWU during the 1992-1993 academic year. A secondary purpose of the study was to compare measures of graduate students' knowledge, attitudes, and behaviors to pre-existing measures of TWU undergraduate students' knowledge, attitudes, and behaviors to determine whether they are different. Also, the study sought to determine if personal experience with HIV/AIDS influences graduate students' knowledge, attitudes, and behaviors. The study was to determine if sources of information about HIV/AIDS influences graduate students' knowledge, attitudes, and behaviors.

This chapter begins with a summary of the first three chapters. A discussion of the results and major conclusions of Chapter IV follows. Recommendations for future research complete this chapter.

#### Summary

The continual increase in the number of AIDS cases among the 24- to 29year-old age group has created concern that HIV is being transmitted during the years of young adulthood. College students are believed to be at increased potential for HIV infection because of the sexual experimentation that accompanies this age period. Estimates as to the proportion of college students who are sexually experienced range from approximately 60 to 80% (Crawford, 1990; DiClemente, 1990). Recent findings indicate these students are in danger of becoming infected with the Human Immunodeficiency Virus (HIV).

Epidemiological data which shows a high prevalence of sexually transmitted diseases (STDs) among female college students, a surrogate biological marker for HIV acquisition, also suggests this population is at increased risk for HIV (DiClemente, 1990). This concern precipitated the need to assess and measure female college students' HIV/AIDS-related knowledge, attitudes, and behaviors and to determine if personal experience with HIV/AIDS-impacted individuals and AIDS awareness programs influences their knowledge, attitudes, and behaviors.

The subjects in the study consisted of 102 graduate female college students, randomly selected from a predominantly female institution, Texas Woman's University in Denton, Texas. The subjects were randomly selected and then asked to voluntarily participate in the research. Participants completed an 88-item HIV/AIDS Awareness Questionnaire to determine their knowledge, attitudes, and behaviors regarding HIV/AIDS. The study was conducted during the middle of March, 1993. To reduce the perception of bias and assure complete anonymity, all questionnaires were mailed out by the researcher. The respondents were told that not only was their participation voluntary, but that they could terminate their participation at any time. The project was approved by the Human Subjects Committee at Texas Woman's University.

The data were analyzed using a statistical package (BMDP) using three 1-sample <u>t</u>-tests, Pearson's Product Moment correlation coefficient, and Point-Biserial correlation coefficient. To determine if any statistical significance existed between graduate and undergraduate female students' knowledge, attitudes, and behaviors about HIV/AIDS, at the .017 level, <u>t</u>-tests were used. The Bonferroni adjustment was applied to guard against Type 1 error. Point-Biserial correlations were used to determine if any relationship existed between demographic variables and knowledge, attitudes, and behaviors, between sources of information about HIV/AIDS and knowledge, attitudes, and behaviors, and between personal experience with HIV/AIDS-impacted individuals and knowledge, attitudes, and behaviors.

#### Summary of the Findings

The demographic variables on the HAAQ Survey for the participants provide information concerning age, gender, marital status, ethnicity, majors, and level of graduate program. Gender and majors were dropped due to a lack of variability. Respondents also did not regularly indicate their ages. The 102 female students who participated in the survey were either white or non-white (Black, Hispanic, Native American, Asian, or Pacific Islanders).

Analyses of the data revealed the following findings:

1. Statistical treatment of the data revealed that undergraduate female students had a significantly higher level of HIV/AIDS-related knowledge than did graduate female students at the .017 level. No significant difference was found between graduate and undergraduate female students' attitudes toward HIV/AIDS at the .017 level. Statistical treatment of the data revealed there was no significant difference between graduate female students' and undergraduate female students' behavior toward HIV/AIDS at the .017 level. Based on these results, it seems that undergraduate students had significantly more knowledge concerning HIV/AIDS than did the graduates surveyed by this researcher. The graduate and undergraduate students did not appear to differ in either their attitudes towards HIV/AIDS, or in regards their behavior as it relates to HIV/AIDS. 2. Statistical analyses using the Pearson correlation coefficient for the correlation of graduate female students' knowledge, attitudes, and behavior towards HIV/AIDS revealed no significant relationship between knowledge and attitude at the .05 alpha level. A non-significant negative correlation between the knowledge score and behavior was shown. A non-significant relationship between graduate female students' behavior and attitudes concerning HIV/AIDS was revealed at the .05 alpha level. Statistical analysis of graduate female students' knowledge, attitudes, and behavior toward HIV/AIDS revealed no significant relationship between the three variables at the .05 alpha level. Based on the results of this study, it appears that graduate students did not differ in either knowledge of and/or attitudes towards HIV/AIDS or in regard their behavior as it relates to HIV/AIDS. It also means that the undergraduate students' high level of knowledge did not change their attitudes or behaviors about HIV/AIDS.

3. Statistical analyses of the data using the Point-Biserial correlation coefficient revealed a significant positive relationship between age and knowledge and between program level and knowledge. Stronger knowledge was associated with marital status, and a significant negative correlation exists between marital status and behavior and between ethnicity and behavior.

There were no significant relationships between age and attitudes, between program level and attitudes, or between marital status and attitudes, and a non-

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significant negative relation exists between ethnicity and attitudes. The significance of the relationship was tested at  $\propto < .05$ .

A possible explanation consistent with the results of this analysis is that undergraduate students were characterized by high knowledge possibly because of high exposure to educational programs involving AIDS education curriculum at the undergraduate level and taking many interrelated courses. Another interpretation is that separated non-whites lack the knowledge upon which to base positive attitudes. Younger white, unmarried students, however, did not show evidence of applying the knowledge they possessed to their attitudes or preventive behaviors.

4. Statistical analyses of the data using the Point-Biserial correlation coefficient test revealed no significant relationships between graduate students' HIV/AIDS knowledge, attitudes, and behavior and their personal experiences with HIV/AIDS-impacted individuals. There is an increasing need for professional and non-professional home health care workers to provide care for the person with HIV/AIDS outside the acute care hospital. Alternate sites for care include the patient's home, community group homes, and residential drug treatment facilities. The results of this study may be interpreted that the graduate students had a fear of contracting AIDS; negative attitudes toward individuals with HIV/AIDS; the lack of a factual knowledge base; and a lack of experience in caring for persons with AIDS. All of these factors might have contributed to the dispositional beliefs to provide care for the HIV/AIDS-impacted individual. HIV/AIDS educational programs must include cross-cultural awareness and value clarification in an attempt to decrease the influence of negative attitudes, fear, and anxiety related to AIDS.

#### **Research Question Results**

A Point-Biserial correlation coefficient was used to answer the following research question:

1. Which sources of information about HIV/AIDS do subjects indicate that they use?

Statistical analyses of the data using the Point-Biserial correlation coefficient test revealed significant relationships between doctor/health educator and knowledge ( $\underline{r} = .3071$ ) and between doctor/health educator and attitudes ( $\underline{r} = .3061$ ). A stronger relationship was shown between formal classes and knowledge ( $\underline{r} = .3448$ ), which was significant at the  $\alpha < .01$  level, and the relationship between formal classes and attitudes ( $\underline{r} = .3182$ ), which was significant at  $\alpha < .05$ alpha level.

Statistical analyses of graduate female students' HIV/AIDS-related knowledge and pamphlets revealed a significant correlation ( $\underline{r} = .3213$ ) at  $\propto < .05$ level. A significant relationship was also found between workshops and knowledge ( $\underline{r} = .3259$ ) and between workshops and attitudes ( $\underline{r} = .2638$ ). It appears that the use of the campus newspaper, magazines, family and friends, and the AIDS Hotline as an important source of information did not significantly influence the responding graduate students in terms of their knowledge about AIDS, attitudes toward AIDS, or behavior in regard to HIV/AIDS. However, it is apparent that having a doctor/health educator, reading pamphlets, and attending formal classes as a major source of information on AIDS significantly influences graduate students' knowledge and attitudes toward HIV/AIDS, but did not influence their behavior as it relates to HIV/AIDS.

#### Discussion

HIV is a deadly virus, and its outcome, AIDS, is an incurable disease that has reached epidemic proportions (Brown, 1989). Control of this epidemic consists predominantly of preventative education programs to foster and sustain reduced risk behaviors (Brown, Childers, & Waszak, 1990). This study is one of a small number of reported research articles concerning college graduate students and their knowledge, attitudes, and behaviors toward HIV/AIDS. College students (ages 24 to 29) have been subjects of many surveys and reported research, and those studies have shed light on knowledge, attitudes, and behaviors of this special population group.

Not only is this study significant because of the group under investigation and the research results, but because the survey was completed at a predominantly female university, and because graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors are measured across the university.

This study did show that no significant difference was shown between graduate female students' and undergraduate female students' attitudes and behaviors toward HIV/AIDS, but the undergraduate students' responses to HIV/AIDS-related knowledge items showed that undergraduate students were more knowledgeable about HIV/AIDS than were graduate female students. This increased knowledge of undergraduate students may have been because of more media campaigns and/or may be because of increased educational efforts (DiClemente & Temoshok, 1986; Strunin & Hingson, 1987; Lawrence et al., 1990) that have occurred between the previous research (Brown, Nassau, & Barrone, 1990) and the present survey. Educational efforts and demographic factors (age, level of education, marital status, ethnicity) provide not only the knowledge but also the motivating force needed to promote behavioral change.

This finding also supports the fact that even though college students may have adequate knowledge about HIV/AIDS, they do not typically change their behavior (Kegeles, Adler, & Irwin, 1988). This finding also reinforces the premise that for behavior change to occur, knowledge is necessary but not adequate, and a motivating factor must be present to induce change (Fineberg, 1988).

Survey results indicated that the highest risk behavior scores of this study were related to alcohol use and sexual practices rather than abuse of illegal drugs. Only 4% of the students reported ever injecting illegal drugs before having sexual practices. However, 54% of the students reported using alcohol before having sex.

This study also revealed that no significant correlations were found between knowledge and attitudes. This finding seemingly supports the prior research with college students which indicates that increased knowledge does not necessarily bring about improved attitudes. In the case of HIV/AIDS, when students were asked to check "True," "False," and "Don't Know" concerning whether HIV/AIDS has been known to have been transmitted by sharing I.V. (intravenous) or non-I.V. needles, 99% of the students answered correctly. In response to the question about transmission through contact with semen, vaginal secretions, or blood, all students answered correctly. Despite this high level of knowledge, 83.3% of the students surveyed responded that they would not work with, attend classes with, and/or take care of a person with HIV/AIDS infection.

These attitudes are even more interesting in light of the fact that these students reported knowing that HIV is transmitted by unprotected sexual intercourse, sharing of I.V. needles, and from an infected mother to her unborn child. Results from this study are consistent with earlier findings that students have a better understanding of how HIV is transmitted than how it is not transmitted (Lesnick & Pace, 1990). Most students responded that they had changed their behavior to avoid HIV infection, but they usually do so by reducing the number of sexual partners. Only 25.7% responded that they had six or more sexual partners since 1979. Of the respondents, 59.2% had used condoms which would have provided a margin of safety against HIV infection.

Specific responses to the instrument provided by the respondents may be interesting, as well as beneficial, to those who will be developing HIV/AIDS program curricula. The survey items with the highest frequency and percentage of correct responses were the following:

Item 2--HIV (AIDS) infection has spread among people who are heterosexual. Students answering correctly: 101 (99.0%). Item #3) A person must be infected with the HIV virus to develop AIDS. Students answering correctly: 98 (96.1%). Item 4--An HIV-infected person can infect others with HIV. Students answering correctly: 97 (95.1%). Item 10--Using a condom during sex can reduce the risk of HIV (AIDS) infection. Students answering correctly: 100 (98.0%). Item 20--HIV/AIDS has been known to have been transmitted by shaking hands. Students answering correctly: 99 (98.0%). Item 23--HIV/AIDS has been known to have been transmitted through contact with semen, vaginal secretions, or blood. Students answering correctly: 102 (100.0%). Item 27--HIV/AIDS has been known to have been transmitted through insect bites. Students answering correctly: 78 (76.5%). Item 28--HIV/AIDS has been known to have been transmitted by sharing I.V. (intravenous) or non-I.V. needles. Students answering correctly: 101 (99.0%). Item 66--Would you have your partner practice safer sex? Students answering Yes: 80 (80.8%). Students

answering No: 16 (16.2%). Item 68--Would you use alcohol before having sex? Students answering Yes: 54 (53.5%). Students answering No: 41 (40.6%). Item 77--Have you ever engaged in sexual intercourse with a partner who uses I.V. (intravenous) or non-I.V. injected drugs? Students answering Yes: 7 (7.3%). Students answering No: 81 (84.4%). Item 81--Do you think you are at risk of becoming infected with HIV/AIDS? Students answering Yes: 12 (12.0%). Students answering No: 72 (72.0%). Item 84--Do you know for certain that a person who you know personally is HIV infected/has AIDS? Students answering Yes: 33 (32.7%). Students answering No: 68 (67.3%). Item 87--Is that person someone you would take care of if he/she would become sick? Students answering Yes: 6 (16.7%). Students answering No: 30 (83.3%). Item 88--Has your behavior changed in response to the AIDS epidemic? Students answering Yes: 35 (87.5%). Students answering No: 5 (12.5%).

In reviewing the responses of those surveyed, the large proportion of "No" and "Don't Know" responses, combined with incorrect responses, revealed the lack of formal HIV/AIDS instruction or information for college students. The present study, however, does indicate that it is necessary for the colleges and universities to correct college students' misconceptions and misinformation about HIV/AIDS.

In this research, the variable, "level of knowledge about HIV/AIDS," did not predict safer behavior with regard to sexual practices. Findings of a study about knowledge and risk behavior of black college students by Thomas et al. (1989) showed overall basic knowledge to be satisfactory, with considerable misinformation about transmission of HIV/AIDS. Less than 30% knew it was not spread by insects and less than 80% knew it was not transmitted by kissing or toilet seats. This is consistent with findings in studies of minority populations by DiClemente and Colleagues (1986, 1988) indicating ethnic differences in knowledge and misconceptions. Thomas et al. (1989) reported that students who had participated in high risk practices had significantly lower mean knowledge scores than those who had not engaged in these activities. These findings appear to be in opposition to the results of the present study.

Many indicated that students still have misconceptions about HIV infection and its modes of transmission. Moreover, students with a reasonable knowledge of HIV infection may not perceive themselves to be at risk and may continue to engage in high-risk behavior. Educational methods and materials must address the diversity of students on college campuses by providing effective learning opportunities for those of different ages, sexes, racial and ethnic groups, and sexual orientations (Thomas et al., 1989).

#### Conclusion

The major purpose of this study was to measure graduate female students' HIV/AIDS-related knowledge, attitudes, and behaviors and to compare these measures with undergraduate female students' knowledge, attitudes, and behaviors to determine whether any difference or relationships exist among these variables. This study also was to determine whether personal experience with HIV/AIDSimpacted individuals and participation in an AIDS awareness program had any influence on graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors. The results of the data analyses were tested at the .05, .017, and .01 levels of significance, and the following conclusions were drawn:

#### Hypothesis 1

No significant difference between TWU graduate and undergraduate female students' HIV/AIDS-related (a) knowledge, (b) attitudes, and (c) behaviors. While a significant difference was found to exist between graduates' and undergraduates' HIV/AIDS-related knowledge, no such significance was found between these two groups in regards to their attitudes or behaviors. The undergraduate students responding to this survey reported greater knowledge about HIV/AIDS, but no difference in their attitudes towards the virus or disease. The graduate students indicated they engaged in behaviors similar to those of the undergraduate students.

Hypothesis 1 (a) <u>was rejected</u>, based on the identification of a significant difference that exists among the two groups. Hypothesis 1 (b) and 1 (c) were <u>accepted</u>, because no such significance was found between the two groups' HIV/AIDS-related attitudes and behaviors. These findings indicate that the graduate students possess a considerably high level of HIV/AIDS-related knowledge which might be due to their intellectual exploration of new ideas, but this does not influence their attitudes and behaviors about HIV/AIDS.

This study also confirms that there were considerably high levels of knowledge, low attitudes, and low safer sexual practices. These findings are inconsistent with Becker and Joseph (1988), who suggested that high levels of knowledge and a strong internal sense of control would accompany the use of safer sex practices. The HIV/AIDS knowledgeable subjects in this study seemed to indicate that their being well informed may have decreased their sense of personal risk. Rhodes and Wolitski (1989) suggested that students with high levels of knowledge of AIDS recognize that they are in a low risk category, and this reduces their perception of susceptibility.

The egocentric undergraduate is oriented to the here and now. Thus, even though college students have the cognitive ability to imagine the future, it often seems irrelevant. As Tonkin (1987) noted, the present is too powerful for much retrospection or for projection into the future; contracting AIDS or dying in five years just is not a realistic concept for many undergraduates. The undergraduate who is still attempting to work through developmental tasks and who simultaneously engages in sexual experimentation is least prepared to handle the "future time perspective" necessary to employ preventive measures. The latency period of AIDS, during which no physical or other manifestations of infection are apparent, further complicates the situation. Based on the present results, a beginning would be to help all college students better understand the facts about HIV/AIDS because undergraduate students with high knowledge were less resistant to safer sex practices.

#### Hypothesis 2

Measures of TWU graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors are not significantly interrelated. Hypothesis 2 was <u>accepted</u> based on the results of this study. No significant interrelationship existed between knowledge, attitudes, and behavior related to HIV/AIDS. These findings indicate that undergraduate students possess a high degree of knowledge regarding HIV/AIDS. Their high level of knowledge might be because of their theoretical intellectual exploration of new ideas and general information, but this knowledge does not influence their attitude and behavior toward HIV/AIDS. Ostrow (1989) pointed out that perception of susceptibility to AIDS "appears to be a better predictor of one's future behavior than knowledge about AIDS." Knowledge alone is not indicative nor sufficient for behavior change. No significant relationship was found between knowledge and attitudes of graduate female students regarding HIV/AIDS. This supports the findings of prior studies with college students which indicate that increased knowledge does not necessarily bring about improved attitudes. This may be indicative of what is to come if

undergraduate students' behavior patterns develop similarly to those for graduate students, because knowledge does not always mean a change in attitudes and/or behavior.

Miller, Booraem, Flowers, and Iverson (1990), in reporting a communitybased AIDS prevention program for gay and bisexual men, discuss the changes in both attitude and information from community discussion groups. These 3 1/2 hour, one-short discussion groups focus on information, attitudes, and behavior associated with HIV infection. The authors report that, on pre-test and post-test scores, correlations of knowledge change to intended behavior change and attitude change to intended behavior change were significant. However, the correlation of knowledge change to attitude change was not significant. This research, according to the authors, underscores the need for interventions that exceed simply giving information to elicit behavior change.

#### Hypothesis 3

Measures of TWU graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors are not significantly related to their demographic and/or educational characteristics (age, educational level, marital status, and ethnic background). Hypothesis 3 <u>was rejected</u> based on the results of this study. A positive significant relationship was found between graduate students' HIV/AIDSrelated knowledge, attitudes, and behaviors and the demographic variables. These findings indicate that graduate female students' HIV/AIDS-related knowledge has been a reflection of their quality graduate programs which have given them the credibility and likelihood of using institutional sources of information about HIV/AIDS. The relationship between age and knowledge is indicative of graduate students' maturity and experience in making better decisions as they relate to HIV/AIDS. The stronger relationship that exists between marital status and knowledge has shown that married graduate students make better use of information regarding multiple sexual partners and use of condoms for protection.

#### Hypothesis 4

Measures of TWU graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors are not related significantly to their personal experiences with HIV/AIDS-impacted individuals. Hypothesis 4 <u>was accepted</u> based on the results of this study. No significant relationship was found between graduate students' HIV/AIDS-related knowledge, attitudes, and behavior and their personal experiences with HIV/AIDS-impacted individuals. These findings indicate that 83.3% of the graduate students responding stated that they would not take care of HIV/AIDS-impacted individuals. In this research, the graduate students' high level of knowledge about HIV/AIDS did not change their attitudes and behaviors toward HIV/AIDS-impacted individuals.

#### **Research Question**

1. Which sources of information about HIV/AIDS do subjects indicate that they use?

The subjects were asked this question in order to determine if sources of information about HIV/AIDS influence the graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors. While a significant relationship was found to exist between doctor/health educator and knowledge, between doctor/health educator and attitudes, between formal classes and knowledge, between formal classes and attitudes, between pamphlets and knowledge, between pamphlets and attitudes, between workshops and knowledge, and between workshops and attitudes, no such significance was found to exist among graduate students' HIV/AIDS-related knowledge, attitudes, and behaviors and other sources of information (campus newspapers, magazines, family and friends, and AIDS Hotline). These findings indicate that graduate students using campus newspapers, magazines, family and friends, and the AIDS Hotline as a preferred source of information did not show any significant effect on their HIV/AIDSrelated knowledge, attitudes, and behavior. However, the graduate students as respondents in this study did indicate that having a doctor/health educator, exposure to brochures or reading pamphlets, and information from formal classes as sources of information on AIDS had significant influence on their knowledge

and attitudes toward HIV/AIDS, but did not have any influence on their behavior as it relates to HIV/AIDS.

The evidence of this study confirms that there are considerably high levels of knowledge, relatively negative attitudes, and low levels of risk behavior toward HIV/AIDS. In general, college students know about the most important risks, and non-risks, involved in becoming infected with HIV. Among the best examples of a high level of correct knowledge scores are questions about having intercourse with an infected individual, having multiple partners, having sex with a promiscuous partner, sharing needles, and use of condoms. Differences between ethnic groups were significant for all data presented here. White students usually received the highest scores followed by Blacks, Hispanic/Asian, and American Indians.

This researcher's conclusions are consistent with those of other sociobehavioral researchers (DeBuono, Zinner, Deamen, & McCormack, 1990); that is, it is difficult to investigate and comprehend the sexual behaviors of college students. These students may be using mechanisms of denial to cope with the overwhelming reality of HIV/AIDS. Not practicing healthy sexual behaviors to protect themselves from HIV/AIDS, or not admitting to practicing safer sex out of concern for the disease, is the antithesis of healthy functioning. Keeling (1986) found that university students as a group have relatively high levels of sexual activity with multiple partners but do not believe or recognize that their actions create a high risk potential for contracting and spreading HIV. Students seem to feel that no one in their circle has AIDS.

#### Implications

Despite being well informed about HIV/AIDS, few college students have changed their behavior in meaningful ways because of the threat of AIDS (Freimuth et al., 1987). Therefore, the goal of HIV/AIDS-related prevention messages must go beyond awareness and knowledge and must extend to influencing actual behavior.

With the number of AIDS cases increasing daily in the United States' colleges and universities and the increasing numbers of male, female, young, and old becoming infected with HIV, it is imperative that the graduate and undergraduate college students of today be knowledgeable about HIV/AIDS. Advances have been made in disseminating knowledge; however, this knowledge must be translated to the individual behavior of the person if the epidemic of AIDS is to be halted.

Graduate college students from TWU did possess a high level of knowledge concerning HIV/AIDS, but still engaged in sexual behaviors that put them at risk of becoming infected with HIV. The results of this research suggest a need to develop and implement HIV prevention education curriculum that would provide opportunities for protective behavioral skill development, ranging from how to say "no" to sex-related pressures, to talking about the decision to have sex with a partner, and how to obtain condoms (Haffner, 1988). College students are affected by peer pressures, loneliness, and lack of social support, and they take part in risky behavior in order to gain admittance into peer groups to improve their self-esteem (Brown, DiClemente, & Reynolds, 1991). Education programs about HIV may be more effective when students have opportunities to develop decision-making skills and ways to resist peer persuasion (CDC, 1988).

Health educators and professionals need to promote healthy attitudes and beliefs that lead to behaviors such as taking responsibility for one's health (Wishon, Swaim, & Huang, 1989). Attitudes can change in a positive direction when students take part in activities that make them analyze and critically think about issues regarding HIV/AIDS (Fennell, 1991).

Health educators need to integrate units covering self-esteem, family, and personal values as a part of a comprehensive sexuality education program into a HIV/AIDS prevention curriculum. This study has demonstrated the need for health educators and professionals to present a decision-making model and encourage activities such as role-playing exercises which are effective in helping students to practice refusal skills (Varnes, 1989). Decision-making activities can provide students with the opportunity to apply this decision-making process to sexual involvement decisions, because students advocate use of movies in sexuality education. HIV health educators could show the videotape <u>Sex, Drugs, and AIDS</u>

which portrays risk-taking behavior, suggests methods of prevention, models a decision-making process, and repeatedly emphasizes the necessity of safer behaviors (Miller & Downer, 1988). Programs could also be presented in formats such as movies, posters, pamphlets, and information packets and by having HIV-infected college students speak (Manning, Balson, Barenberg, & Moore, 1989).

In addition to a need for specific information about HIV and its mechanism of transmission, college and university students also need education on civil rights and social issues arising from the AIDS epidemic. As future leaders of the generation that will feel the most impact from AIDS in terms of the number of infected people, these students can make themselves stand for positive political and social decisions related to the epidemic. Teaching students to address the moral and ethical dilemmas posed by the AIDS epidemic, as well as the medical ones, seems an appropriate responsibility for the college curriculum.

#### Recommendations

The following recommendations have been developed for future research:

1. Further research is needed to document the magnitude of behavioral change in college populations. Furthermore, the future work must adequately and vigorously investigate the determinants of behavior of college students.

2. Establish a longitudinal study with behavior change as a dependent variable. Such a study would need to find the most appropriate method of data collection because self-reporting of such sensitive information as personal sexual behaviors is suspect.

3. Effective HIV/AIDS education at the collegiate level would require that students understand the multifaceted health-related behaviors that can increase the potential for HIV infection; therefore, HIV education should be part of a general health education course.

4. Future surveys should be used to study current drug- and sex-related behaviors of college students to obtain a more complete view of various HIV/AIDS risk-related behaviors and their possible effects on future college generations.

5. Further, monitoring of HIV-related knowledge, attitudes, and behaviors and program effectiveness are recommended. State and local agencies, including colleges and universities, are urged to make concerted efforts to implement effective HIV prevention education programs by seeking funding from local organizations in a collaborative effort to provide sound HIV education programs for their students.

6. A longitudinal study should be conducted to determine whether HIVrelated knowledge, attitudes, and risk behaviors change over time in a specific college population. The study should be replicated in other areas of the state to determine if regional differences exist, and the study should be conducted to determine if and how motivating factors can contribute to measurable behavior change.

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### APPENDICES

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Appendix A

## HIV/AIDS AWARENESS QUESTIONNAIRE

# HIV/AIDS Awareness Questionnaire

This is a study of the knowledge, attitudes and behavior practices relating to Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS). The HIV attacks the body's immune system; AIDS is the most serious form of HIV disease. This survey is STRICTLY CONFIDENTIAL and ANONYMOUS. There is no way to identify any of the students participating in the survey. Please answer each question honestly. DO NOT SIGN YOUR NAME OR ID NUMBER ANYWHERE ON THE SURVEY. The completed questionnaire will not be made available to anyone except the researcher. The completed questionnaire must be returned through US mail to: Robert Ibironke, c/o Dept. of Health Studies, TWU, P.O. Bax 25383, Denton, Texas 76204.

Age	Gender 🗆 Male 🗆 Female	
Marital Status	Ethnic Background	Major Area of Specialization
<ul> <li>D Never Married</li> <li>D Married</li> <li>D Separated</li> </ul>	<ul> <li>Black-Non-Hispanic Origin</li> <li>American Indian or Alaskan Native</li> <li>White-Non-Hispanic Origin</li> </ul>	Please specify:
<ul> <li>Divorced</li> <li>Widowed</li> </ul>	<ul> <li>Hispanic</li> <li>Asian or Pacific Islander</li> <li>International Non-Resident or Alien         (Please specify country:)</li> <li>Other (Please specify:)</li> </ul>	
Level of Grad	uate Program	toral

Please check the appropriate box or fill in the blank:

Please check your response for each item listed below:

1. Have you learned about HIV/AIDS from any of the following sources?

VFS NO	T.V.	VFS	Formal Classes
NO	Campus Newspaper	VES	HIV/AIDS Pamphlets
YES NO	Family/Friends	VES	Community Newspaper
YES NO	AIDS Hotline	VES NO	Magazines
YES	Doctors/Nurses/ Health Educators	VES	Workshops/Seminars/ Briefings

Other (please specify) :\_

#### PARTA. Knowledge:

For items 2-19, please check either TRUE, FALSE, or DON'T KNOW for the following statements:



95



For items 20-34, "contact" refers to infected body fluids coming into contact with an open cut, sore, or mucous membrane such as the lining of the mouth, vagina, or rectum.

HIV/AIDS has been known to have been transmitted...



96

HIV / AIDS has been known to have been transmitted... (Check one answer for each of the following, :



#### PART B. Attitudes:

For items 35-45, please check one answer (agree, disagree, or uncertain) that corresponds to your response to the following statements:




#### PART C. Behavior:

For item 46, check one answer which applies to you:

46. a I do not have sexual intercourse.
b I use condoms each and every time I have sexual intercourse.
c I use condoms, but not every time.
d I do not use condoms.
If you checked a, skip to item 61 and continue.

If you checked b, c, or d, continue on item 47.

For items 47 thru 60, please check one answer (yes, no, or don't know) that corresponds to your response to the following statements:

When I do not use condoms during sex it is because...



When I do not use condoms during sex it is because ... (Check one answer for each of the following) :



99



For items 74 thru 83, please check the appropriate box for your response.

74. With how many partners have you had sexual intercourse since 1979?

If you answered NONE, skip to item 78 and continue.

75. How many sexual partners (including yourself) has your current sexual partner had since 1979?





Check one answer for each of the following:

.



 84.
 YES
 Do you know for certain that a person who you know personally is HIV infected/has AIDS?

#### If yes, answer the following:

<b>85</b> .	YES NO	Is that person someone with whom you live or someone who you see every day?
<b>8</b> 6.	VES NO P	Is that person a member of your family?
87.	VES NO	Is that person someone you would take care of if he/she would become sick?
<b>8</b> 8.	NO S	Has your behavior changed in response to the AIDS epidemic?

\* Please fold this questionnaire in half and place in the envelope provided.

\* Return this sealed envelope through campus or U.S. Mail (no postage required) to:

Robert Ibironke c/o Department of Health Studies Texas Woman's University P.O. Box 25383 Denton, Texas 76204

Thank you for your time and honesty.

Appendix B

### CONSENT TO CONDUCT STUDY FROM

#### TWU HUMAN SUBJECTS REVIEW COMMITTEE

TEXAS WOMAN'S UNIVERSITY DENTON DALLAS HOUSTON

OFFICE OF RESEARCH AND GRANTS ADMINISTRATION P.O. Box 22939, Denton, Texas 76204-0939 817/898-3375



HUMAN SUBJECTS REVIEW COMMITTEE

February 15, 1993

Robert A. Ibivonke C/O Dr. Leah Kaplan Health Studies

Dear Robert A. Ibivonke:

Your study entitled "HIV/AIDS - Related Knowledge, Attitudes Behavior of Graduate University Students: A Comparative Analysis" has been reviewed by a committee of the Human Subjects Review Committee and appears to meet our requirements in regard to protection of individuals' rights.

Be reminded that both the University and the Department of Health and Human Services (HHS) regulations typically require that signatures indicating informed consent be obtained from all human subjects in your study. These are to be filed with the Human Subjects Review Committee. Any exception to this requirement is noted below. Furthermore, according to HHS regulations, another review by the Committee is required if your project changes.

Special provisions pertaining to your study are noted below:

- X The filing of signatures of subjects with the Human Subjects Review Committee is not required.
- X Your study is exempt from further TWU Human Subjects Review.
- \_\_\_\_ No special provisions apply.

Sincerely,

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Chairman Human Subjects Review Committee

cc: Graduate School Dr. Leah Kaplan, Health Studies Dr. William Cissell, Health Studies

# Appendix C

## CONSENT TO USE THE INSTRUMENT

FROM TWU TASK FORCE ON AIDS



TEXAS WOMAN'S UNIVERSITY DENTON DALLAS HOUSTON DEPARTMENT OF HEALTH STUDIES College of Health Sciences, P.O. Box 22808, Denton, Texas 76204-0808 817/898-2860

February 8, 1993

Robert Ibironke 2121 Stella Street Denton, TX 76201

Dear Robert,

As Chair of the TWU Task Force on AIDS (TFDA), and Chair of the Research Committee of the TFDA which developed the (HIV/)AIDS Awareness Questionnaire ([H]AAQ), it is my pleasure to give you permission on behalf of the members of the TFDA to use this instrument in your study. We would like to review a copy of your dissertation at its completion with your permission to copy information which would be useful to further research using the HAAQ.

In your dissertation, when discussing the instrument itself, please cite the Research Committee of the TWU Task Force on AIDS as the author of the instrument. For validation and reliability information, see Brown's doctoral dissertation of 1989, and Mason's unpublished master's thesis of 1993. Both authors were TWU student members of the TFOA, as you have been, and chose to conduct research for their graduate papers which would lead to further development and improvement of the instrument.

You have my best wishes for every success with your research.

Sincerely yours,

Leah E. Kaplan, PhD, CHES Assistant Professor Appendix D

LETTER TO STUDY SUBJECTS

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February 10, 1993

Dear TWU Graduate,

I am a doctoral student in the Department of Health Studies and am conducting research for my dissertation under the direction of Dr. Leah Kaplan. You have been selected at random from among all graduate students enrolled this semester at the Denton campus of TWU to participate in this study, HIV/AIDS-Related Knowledge, Attitudes and Behaviors of Graduate University Students: A Comparative Analysis. The purpose of this study is to measure graduate students' HIV/AIDS-related knowledge, attitudes and behaviors at TWU during the spring of 1993, to compare these measures to similar pre-existing measures for TWU undergraduate students, and to compare these measures for male graduate students to those for female students.

Your participation in this study is completely voluntary; no penalty will result from your refusal to participate. Completion and return of the enclosed HIV/AIDS Awareness Questionnaire will constitute your informed consent to include your responses in a collective analysis with those of all other participants in the study. All data will be strictly confidential. To protect your anonymity, DO NOT place any identifying marks or write your name anywhere on the questionnaire. No person other than myself will have access to your completed questionnaire, and the questionnaire will be destroyed at the conclusion of the study.

Please complete and return the questionnaire in the envelope provided. However, if you are younger than 18 years of age, if you are uncomfortable about answering questions about HIV/AIDS, or if you do not want to participate in the study for any other reason, DO NOT respond to the items on the questionnaire; however, please return it to me in the envelope provided.

Should you wish information or assistance regarding HIV/AIDS, you are invited to contact Dr. Leah Kaplan, Chair, TWU Task Force on AIDS, at her office in the Department of Health Studies (817/898-2841). You also may call one or more of the toll-free hotlines available locally (Dallas AIDS Resource Center, (214/521-5124), in the State of Texas (Texas Department of Health AIDSLINE, 1-800-299-AIDS), or nationally (National AIDS Information Clearinghouse, 1-800-458-5231). Should you wish additional information about this study specifically, you may contact me at (817) 382-7204. If you have any concerns about the way this research is being conducted, you may contact the Texas Woman's University Office of Research and Grants Administration (817/898-3375).

Thank you for your cooperation.

Sincerely,

Robert Ibironke, MPH, MS