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A SURVEY OF THE KNOWLEDGE, ATTITUDES, AND BEHAVIORS
OF UNIVERSITY OF WISCONSIN-LA CROSSE STUDENTS
REGARDING ACQUIRED IMMUNE DEFICIENCY SYNDROME

A THESIS

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by
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ABSTRACT

Koski, Kathryn A. A Survey of the Knowledge, Attitudes and Behaviors of University of Wisconsin - La Crosse Students Regarding Acquired Immune Deficiency Syndrome

The purpose of this research was to provide educators with an improved understanding of the current level of AIDS-related knowledge, attitudes, and behaviors possessed by a sample of University of Wisconsin-La Crosse undergraduates. Two hundred and twenty-three Health Education 101 students were surveyed during spring semester 1990. Students were found to be generally knowledgeable about key AIDS-related facts, although several widely-held misconceptions were identified. While students indicated perceiving AIDS to be a severe, painful, and pervasive condition, they generally indicated a belief that their personal risk of infection is very low. In addition, many students reported changing their behavior in some way to decrease their risk of contracting AIDS. Statistical analysis using t -tests ($p < .05$) revealed no relationship between personal risk perception and behavior change items, although relationships were identified between two behavior change items and mean knowledge scores. Recommendations are made for results utilization by AIDS educators in designing programs targeting specific educational needs of University of Wisconsin-La Crosse students.

CHAPTER I

INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS), is one of the most serious health problems that has ever faced the American public (Koop, 1987). AIDS is the most severe manifestation of infection with the human immunodeficiency virus (HIV). HIV infection causes a weakening of the human immune system, and thus allows a host of opportunistic infectious agents to establish themselves in the body. These agents, in combination with other effects of the virus, usually lead to severe illness in those infected (Volberding, 1988). It is currently believed that in most cases, HIV infection will eventually result in death (Keeling, 1989).

HIV infection is unique in that the virus may lie dormant for several years before the onset of recognizable symptoms. However, anyone who is infected with the virus is potentially infectious. Thus the virus (which is almost exclusively transmitted through sexual activity, the sharing of IV needles, and to infants during pregnancy) is believed to be spreading rapidly throughout the population, largely by individuals who are unaware of their own infection (Curran, 1988).

Experts believe that AIDS/HIV may pose a unique threat to the college campus. In particular, the traditional-aged undergraduate population is believed to be at risk because of behaviors typical of this age group which may facilitate transmission of HIV. In addition to experimentation with various aspects of their sexuality and with alcohol and other drugs (Keeling, 1989), the "it can't happen to me" attitude is prevalent among this population (Edgar, Freimuth, & Hammond, 1988). Recent studies of AIDS-related knowledge, attitudes and behaviors of college students (e.g., Goodwin & Roscoe, 1988; Gray & Saracino, 1989; Edgar, Freimuth, & Hammond, 1988; Thurman & Franklin, 1990) indicate that students continue to engage in behaviors which place them at risk of HIV infection even though they possess a great deal of knowledge about HIV transmission and prevention.

In the absence of a cure for AIDS or a vaccine to prevent HIV infection, education--specifically, education for change of those human behaviors essential to transmission of HIV (Becker & Joseph, 1988)--is recognized as the primary strategy for limiting the spread of HIV and the subsequent effects of HIV infection (Lomax, Keeling & Gould, 1989). There is little disagreement that the college campus is an ideal setting for educational intervention; where to begin, what methods to use, and which populations, topics, and concerns to address are all variables which must be determined.

Statement of the Problem

In order to provide more effective AIDS/HIV educational programming on campus, a "starting point" must be ascertained regarding the current level of knowledge, attitudes and behavior in the target population and subpopulations. There have previously been no studies of the AIDS/HIV-related knowledge, attitudes and behaviors of University of Wisconsin-La Crosse students; indeed, there have been relatively few studies of university populations overall (Grieger & Ponterotto, 1988) and the lack of random samples and standard instrumentation in those few studies limits their generalizability (Gray & Saracino, 1989). Therefore, the degree of AIDS/HIV-related awareness and knowledge, as well as prevailing attitudes and behaviors of this population and subpopulations is unknown, making it difficult to determine whether educational efforts are correctly and adequately addressing specific populations and concerns.

In addition, with no existing measures of AIDS/HIV-related knowledge, attitudes and behaviors among the University of Wisconsin-La Crosse student population, accurate evaluation of future AIDS/HIV education programs may be impossible to ascertain. A peer AIDS/sexuality education program has been established at the University of Wisconsin-La Crosse during the 1989-90 school year. Without an understanding of the current level of AIDS-related knowledge,

attitudes and behaviors among the University of Wisconsin-La Crosse student population, it will be difficult to assess the impact of this program on campus.

To address these concerns, the purposes of this study are: (a) to determine what factual knowledge regarding AIDS/HIV is possessed by a sample of University of Wisconsin-La Crosse undergraduates; (b) to identify prevalent attitudes about AIDS/HIV and related issues among this population based on five scales of the California State University-Long Beach AIDS Opinion Survey (personal vulnerability, desire for more information, perception of social norms, severity of disease, and prevention effectiveness); (c) to assess whether respondents are making behavioral changes to reduce their risk of contracting AIDS/HIV.

Importance of the Study

The impact of AIDS on our society is and will continue to be devastating (Koop, 1987). Since the first cases were identified in the United States in 1981, over 136,000 Americans have been diagnosed with AIDS. Of those cases, over 83,000 have resulted in death thus far (CDC, 1990). These cases represent just a fraction of the estimated 800,000 to 1.3 million Americans infected with HIV (CDC, 1990); worldwide, 10 million individuals are believed to be infected (Piot, 1988). Researchers have estimated that 99% of the people infected with HIV develop AIDS and will die from

related illnesses within 5 to 10 years (Gray & Saracino, 1989). The U. S. Department of Public Health estimates that by the end of 1992, AIDS will become the nation's fourth leading cause of death, with as many as 336,000 Americans having contracted the disease (CDC, 1990). In short, AIDS represents a real threat to human existence (Krupka & Vener, 1988).

College students--particularly traditional-aged college students--have been identified as a population at risk for HIV infection (e.g., Gottlieb, Vacalis, Palmer, & Conlon, 1988; Edgar, Freimuth, & Hammond, 1988; Keeling, 1989). According to Richard Keeling, M.D., chair of the American College Health Association's Task Force on AIDS, "Students are commonly experimental. They may act out differing elements of their sexuality, exercise inconsistent judgment in their selection of sexual partners, and toy with recreational drugs. Alcohol or other drugs influence judgment. Peer pressure is strong (1989, p. 6)." In addition, college students don't commonly personalize the risk of AIDS (Edgar, Freimuth, & Hammond, 1988) and thus may not "feel personally threatened nor motivated to change their behavior" (Widen, 1987, p. 272) to decrease their risk of contracting HIV.

Due to the lengthy incubation period of HIV, traditional-aged college students who are infected with the virus are not likely to show signs of the disease; thus, many may be unaware

of their own infection. As a result, these infected individuals may be engaging in behaviors which facilitate transmission of HIV to others, and/or depriving themselves of early intervention and appropriate care (Keeling, 1989).

As mentioned previously, education is currently regarded as society's primary strategy for limiting the spread of HIV (Koop, 1987). As AIDS is a multi-faceted issue, it is necessary for AIDS/HIV education to be similarly comprehensive (Conant-Sloane, 1990), targeting not only knowledge, but attitudes and behaviors. The American College Health Association recommends the following goals for college AIDS education programs:

1. to prevent further spread of HIV to uninfected people,
2. to delay or prevent the development of illness in people who already have HIV infection,
3. to prevent or reduce unreasonable fears about the transmission of HIV,
4. to promote compassionate and caring responses to people with HIV infection and AIDS,
5. to provide support for needed services for people with HIV infection and AIDS,
6. to combat prejudice and discrimination against people with HIV infection and AIDS, and
7. to ensure attention to the important economic, social, ethical, legislative, legal, and psychological issues created by the epidemic (Lomax, Keeling, & Gould, 1989, p. 44).

In order to meet these goals and provide more effective educational programming for students of the University of Wisconsin-La Crosse, a "starting point" must be ascertained in regard to their current knowledge about AIDS/HIV, their

attitudes and beliefs regarding AIDS/HIV and related issues, and their related behaviors. Such information is important in determining which areas need to be emphasized and whether certain subgroups of the population need more specific education in certain areas than others.

Additionally, a study of this type is important for evaluative purposes. A study describing the current status of a population can provide a reference point with which to compare future studies and evaluate the effectiveness of educational programming. Evaluation is a pervasive concern of program administrators; programs are routinely justified by and funding is often contingent on their "measurable results." In order to facilitate evaluation of future educational programming, an initial point of reference ("pre-education") with which to compare subsequent measurements ("post-education") is necessary. Since this study will be implemented prior to mass campus AIDS education programming (i.e., the Peer AIDS/Sexuality Education program), it should specifically provide this group with a point of reference with which to evaluate its programs.

In summary, education is regarded as the primary means of slowing the AIDS epidemic. College students are recognized as a population at risk for contracting HIV, and their apparent lack of concern about the disease complicates educational intervention. This study attempts to provide a necessary

basis for AIDS/HIV educational efforts at the University of Wisconsin-La Crosse, as well as a point of reference with which to evaluate future educational programs.

Definition of Terms

AIDS -- Acquired Immune Deficiency Syndrome; the most severe manifestation of infection with human immunodeficiency virus (HIV).

Anal intercourse -- Sexual activity that involves insertion of the penis into a partner's rectum (Walch, 1989).

Antibodies -- A protein substance developed in response to an antigen (Taber, 1985). The human body produces antibodies in response to infection by HIV, which can be detected by serologic testing.

Asymptomatic seropositivity -- A positive reaction to serological tests, without the exhibition of symptoms (Taber, 1985), e.g., when a person is infected with HIV but has no symptoms of illness. Those who asymptomatic seropositive for HIV are presumed infectious, and therefore capable of spreading HIV.

AZT -- Zidovudine (formerly known as azidothymidine), an antiviral drug that is used to treat, but not cure, AIDS. AZT is also helpful to some HIV-positive patients. The drug suppresses HIV activity in the body but does not eliminate the virus (Abramowicz, 1990).

Condom -- A thin, flexible sheath worn over the penis. It is used during sexual intercourse to prevent sperm from entering the vagina and to help prevent sexually transmitted disease (Taber, 1985). Condoms made of latex rubber are considered more effective in preventing transmission of HIV than those made of other materials.

Gay -- See homosexual.

Heterosexual -- One whose sexual orientation is to persons of the opposite gender (Taber, 1985).

High-risk behavior -- An action which puts one at risk for contracting HIV.

Homosexual -- One sexually attracted to another of the same gender (Taber, 1985). Often, "gay" refers to homosexual males and "lesbian" refers to homosexual females.

HIV -- Human Immunodeficiency Virus, the virus which leads to AIDS. Previously referred to as HTLV-III (Human T-Cell Lymphotropic Virus Type III) and LAV (Lymphadenopathy Associated Virus).

HIV disease -- The spectrum of illness caused by infection with human immunodeficiency virus (Douglas & Pinsky, 1989).

Incubation period -- The interval between exposure to infection and the appearance of the first symptom (Taber, 1985).

Intrauterine -- Occurrence within the uterus (during pregnancy) (Taber, 1985).

Intravenous (IV) needles -- Implements used to inject substances (especially illicit drugs and anabolic steroids) into the blood vessels or under the skin.

Monogamous -- Sexual faithfulness to one partner (Walch, 1989).

Non-traditional aged students -- Undergraduate college students over 25 years of age.

Opportunistic infection -- Infections that occur due to the opportunity afforded by the altered physiological state of the host (Taber, 1985). AIDS-related opportunistic infections occur when an individual's immune system is weakened by HIV.

Oral intercourse -- The sexual act of a person putting his/her mouth and/or tongue on another person's genital areas (Walch, 1989).

Perinatal -- The period beginning after the 28th week of pregnancy through 28 days following birth (Taber, 1985).

Postpartum -- The period after childbirth (Taber, 1985).

Risk reduction -- Techniques of safer sex--condom use, decrease of number of sexual partners, decrease in risky sexual practices--or techniques for cleaning intravenous drug needles to lessen the chance of being infected with HIV (Koop, 1987).

Seropositivity -- A positive reaction to serological tests (Taber, 1985), e.g., the presence of HIV (or HIV antibodies) in the blood.

Straight -- See heterosexual.

Traditional-aged college population -- Undergraduate college students between the ages of 17 and 24.

Vaginal intercourse -- Sexual activity involving the entry of the penis into the vagina (Walch, 1989).

CHAPTER II

REVIEW OF RELATED LITERATURE

Much has been written about AIDS in the scientific as well as the popular press since it was identified in 1981. This chapter will provide a review of the literature relating to AIDS in two areas of relevance to the present study: (a) background scientific/epidemiological literature; and (b) relationship between AIDS and the college campus, with an emphasis on studies of AIDS/HIV-related knowledge, attitudes and behaviors of adolescents.

Scientific/Epidemiological Literature

History of the Disease

AIDS was first diagnosed in the United States in 1981, when two rare conditions--Kaposi's sarcoma, a cancer of the lining of the blood vessels, and Pneumocystis carinii pneumonia, a parasitic lung infection--were observed in groups of previously healthy young homosexual males (CDC, 1981a, 1981b). In addition to the virulence of these and other parasitic, fungal, bacterial and viral infections which would ordinarily not cause illness, scientists noted a depleted level of T4 cells (cells essential to immune response) in the afflicted individuals, implicating immune deficiency as a central feature of the disease (Gallo, 1988).

Though initially found in homosexual males, AIDS cases soon began to appear in other populations, including intravenous (IV) drug users, recent Haitian immigrants (CDC, 1982a), hemophiliacs (CDC, 1982b, 1983b), recipients of blood transfusions (CDC, 1982c), sexual partners of people who had the disease or were "at risk" (CDC, 1983a), and infants of mothers with or at risk for the disease (CDC, 1982d). The pattern of infection led scientists to believe that the disease was caused by a single agent, transmittable through blood and semen (Gallo, 1988).

Within three years of the initial diagnoses, the etiologic agent of AIDS was discovered by French and United States researchers working independently. The AIDS-causing retrovirus now referred to as human immunodeficiency virus (HIV) (CDC, 1986b) was initially identified as lymphadenopathy-associated virus (LAV) by French scientist Luc Montagnier of the Pasteur Institute (Barre-Sinoussi, Cherman, Rey, Nugeyre, Chamaret, Gruest, Dauguet, Axler-Blin, Vezinet-Brun, Rouzioux, Rozenbaum, & Montagnier, 1983) and human T-lymphotropic virus, type III (HTLV-III) by Robert C. Gallo of the U. S. National Cancer Institute (Gallo, Salahuddin, Popovic, Shearer, Kaplan, Haynes, Palker, Redfield, Oleske, Safai, White, Foster, & Markham, 1984).

With discovery of the causative agent came marked advances in the understanding of HIV infection and AIDS, as

well as in research into the development of vaccines and potential treatments. Advances such as the ability to grow lymphocytes in tissue culture, the identification of T4 cells as a target for HIV infection, the discovery of an immortal T-cell line that could be used to cultivate the virus, and the development of sensitive viral antibody tests made it possible to understand more fully the nature of AIDS and its related syndromes (Volberding, 1988).

The development of viral antibody tests in 1985 (Weiss, Goedert, Sarngadharan, Bodner, Gallo, & Blattner, 1985) has had a significant effect on the safety of the nation's blood supply. Since that time, as a result of the screening of all units of donated blood for HIV antibodies and the adoption of a system which discourages high-risk individuals from donating (Eisenstaedt & Getzen, 1988), the chance of contracting HIV from a blood transfusion in the United States has become low (Hardy, Allen, Morgan, & Curran, 1985).

Much research continues to be conducted into the development of a vaccine against HIV or cure for AIDS. While scientists remain pessimistic about the chances of finding such a remedy in the near future (Barnes, 1988), advances have been made in the treatment of HIV disease and its varied manifestations. In the meantime, education is considered the primary form of intervention for slowing the spread of the virus (Koop, 1987).

Spectrum of HIV Disease

HIV infection results in a spectrum of disease, of which AIDS, or advanced symptomatic HIV disease, is the most severe manifestation. Other manifestations of HIV infection include chronic symptomatic HIV disease (previously referred to as AIDS-related complex or ARC) and asymptomatic HIV disease. It is currently believed that the majority of those infected with HIV will eventually develop HIV disease in its most advanced (usually fatal) form (Volberding, 1988).

It is not yet fully understood why some HIV-infected individuals remain asymptomatic for extended periods, why some develop chronic (not life-threatening) symptoms, or why others develop advanced symptoms within a relatively short time after infection. Significance lies, however, with the recent shift from focus on a single manifestation of the infection (AIDS) to focus on the agent causing the spectrum of disease (HIV) (Douglas & Pinsky, 1989).

HIV Transmission Routes

Routes of HIV transmission which have been epidemiologically evidenced are as follows (Friedland & Klein, 1987, p. 1126):

- I. Inoculation of blood
 - a. Transfusion of blood and blood products
 - b. Needle sharing among intravenous drug users
 - c. Needle stick, open wound, and mucous membrane exposure in health care workers
 - d. Unsterilized needle

II. Sexual

- a. Homosexual, between men
- b. Heterosexual, from men to women and women to men

III. Perinatal

- a. Intrauterine
- b. Peripartum
- c. Breast feeding

Although other routes have been speculated about, particularly in the early stages of understanding of the disease, these are the only routes which have been shown to result in viral transmission. The role of casual contact (e.g., touching, sharing eating and drinking utensils) in transmission has been discounted (Friedland & Klein, 1987; CDC, 1985b), and even kissing ("as we know it" [Keeling, 1989]), once considered a high-risk activity, has been eliminated from many experts' lists of behaviors facilitating HIV transmission (e.g., Keeling, 1989). The rate of new HIV infection has experienced exponential growth. As HIV infection may not result in recognizable symptoms for 10 years or longer, many of those infected are unaware that they are carrying the virus, yet all who are infected are potentially infectious (Koop, 1987). Thus, the "invisible epidemic of HIV infection" (Keeling, 1989) underlies the epidemic which is marked by visible disease.

Impact of the Disease

The United States Surgeon General has stated that the impact of AIDS on our society "is and will continue to be

devastating" (Koop, 1987, p. 1). Since 1981, nearly 125,000 people in the United States have developed AIDS and over 76,000 have died (CDC, 1990). It is estimated that by 1993, HIV infection will have resulted in as many as a half-million cases of AIDS (Keeling, 1989) and will become the fourth-leading cause of death among Americans (CDC, 1987a).

Actual AIDS cases represent just a fraction of the incidence of HIV disease. It is believed that 800,000 to 1.3 million Americans are infected with HIV (CDC, 1990); worldwide, an estimated 10 million people carry the virus (Piot, 1988). As stated previously, the majority of those infected with HIV are expected to eventually develop AIDS. Scientists have estimated that up to 99% of people who become infected with the virus will develop AIDS and will die from related illness within 5 to 10 years (Gray & Saracino, 1989).

In addition to the human suffering caused by AIDS, society is becoming increasingly aware of the present and future financial costs resulting from the disease (Buchanan, 1988). The direct cost of providing health care to AIDS patients in the United States has been projected at a minimum of \$8.5 billion by 1991 (Scitovsky & Rice, 1987). Furthermore, indirect costs to the nation could increase to \$55.6 billion by 1991 (Scitovsky & Rice, 1987). Thus, "the full impact of AIDS, in terms of morbidity, mortality, and

direct and indirect costs to society has only begun to be felt" (Volberding, 1988, p. 14).

Impact on Specific Populations

To date, AIDS has disproportionately affected young males who have sex with other males--two-thirds of AIDS cases in the United States have been diagnosed in homosexual/bisexual men, and nearly 70% of all cases have been diagnosed in individuals under the age of 40 (CDC, 1990). Additionally, approximately one-quarter of AIDS cases have been contracted through IV drug use, another 5% through heterosexual contact and 4% through blood transfusions or the infusion of blood products in hemophiliacs (CDC, 1990) (Appendix A).

These statistics, however, do not reflect the epidemiologic dynamics of AIDS. Rates of new AIDS cases resulting from intravenous drug use and heterosexual contact have increased steadily over the past few years (Keeling, 1989), while the rate of new cases among homosexuals has slowed (Becker & Joseph, 1988). Also, since 1985, the risk of transfusion-associated HIV infection has been greatly reduced as a result of steps taken by the blood industry in the U.S. to safeguard the nation's blood supply (Hardy, Allen, Morgan & Curran, 1985).

AIDS has also disproportionately affected racial/ethnic minorities (CDC, 1986a). As of February 28, 1990, 56% of U. S. AIDS cases have been reported in whites, with 28% occurring

in Blacks, and 16% in Hispanics (CDC, 1990). However, as Blacks comprise only 12% of the U.S. population and Hispanics only 7%, the rate of cases among these groups is higher than would be expected, relative to their percentage in the overall population (Thomas, Gilliam, and Iwrey, 1989).

High-Risk Behavior

The emphasis in transmission categories has shifted from "high-risk groups" to "high-risk behaviors"; "it is not who you are, but what you do that places you at risk" (Lomax, Keeling, & Gould, 1989, p. 74). Behaviors which have been identified as high-risk include receptive anal or vaginal intercourse (especially if unprotected, i.e., without a condom), intercourse with unknown and/or multiple partners, and sharing of IV drug needles. Oral intercourse is considered "possibly unsafe", and anal or vaginal intercourse with consistent and correct condom use, is considered "low risk" (Volberding, 1988). Elimination or modification of risky behaviors is necessary in controlling the spread of the virus (Becker & Joseph, 1988).

Control of the Disease

There is currently no cure for AIDS, and no vaccine against HIV infection (Koop, 1987). There have been some advances in the treatment of HIV disease and its varied manifestations. Azidothymidine (AZT) has been the primary

treatment for persons with AIDS; it is an anti-viral agent which has been found to slow the effect of HIV once it infects the body thereby prolonging the life expectancy of certain AIDS patients (Wilber, 1988). Recently, AZT (now sold under the generic name zidovudine) has been found to be effective in therapy for some individuals in the early stages of HIV disease as well (Abramowicz, 1990). Therapies for treatment of certain opportunistic infections (e.g., aerosolized pentamidine for treatment of Pneumocystis pneumonia) have also been developed.

As development of a vaccine or cure is not foreseen in the near future (Wilber, 1988), the elimination or modification of those human behaviors essential to HIV transmission is considered the only available measure for limiting viral transmission (Becker & Joseph, 1988). Prevention guidelines have been developed to increase the safety of both sexual activity and IV drug use (CDC, 1983c). For example, "safer sex" guidelines recommend decreasing one's number of sexual partners; avoidance of the exchange of body fluids, particularly semen, during sexual activity; and consistent and careful use of condoms with a spermicide containing nonoxynol-9 (Koop, 1987). Many in the gay community have adopted such strategies (McKusick, Horstman, & Coates, 1985), and the rate of new infections among this population has slowed (Becker & Joseph, 1988).

Education is regarded as playing a vital role in the adoption of risk-reducing behavior. The effectiveness of AIDS education is greatly enhanced when it is tailored to the specific needs of certain populations (Lomax, Keeling, & Gould, 1989). Therefore, it is necessary to closely examine the population at which educational programs are targeted in order to determine how best to elicit the greatest possible risk-reducing response.

AIDS and the College Campus

Impact of AIDS on Adolescents

The number of AIDS cases occurring among adolescents has been relatively low (CDC, 1990) and is expected to remain that way (Keeling, 1989), primarily because of the length of the incubation period of HIV in relation to the age of initial risk behavior (i.e., sexual activity) in adolescents. Keeling (1989) has stated, "HIV infection acquired in high school or college may not manifest itself in recognizable symptoms until long after commencement (p. 6)." Indeed, the absence of physical symptoms of HIV infection does not accurately reflect the threat of AIDS among adolescents (DiClemente, Zorn, & Temoshok, 1986). It is feared that since adolescents generally do not see the clinical manifestations of HIV infection in their peers, they may not feel that AIDS concerns them, and may make no efforts to engage in "less risky" behavior (Keeling, 1989). Further, the existence of

misconceptions about AIDS and HIV transmission may lead to inaccurate assessments of risk and/or failure to utilize (or utilize correctly) protective measures (Manning, Barenberg, Gallese, & Rice, 1989). The result may be an "invisible epidemic of HIV infection" among students on college campuses (Keeling, 1989).

The two necessary components for the spread of HIV have been noted among this population: presence of the virus, and occurrence of behavior (especially sexual) which facilitates viral transmission. A recent study by the American College Health Association and the Federal Centers for Disease Control has indicated that there is indeed HIV infection among college students; analysis of the blood of 16,861 college students across the country showed that HIV antibodies were present in two out of every 1000 students (Biemiller, 1989). High-risk behavior, or that which facilitates transfer of the virus, has likewise been noted among this population, and will be discussed in the next section.

High-Risk Behavior Among Adolescents

The relationship between high-risk sexual behavior and HIV transmission has been well documented (CDC, 1986b; Turner, Miller, & Moses, 1989; Becker & Joseph, 1988). Sexually transmitted disease (STD) rates have been used as an indicator of high-risk sexual behavior (DiClemente, Zorn, & Temoshok, 1987; Melchert & Burnett, 1990), and the incidence of STD

among adolescents has reached near-epidemic proportions (U.S. Department of Health and Human Services, in Melchert & Burnett, 1990). Statistics from the U.S. Department of Health and Human Services indicate that about 75% of the 8-12 million STD cases reported each year occur among adolescents aged 15-24 years old (Manning, Barenberg, Gallese, & Rice, 1989). High rates of gonorrhea were found among adolescents in a recent Canadian study; females between the ages of 15 and 19 years were found to have higher gonorrhea rates than any age group, followed closely by males aged 20 to 24 years. In a related study, Chlamydia trachomatis was found to be prevalent among Canadian college women, with infection rates ranging from 5% to 20% (MacDonald, Wells, Fisher, Warren, King, Doherty, & Bowie, 1990). Locally, the La Crosse County Health Department receives reports of approximately 500 cases of Chlamydia trachomatis annually, the majority of which come from University of Wisconsin-La Crosse students (A. Graewin, personal communication, May 25, 1990).

Many researchers have examined high-risk behavior in adolescents and have attempted to understand factors underlying the actions. Manning, Barenberg, Gallese, and Rice (1989) utilized developmental theory in identifying six traits contributing to high risk behavior among adolescents (pp. 257-258):

1. Identity versus role confusion. The most important task of adolescence is to discover, 'Who

am I?' This is described by Erik Erikson as Crisis Five of life. Many undergraduates use their college years as the time to complete the search for self begun during the teenage years. Indeed, American society seems to encourage college as an appropriate time and setting for such self-discovery.

2. Defining sex roles. Adolescence is the time when sex roles are defined The college years, which often provide a student's first extended period away from home . . . may mean an extension of the period of defining one's sex role. This may be particularly true for the current generation, which has been presented with many new challenges to the traditional roles for both men and women.

3. Sexual experimentation. In terms of Freud's psychosexual theory of development, adolescence is the genital stage of mature adult sexuality. There is a reawakening of the sexual urges of the phallic stages. The need for adolescents to define their own sexual roles may include a period of sexual experimentation. It may even lead to a kind of rite of passage to prove to themselves and to others that they are now men or women.

4. Cognitive development. During adolescence, individuals may attain Piaget's stage of formal operations. Although only about half of American adults reach this highest stage of intellectual development, a much higher proportion of college students attain it. This enables them to appear as 'masters' of the facts and implications of AIDS . . . even though the knowledge may not be perceived as relevant.

5. Risk taking. Adolescence is a time of risk taking, particularly among males. Many 'act out' or attempt 'suicidal' behaviors, by exposing themselves to high-risk actions such as heavy drinking, using drugs, and staying up for 'all-nighters.' Unprotected sex with unknown partners ('unsafe' sex) may now be added to those behaviors.

6. Egocentrism. Elkind has described the egocentrism of adolescence, which involves two subfeatures: (a) the imaginary audience, in which adolescents are constantly reacting to an imaginary

audience that watches their every move with intense interest; and (b) the personal fable, in which adolescents are magically protected from things that can happen to other people The egocentric undergraduate is oriented to the here and now. Thus, as Erikson has noted, even though adolescents have the cognitive ability to imagine the future, it often seems irrelevant. . . .

The existence of such developmental traits, along with the "invisibility" of HIV infection among adolescents, poses a challenge for educators in their attempts to help limit the spread of HIV. Thus, researchers have sought to increase their understanding of the thoughts and actions of adolescents to discover how best to prevent further HIV infection among this population. Much information has been gained by conducting direct surveys on populations of adolescents.

Studies of Adolescent Populations

Since adolescents have been identified as a "population at risk" for HIV infection, there has been an increasing interest in the study of their reaction to the AIDS epidemic. Studies of adolescents have focused on such issues as high school and college students' knowledge of AIDS facts (e.g., Price, Desmond, & Kukulka, 1985; Caron, Bertran, & McMullen, 1987; Goodwin & Roscoe, 1988; Gray & Saracino, 1989), their attitudes regarding AIDS (e.g., Simpkins & Eberhage, 1984; DiClemente, Zorn, & Temoshok, 1987; Goodwin & Roscoe, 1988; Thurman & Franklin, 1990), behaviors which may facilitate HIV transmission (e.g., Carroll, 1988; Katzman, Mulholland, &

Sutherland, 1988; Gray & Saracino, 1989), their attitudes regarding AIDS patients (Poling, Redmon, & Burnette, 1990), their attitudes regarding gay men and lesbian women (Grieger & Ponterotto, 1988), their sources of AIDS information (McDermott, Hawkins, Moore, & Cittadino, 1987), their attitudes about AIDS education programs (Roscoe & Skomski, 1989) and black students' AIDS-related knowledge and risk behaviors (Thomas, Gilliam, & Iwrey, 1989). These studies have helped educators to better understand the thoughts and behaviors of this population, thus enabling them to tailor educational programs to fit the needs of specific groups.

Trends in Knowledge, Attitudes and Behavior. Although generalizability of AIDS-related studies of adolescents has been limited by a lack of random samples and standard instrumentation (Gray & Saracino, 1989), some trends in knowledge, attitudes and behaviors are evident. While early assessments of the level of AIDS knowledge and awareness among adolescents indicated that students were lacking in factual knowledge about AIDS (e.g., Price, Desmond, & Kukulka, 1985; DiClemente, Zorn, & Temoshok, 1987; Caron, Bertran, & McMullen, 1987), the level of AIDS-related knowledge among this population appears to be increasing. More recent studies have characterized adolescents as either "well-informed" about AIDS-related facts (e.g., Thurman & Franklin, 1990; Roscoe & Skomski, 1989), or at least knowledgeable about key facts

(e.g., Manning, Barenberg, Gallese, & Rice, 1989; Wolitski & Rhodes, 1988a & 1988b). Roscoe and Skomski (1989) have attributed this increase in knowledge to such factors as growing awareness by the general public; increased AIDS education programs and professional and lay literature on the topic; the large variety of reports furnished by the mass media; and the recent appearance of safe sex commercials on television, radio, and billboards.

Despite adolescents' increased knowledge about the disease, researchers have found little change in the sexual behavior of this population in response to AIDS (Hirschorn, 1986; Edgar, Freimuth, & Hammond, 1988; Thurman & Franklin, 1990). In a review of four empirical AIDS-related studies of college students, Edgar, Freimuth, and Hammond (1988) concluded that the majority of students are informed about AIDS but do not translate their knowledge into behavioral change; "this presents health educators with their greatest challenge" (p. 61).

Behavior change has been linked to risk perception (Weinstein, 1984), and studies have indicated that there is little concern among adolescents about AIDS affecting their lives (Goodwin & Roscoe, 1988; Gottlieb, Vacalis, Palmer & Conlon, 1988; Gray & Saracino, 1989). While correlations have been identified between level of concern about AIDS and behavior change (Gray & Saracino, 1989; Thurman & Franklin,

1990), few have found a relationship between knowledge and behavior change. This has led many researchers to call for education which goes beyond the traditional dissemination of facts and instead focuses on the building of life skills necessary for behavior change (Wolitski & Rhodes, 1988a; Keeling, 1989; Conant-Sloane, 1989).

As mentioned previously, difficulty arises in generalization of studies assessing the AIDS-related knowledge, attitudes, and behavior of adolescents, since no standard instrumentation has been used and few research efforts have utilized random samples. Therefore, the following review of related studies should be interpreted with caution.

Knowledge About AIDS. Despite a relatively high level of knowledge among the general public, there remains in existence a number of misconceptions about AIDS (Turner, Miller, & Moses, 1989). Many of these relate to HIV transmission routes; "[t]hat many Americans continue to believe that AIDS can be acquired from a mosquito, drinking glass, toilet seat, or one's casual companion undoubtedly reflects not just misinformation, but fear" (Keeling, 1989, p. 7).

The state of AIDS knowledge among the general public is reflected in adolescents, although this author is unaware of any research which provides a comparative evaluation. In an

early study, an informal assessment of college students' AIDS-related knowledge and attitudes was conducted by Caron, Bertran, and McMullen (1987). They enlisted student peer educators to interview students in campus-area bars, and found that "most students exhibited a serious lack of factual knowledge about AIDS." They called for an "increased dissemination of factual information" about AIDS to influence the behaviors of those who do not believe themselves to be at risk of exposure.

McDermott, Hawkins, Moore, and Cittadino (1987) found college students to be "generally knowledgeable" about key AIDS-related facts, but identified important "information deficits" among their sample. For example, the authors described as "alarming" the respondents' lack of association between indiscriminant sexual behavior and AIDS risk, as approximately a third of students were unclear about the link between not engaging in "safe sex behavior" and increased risk of HIV infection, and one-fifth did not realize that avoiding casual sex is a way of decreasing the chance of getting AIDS.

DiClemente, Zorn, and Temoshok (1987) found that while most high school students possessed knowledge of many key AIDS-related facts, their knowledge was "uneven." For example, most students knew that sexual intercourse was a way of transmitting HIV, but only 60% knew that condom use may reduce the risk of HIV infection. They also found that

residence in a high-incidence area had a positive effect on students' level of knowledge about AIDS, as San Francisco adolescents scored significantly higher on related knowledge items than adolescents in Ohio and New York. They hypothesized that concern about AIDS may have a relationship to knowledge about the disease.

Goodwin and Roscoe (1988) assessed the AIDS-related knowledge and attitudes of 495 undergraduates. Like previous studies, they found that students possessed "moderate knowledge" regarding AIDS prevalence, high risk groups, modes of transmission, and symptoms. Students were least knowledgeable about the prevalence of AIDS in the United States and the low degree of risk of acquiring AIDS through an in-hospital blood transfusion--only 35% agreed with the statement, "There is not a high risk of getting AIDS from a blood transfusion in a hospital". The authors identified the persistence of misconceptions among the population, and indicated that misconceptions "may result in unnecessary concern and fear of contracting AIDS through sexual contact" (p. 220).

Wolitski and Rhodes have studied AIDS-related knowledge, attitudes and risk-reducing behaviors of both college and high school students (1988a, 1988b) using instruments similar to the one utilized in the present study. Their study of high school students (Wolitski & Rhodes, 1988b) revealed a

"moderately high" level of knowledge of AIDS-related facts, although several items were missed by at least 40% of the students. Questions answered incorrectly most often included items regarding the transmission of HIV through saliva, blood transfusions, and donation of blood. Additionally, they found a "generally high" level of knowledge of AIDS facts in their study of college students (Wolitski & Rhodes, 1988a).

In a study of the relationship between knowledge about AIDS, perception of risk of contracting AIDS, and sexual behavior, Gray and Saracino (1989) surveyed 459 undergraduates in a human sexuality class. They found that students were "generally informed about AIDS", although a third were unclear about the role of casual contact in HIV transmission. In addition, they identified the existence of several misconceptions, including an item in which 82% believed that the majority of gay men and lesbians have AIDS. They felt that this was dangerous because it "reinforces stereotypic images of persons who are likely to get AIDS and leads to unrealistic self-assessment of an individuals' risk for contracting the disease (p. 201)."

Very high levels of AIDS-related knowledge in adolescent populations have been found recently by Manning, Barenberg, Gallese, and Rice (1989), Roscoe and Skomski (1989), and Thurman and Franklin (1990). Each of these studies' authors

stressed the importance of AIDS education which goes beyond the dissemination of facts.

Relationship Between Knowledge and Behavior. Wolitski and Rhodes (1988a) compared level of AIDS knowledge with self-reported adoption of risk-reducing behavior and found no relationship between the two variables. They called for education which goes beyond factual dissemination, as "knowledge alone may not lead to the adoption of personal risk-reduction strategies (p. 1)." Similarly, Gray and Saracino (1989) found no relationship between accurate knowledge about AIDS and sexual behavior, and also recommended that educators and counselors go beyond traditional approaches of providing factual information as "knowledge alone does not appear to translate into behavioral change" (p. 201).

Manning, Barenberg, Gallese, and Rice (1989) did find a correlation between AIDS knowledge and the practice of safer sex. Students with low knowledge about AIDS indicated that the perceived barriers to practicing safer sex were higher than did those students with high knowledge. The authors suggested that special efforts need to be made to teach students with low knowledge more about AIDS and that the barriers to safer sex can and should be overcome.

Other studies relating to AIDS knowledge include one in which 59% of students claimed that knowledge of AIDS had

affected their choice and number of sexual partners (Atkinson, et al., in Edgar, Friemuth, & Hammond, 1988). Another found a positive relationship between the level of knowledge a student possessed and the student's willingness to associate with HIV-infected individuals in varying degrees of intimacy (Krupka & Vener, 1988).

AIDS-Related Attitudes. Complicating the fears that surround AIDS are some important attitudinal issues (Keeling, 1989); one in particular deals with attitudes toward homosexuals. As AIDS has been inextricably linked with homosexuality since the beginning of the epidemic (the disease has been identified as both GRID [gay-related immune deficiency] and the "gay plague" by the scientific and lay press), the AIDS tragedy has "spawned a renewed scrutiny of gay sexuality as well as an apparent backlash of negative attitudes towards persons who are gay" (Grieger & Ponterotto, 1988, p. 415).

Goodwin and Roscoe (1988) identified a highly negative attitude toward homosexuals among students in their sample, with 45% of respondents identifying themselves as highly nonaccepting of homosexual behavior. A correlation was also found between indication of an accepting attitude toward homosexuality and lack of fear about contracting AIDS. However, Ponterotto and Grieger (1988) found just the opposite; respondents in their survey of college students

generally indicated that they did not hold negative views toward homosexuality or punitive views toward persons with AIDS.

Misconceptions about transmission routes and the stigma associated with homosexuality and IV drug use disease have resulted in negative attitudes toward persons with AIDS (Keeling, 1989). Becker and Joseph (1988) stated that, AIDS is a "highly stigmatized condition," with potential consequences ranging from "disrupted personal or familial relationships through loss of income or insurance benefits to the denial of health care by some providers" (p. 395). In a study of college students' attitudes toward persons with AIDS, Krupka and Vener (1988) surveyed 1175 college students and found a positive relationship between students' knowledge level and their willingness to associate with HIV infected individuals in such situations as sharing a dorm room, sharing a bathroom, using the same swimming pool, living in the same dormitory and being in the same classroom. They also found that 91% were unwilling to date an AIDS carrier and 33% would not wish to be in the same classroom with such individuals. In a survey of students in the University of Texas system (Gottlieb, Vacalis, Palmer, & Conlon, 1988), 86% of respondents indicated that they were in favor of mandatory screening for HIV, and one-third thought people with AIDS should be quarantined.

Concern About AIDS. Studies have indicated that there is little concern about the personal threat of AIDS among the general public, with the exception of the homosexual community (McKusick, et al., 1985). A recent poll conducted by the Associated Press found that although half of the respondents said that everyone or almost everyone in the population is at risk, only 16% saw themselves at risk (Edgar, Freimuth, & Hammond, 1988). Among adolescents, the level of risk perception may be even lower, as a result of developmental factors such as those listed earlier in this paper.

In one of the earliest AIDS-related studies of adolescents, Simpkins and Eberhage (1984) examined college students' attitudes toward AIDS, herpes II, and toxic shock syndrome. They found that the majority of respondents in their sample expressed little concern about any of the diseases, although male homosexuals expressed more concern about AIDS than did any other sexual preference group toward any disease. Further, students reported very little change in rates of sexual activity in response to AIDS over a one-year period. As the study was conducted in a low-incidence area in the midwest, the authors posited that "concern about these diseases . . . may be a function of the incidence of disease (p. 779)."

The findings of Price, Desmond, and Kukulka (1985) echoed the lack of concern about AIDS identified by Simpkins and

Eberhage, as 73% of high school students in their study indicated that they were not worried about contracting the disease. A subsequent study of high school students in San Francisco (DiClemente, Zorn, & Temoshok, 1987) again showed some lack of concern among adolescents, as 61.5% of respondents answered "true" to the statement, "I am not the kind of person who is likely to get AIDS", and 52.4% agreed that, "I am less likely than most people to get AIDS." The authors posited that students in their sample may be more aware of AIDS because they live in a high AIDS-incidence area.

Caron, Bertran, and McMullen (1987) found that many students perceived a low personal degree of risk. While students in their study typically agreed that "everyone should be concerned about AIDS", when asked if they were personally concerned, their response was generally, "no". However, some students did indicate that concern about AIDS was leading to changes in social attitudes regarding sexual and dating behavior.

Low levels of concern were also evident in studies by Spreadbury (1988), who found that 71% of college students were "not worried at all" or "not very worried" about contracting AIDS; Wolitski and Rhodes (1988a, 1988b), who found that while students acknowledged that AIDS is a severe and pervasive problem "for everyone," they did not tend to feel personally

threatened; and Roscoe and Skomski (1988). Goodwin and Roscoe (1988) found that most students did not feel that AIDS was a serious threat to them. Only 3.9% felt "very worried that they will get AIDS", 10.5% indicated that they were "very worried that someone that they know will get AIDS", and only 16% indicated that "it is very likely that AIDS will become an epidemic for the public at large." Likewise, the majority of respondents in a study by Gray and Saracino (1989) indicated that AIDS was not an issue of personal concern for them, as 83% indicated that they were either at low risk or no risk for contracting AIDS, and 87% indicated that they were not concerned about contracting AIDS.

Concern About AIDS and Risk Reduction. According to the Health Belief Model (Janz & Becker, 1984), for an individual to be motivated to take action against AIDS (or any other disease), the disease must be perceived as a personal risk with serious consequences. A person who does not believe that the disease in question is serious or that he or she could contract it is unlikely to take preventive action (Turner, Miller, & Moses, 1989). The low level of concern about AIDS among adolescents is seen as a major obstacle in the adoption of risk-reducing behaviors by this population. According to Edgar, et al. (1987, p. 62):

Perhaps the greatest barrier to behavioral change and probably the most difficult to overcome is the problem of personalization of risk. That is, there is reason to believe that many college students

intellectually understand that they belong to a group which is potentially at risk, but they have the ability to divorce themselves from the problem. They have become spectators to their own peer group while remaining part of the action.

One study has sought to demonstrate that "contrary to popular accounts," college students are actually concerned about AIDS and their concern is leading to change in their behavior (Carroll, 1988). Carroll found that nearly half of the college students sampled reported that concern about AIDS has affected their sexual behavior in some way, with "greater selectivity in choice of partners" reported as the most common change by sexually active students. Although this finding was not supported by independent measures of sexual behavior, Carroll concluded that "college students are more concerned with AIDS than previously believed" (p. 410).

Few studies have supported the findings of Carroll (1988). Studies have confirmed the relationship between level of risk perception and behavior change (Wolitski & Rhodes, 1988a, 1988b; Roscoe & Skomski, 1988; Gray & Saracino, 1989); however, according to the literature reviewed in the previous section, risk perception and concern about AIDS are not widespread among adolescents.

Studies have indicated that there is a relationship between risk perception and risk-reducing behavior. Wolitski and Rhodes (1988a) identified a correlation between a measure of perceived personal vulnerability and risk-reducing

behavior. They found no relationships between behavior change and any other measure. Gray and Saracino (1989) also identified a correlation between self-assessment of personal risk for AIDS and reduced sexual contacts, as did Roscoe and Skomski (1988), who found a significant relationship between a change in sexual behavior and a recognition of a high degree of risk for contracting AIDS. Roscoe and Skomski recommended education programs that "not only present factual information but which also deal with practical, real-world consequences of one's behavior and attitudes. Students need to be shown the direct causal link between their behavior and the risk of AIDS." (p. 65).

AIDS-Related Behavior. There has been very little research into actual risk-related behavior (i.e., sexual and IV-drug use) of adolescents, although it has been an often-cited recommendation for further study by those who have done related research (e.g., Katzman, Mulholland, & Sutherland, 1988; Goodwin & Roscoe, 1988; Keeling, 1989). In a study of Black college students, Thomas, Gilliam, and Iwrey (1989) found that approximately 17% of their respondents had experienced anal intercourse, 6.5% reported having used heroin, 32.6% reported having multiple sex partners, and 16% had been treated for a sexually transmitted disease. It was found that there was a significant relationship between engaging in risky behaviors and lower mean knowledge scores.

A study of college students in Great Britain (Reader, Carter, & Crawford, 1988) found that 56% of respondents indicated that they had made some change in behavior in response to AIDS. The most common behavioral changes cited were using condoms, avoiding casual sex, and remaining faithful to one partner.

Roscoe and Skomski (1988) found that 22% of females and 38% of males in their sample reported a change in sexual behavior in some way in response to AIDS. Additionally, Carroll (1988) indicated that concern about AIDS had affected the sexual behavior of more than 40% of the college students in his sample, with greater selectivity in choice of partners cited as the most common change reported by sexually active students.

Gray and Saracino (1989) constructed a risk-behavior scale, consisting of explicitly defined sexual behaviors which were rated as to their relative riskiness. Respondents indicated how often and with how many partners they had engaged in sexual activities during the past year and received a score between 0 and 97. The authors, however, did not elaborate on this scale in their discussion besides indicating that the mean score of 14 may be misleading.

Summary

Since AIDS slipped into medical awareness in 1981, the growing number of cases and frightening fatality rate have

resulted in an escalation of public awareness and fear of the disease (Keeling, 1989). Various populations, including adolescents, have been surveyed in assessments of public reaction to the disease. Adolescents have been found to possess relatively high levels of knowledge, although lacking a firm commitment to the adoption of safer behavior. These studies, although of questionable generalizability, provide public health officials and educators with valuable insights into the AIDS-related ideologies of specific populations.

CHAPTER III

METHOD

Chapter III presents the methodology utilized in this study, and is broken down into the following components: a) research design, b) sample and setting, c) instrumentation, d) procedure, e) analysis of data, and f) delimitations.

Research Design

This research is descriptive in design, and its purpose is to assess the current status of AIDS-related knowledge, attitudes, and behaviors of University of Wisconsin-La Crosse undergraduates. Data were collected through administration of a self-report survey to a sample of students. Self-report surveys are considered much more efficient than an interview process because they requires less time, are less expensive, and permit data collection from a much larger sample (Gay, 1987). However, self-reported data may be limiting because it may lack depth and accuracy.

Sample and Setting

The subjects of this study were 223 students enrolled in the course "Personal Health" (Health Education 101) during the spring semester, 1990, at the University of Wisconsin-La Crosse. The University of Wisconsin-La Crosse is a medium-

sized state-supported institution of higher education, with a full-time student population (during the semester, 1990) of 7993 (7633 undergraduate, 360 graduate).

Health Education 101 is described in the University of Wisconsin-La Crosse General Catalog 1989-91 as follows:

The dynamics of health in modern life in a rapidly changing world; modern concepts of health, disease, and longevity; current medical findings relative to weight control, emotional health, human sexuality, family planning, venereal and other disease control, drug abuse, environmental health and quackery are included (p. 156).

The students enrolled in Health Education 101 were selected for study for the following reasons: (a) It was felt that given the sensitive nature of some of the survey questions, administration in a classroom setting would yield a far greater response rate than other survey techniques (e.g., a random mailing); (b) Health Education 101 fulfills a University basic studies requirement, so it was felt that the students enrolled in this course represented a reasonable cross-section of lower-level undergraduates at the University of Wisconsin-La Crosse; (c) Health Education faculty were extremely cooperative and interested in the study. Care was taken to include for study sections of the course which had not covered units on AIDS, sexually transmitted diseases, or sexuality prior to administration of the survey.

Sample Demographics

Demographic information on the sample is shown in Table 1. The majority of respondents were between the age of 19 and 24 (68.8%). Females comprised 54.8% of the sample, while

45.2% were male. The vast majority (92.8%, $n = 205$) of respondents identified their racial background as white.

Table 1

Demographic Characteristics of Sample

	Percentage	<u>n</u>
<u>Age</u>		
18 or under	28.2%	62
19 - 24	68.6%	151
25 and above	3.2%	7
<u>Gender</u>		
Male	45.2%	100
Female	54.8%	121
<u>Racial Background</u>		
White	92.8%	205
Black	3.2%	7
Hispanic/Latino	2.3%	5
Asian/Pacific Islander	0.9%	2
American Indian/other	0.9%	2

Instrumentation

The instrumentation utilized consists of two parts: the AIDS Information and Opinion Survey, developed by California State University-Long Beach, and a behavior inventory developed by this author based on recommendations for risk reduction by the U. S. Surgeon General (Koop, 1987) and the Federal Centers for Disease Control (CDC, 1986c).

AIDS Information and Opinion Survey

The AIDS Information and Opinion Survey (Appendix B) was developed by the staff of the AIDS Research and Education Project at California State University, Long Beach. It has been used in a variety of on- and off-campus settings to assess individuals' knowledge and attitudes regarding AIDS. The instrument is broken down into two sections: AIDS Information Survey and AIDS Opinion Survey.

AIDS Information Survey. The AIDS Information Survey was designed to measure general AIDS knowledge, focusing on modes of HIV transmission and prevention techniques. The information survey consists of 31 items, and utilizes a five-category true-false format incorporating respondent confidence level. The internal consistency of this instrument, computed using Chronbach's alpha, was found to be .85.

AIDS Opinion Survey. The AIDS Opinion Survey measures five components of attitude, four of which represent AIDS-specific versions of elements identified in traditional health-behavior models (Fishbein and Ajzen, 1975; Rogers, 1983; Rosenstock and Kirsch, 1979; cited in Rhodes and Wolitski, 1988). These components are: (1) perceived personal vulnerability (threat/self-efficacy) (2) perceived social norms, (3) desire for AIDS information, (4) perceived disease severity, and (5) prevention effectiveness (response efficacy). The opinion survey consists of 26 items and employs a five-point Likert-

type response scale. Internal consistencies for each of the five attitude scales, using Chronbach's alpha, are listed in Table 2.

Table 2
Chronbach's Alpha for Attitude Scale Items

Attitude Scale	Items	Chronbach's Alpha
Personal Vulnerability	2, 6, 9, 13, 17, 20, 24, 26	.76
Social Norms	7, 15, 19, 21, 23, 25	.77
Desire for AIDS Information	3, 8, 12, 14	.63
Severity of Disease	1, 5, 18, 22	.64
Prevention Effectiveness	4, 10, 11, 16	.54

AIDS Behavior Change Inventory

The AIDS behavior change inventory (Appendix B) was developed by the author to determine whether respondents are modifying their behavior to lower their risk of becoming infected with HIV, and to ascertain which behaviors are and are not being modified. It is an 8-item survey, based on the recommendations of the U. S. Surgeon General (Koop, 1987) and the Federal Centers for Disease Control (CDC, 1986c) for limiting the transmission of HIV. Participants respond to the items in this survey by indicating "yes" if they have adapted

the specific behavior to lower their risk of contracting HIV, "no" if they have not adapted the specific behavior to lower their risk of contracting HIV, and "NA" (Not Applicable) if the specific behavior does not apply to them (e.g., a participant who has never used IV needles to inject drugs/steroids would respond "NA" to an item which asks whether the participant has decreased use of IV needles to inject drugs/steroids).

Demographic Items

Demographic information obtained in this survey includes age (18 or under, 19 to 24, 25 to 29, 30 to 39, and 40 or above), gender, and race (White, Black, Hispanic/Latino, Asian or Pacific Islander, and American Indian or Other) of participants.

Procedure

Permission to use the AIDS Information and Opinion Survey was obtained by contacting Richard Wolitski, Research Associate/Contract Manager, AIDS Research and Education Project, Psychology Department, California State University-Long Beach, 1250 Bellflower Boulevard, Long Beach, California 90840-0901 (Appendix C).

The Dean of Student Development was contacted regarding the need to have the study approved by the Human Subjects Review Board, and he determined that this would not be

necessary (R. Horle, personal communication, March 1990). Individual instructors in the Health Education 101 course were contacted and asked if they would allow the survey to be administered to students during class time. Instructors were also asked if the topics of AIDS and/or sexuality had previously been covered in their sections. To obtain more generalizable results, a population with no previous special training in AIDS and/or sexuality was desired. Three out of the five course instructors (two with responsibility for one section each and one with responsibility for two sections) who had not previously covered AIDS and sexuality in their classes agreed to administration of the survey during class time. Administration of the survey was conducted on March 27, 1990 (one section, $n=31$), March 28, 1990 (two sections, $n=97$, $n=78$), and April 3, 1990 (one section, $n=17$).

The survey instrument consisted of three pages; it was duplicated so that it occupied two sides of one sheet of paper and one side of another and was stapled together. The instrument and an IBM sheet for responses were placed inside an unmarked manila envelope, and the envelopes were distributed to participants. The purpose of the manila envelopes was to increase the level of privacy afforded to each participant; it was hoped that participants would answer questions, particularly those related to the individual's sexual and drug use practices, more truthfully if the answer

sheet could immediately be placed out of the view of other participants. Participants were instructed not to open the envelopes until they were told to.

When each participant had received an envelope, this researcher instructed the participants by telling them the following:

"Please remove the survey and answer sheet from your envelope. This is a survey to measure your knowledge, attitudes and behavior regarding AIDS. Notice that there are 3 pages to this survey, and you are to put all of your answers on the answer sheet. Your participation and honest responses to these questions are extremely important because the results will be used to develop more effective AIDS education programs on the University of Wisconsin-La Crosse campus. Please be assured that your participation in this study is completely anonymous, and please make sure that you do not write your name on the survey or the answer sheet. When you finish answering all 68 items, please place the survey and the answer sheet back in the envelope. Please begin taking the survey now."

When all participants were finished taking the survey, this researcher asked them to pass the envelopes to the aisles. The envelopes were then picked up by this researcher, and participants were thanked for their cooperation. Participants were also told that copies of the results of this survey would be available at the Health Center in approximately one month, if they were interested.

After students in all four sections of Health Education 101 had completed surveys (n=223), answer sheets were forwarded to the Academic Computing Department at the

University of Wisconsin-La Crosse for processing and data analysis.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) program (2nd ed.) (Nie, et al., 1975) on the Univac 1100 mainframe computer at the University of Wisconsin-La Crosse. Descriptive data were generated for the following:

1. Frequency of responses to each item on the opinion survey.
2. Frequency of responses to each item on the opinion survey, by sex.
3. Mean response to each item on the opinion survey, using a 5-point Likert-type scale (1 = agree strongly; 5=disagree strongly).
4. Mean response to each item on the opinion survey, using a 5-point Likert-type scale (1 = agree strongly; 5 = disagree strongly), by sex.
5. Frequency of responses to each item on the information survey.
6. Frequency of responses to each item on the information survey, by sex.
7. Mean response to each item on the behavior survey, using a 5-point Likert-type scale (1 = true, very sure; 5 = false, very sure).
8. Mean response to each item on the behavior survey, using a 5-point Likert-type scale (1 = true, very sure; 5 = false, very sure), by sex.
9. Frequency of responses to each item on the behavior survey.
10. Frequency of responses to each item on the behavior survey, by sex.

Parametric and nonparametric tests of significance were utilized to test for differences between male and female responses (for the purpose of this study, all tests of significance were set at the 0.05 alpha level). For each item

on the opinion and information surveys, male and female mean responses were compared using two-tailed t-tests. Chi-square analysis was used to compare male and female responses on behavior change items.

Two-tailed tests of significance using t-values based on pooled variance estimates were utilized to identify relationships between behavior change items and mean knowledge, and between behavior change items and risk perception. To assess the relationship between knowledge and behavior change, comparisons were made between the sum mean knowledge score of those indicating a change in behavior and the sum mean knowledge score of those indicating no behavior change for each behavior item (those indicating N/A were not considered). Similarly, to assess the relationship between behavior change and risk perception, comparisons were made between the mean response to item 24 ("I consider my personal AIDS risk to be very low") of those indicating a change in behavior and of those indicating no change in behavior for each behavior item (again, those indicating N/A to behavior change items were not considered).

Delimitations of the Study

1. This study was delimited to individuals enrolled in Health Education 101 at the University of Wisconsin-La Crosse.
2. This study was delimited to a sample consisting mainly of lower-level undergraduate students.

3. This study does not take into account the extent and consistency of behavior change, nor does it ensure that an indication of behavior change on a particular measure is strictly the result of a response to AIDS.

4. This study does not break down respondents by age or amount of education; only vague age-groupings are determined (e.g., 19-24) which does not allow for comparison of respondents by age or number of college credits.

5. This study does not ascertain the sources of participants' AIDS-related knowledge and attitudes. Such information may be obtained through utilization of a longitudinal, rather than cross-sectional, research design.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter presents the results of each section of the survey: attitudes, knowledge, and behaviors. Each section will be presented and discussed separately, followed by an analysis of the relationships between behavior change and knowledge, and between behavior change and risk perception.

AIDS-Related Attitudes

Results of the attitude portion of the survey are shown in Tables 3 - 5. Table 3 lists the mean responses to attitude items. Table 4 (Appendix D) lists responses to attitude items by percentage. Table 5 shows items with significant differences between male and female responses. Items in this portion of the survey have been categorized by the survey's authors (Rhodes & Wolitski, 1988) as follows: severity of disease, personal vulnerability, perception of social norms, desire for AIDS information, and prevention effectiveness. Items in each of these categories will be presented and discussed separately.

Severity of the Disease

It appears that the majority of respondents perceive AIDS to be a severe and painful disease to some extent. Most (85%)

of the respondents agreed at least somewhat with the item, "AIDS has become the country's number one health problem" (mean response = 1.978 on a 5-point scale where 1 = strongly agree, 5 = strongly disagree) (Table 3). The majority of respondents also indicated that they perceive AIDS to be a very painful condition, with 58% (mean response = 2.395) agreeing that "AIDS is one of the most painful deaths that I can imagine."

Table 3

Mean Responses to AIDS-Related Attitude Items

Attitude Item	Mean	SD
<u>Personal Vulnerability</u>		
2. I am not worried about getting AIDS	3.336	1.174
6. I think I will be able to protect myself from being exposed to AIDS	1.919	.866
9. I am concerned that I might get exposed to the AIDS virus	2.525	1.142
13. I feel helpless against a disease like AIDS	3.161	1.212
17. The idea of getting AIDS really frightens me	1.744	1.019
20. I don't think AIDS will ever affect my own life	2.982	1.099
24. I consider my own AIDS risk to be very low	1.812	.925
26. These days everybody is at risk for getting AIDS	2.085	1.114
<u>Perception of Social Norms</u>		
7. Very few people are doing anything differently because of AIDS	3.354	1.088

Attitude Item	Mean	SD
15. AIDS has caused a lot of people to think more seriously about sex	1.906	.878
19. Most people are trying to protect themselves against AIDS these days	2.444	.928
21. AIDS has made people a lot more careful about who they have sex with	2.296	.950
23. Most of the people I know have made changes in their lives to protect themselves against AIDS	2.825	1.023
25. Even a disease as serious as AIDS is not going to change people's attitudes about having sex or using drugs	3.148	1.167
<u>Desire for AIDS Information</u>		
3. There is a general need for more AIDS information and education	1.601	.804
8. I would like to learn more about AIDS and how it is spread	2.049	.926
12. I believe that AIDS education should be provided in the public schools	1.413	.723
14. I have already heard more than I want to hear about AIDS	3.719	1.024
<u>Severity of Disease</u>		
1. AIDS has become the country's number one health problem	1.978	.913
5. Dying of AIDS is one of the most painful deaths that I can imagine	2.395	1.214
18. AIDS is a serious disease, but I can think of other diseases that would even be worse to have	3.058	1.212

Attitude Item	Mean	SD
22. I can't think of anything worse than getting AIDS	2.686	1.212
<u>Prevention Effectiveness</u>		
4. I don't think that condoms can provide very much real protection against AIDS	3.821	1.148
10. The preventive measures that are currently available give good protection against AIDS infection	2.709	.940
11. In my opinion, there is no such thing as "safe" or "safer" sex as far as AIDS is concerned	2.982	1.284
16. There is really very little a person can do to keep from getting AIDS	4.336	.854

Note: Mean response scores were calculated using a 5-point Likert-type scale (1=agree strongly, 5=disagree strongly)

While many students agreed with the item, "I can't think of anything worse than getting AIDS" (mean response = 2.686, 47.4% agreed strongly or somewhat), respondents were divided on the item, "AIDS is a serious disease, but I can think of other diseases that would be even worse to have" (38% agreed with the statement, 35% disagreed, and 27% were neutral; mean response = 3.058). It is possible that this difference reflects a fear among some respondents of the stigmatization associated with having AIDS in addition to a fear of having the disease itself (as in Krupka & Vener, 1988). Comparison of male and female mean responses for each item yielded no significant differences in this portion of the study.

Personal Vulnerability

Although over 75% of students in this sample indicated that, "These days everybody is at risk for AIDS" (mean response = 2.085), nearly 80% agreed that "I consider my own AIDS risk to be very low" (mean response = 1.812). This finding is consistent with several authors' assessments of low AIDS risk perception among adolescents (Goodwin & Roscoe, 1988; Gottlieb, Vacalis, Palmer, & Conlon, 1988; Gray & Saracino, 1989; Wolitski & Rhodes, 1988a, 1988b; Thurman & Franklin, 1990).

Many students, however, did not agree with the seemingly-related items, "I am not worried about getting AIDS" (54.7% disagreed; mean response = 3.336) and "I am concerned that I might get exposed to the AIDS virus" (57.4% agreed; mean response = 2.525). The wording of these items may have led some students to respond in terms of being concerned about the idea of contracting the disease or being exposed to the virus, rather than a belief that they may actually be infected or develop symptoms. Indeed, these items may be more closely related to the item, "The idea of getting AIDS really frightens me" (82.1% agreed, mean response = 1.744) than to perception of risk. This may also be related to the previous section, in which participants indicated that they perceive AIDS to be a severe and painful condition.

Students' responses to the item, "I don't think AIDS will ever effect my own life" were evenly distributed, as 33.2% agreed with the statement, 31.9% disagreed, and 35% were neutral (mean response = 2.982). This question could also be considered ambiguous, as students could have responded to it from the point of view that it will never happen to them personally, that it will never happen to them or anyone they know, or that it won't affect them either directly or indirectly.

Responses to items regarding perceived self-efficacy in AIDS prevention were generally inconsistent. Although nearly three-fourths of respondents indicated that they believe they will be able to protect themselves from being exposed to AIDS (mean response = 1.919), respondents were divided on the statement, "I feel helpless against a disease like AIDS," with 41% of respondents disagreeing with the statement, 32% agreeing with it, and 25% indicating a neutral response (mean response = 3.161).

Significant differences between male and female mean responses were found for two of the items in the personal vulnerability category (Table 5). Males agreed more strongly with the item, "I think I will be able to protect myself from being exposed to AIDS" ($p < .01$), and females agreed more strongly with the item, "These days everybody is at risk for getting AIDS" ($p < .05$). These differences may reflect social

norms, in which males are expected to be protectors (of women and children, as well as of themselves); it may also reflect the attitude that "AIDS is a gay disease" (so therefore, not everyone is at risk) which has been found to be more pervasive among males than females (Goodwin & Roscoe, 1988).

Perception of Social Norms

Respondents tended to indicate that many people have changed their sexual behaviors and attitudes as a result of AIDS (consistent with the findings of Caron, Bertran, & McMullen, 1987). Students agreed considerably with the statement, "AIDS has caused a lot of people to think more seriously about sex" (mean response = 1.906, 81.6% agreed). They were also in agreement that, "AIDS has made people a lot more careful about who they have sex with" (mean response = 2.296, 68.6% agreed) and that, "Most people are trying to protect themselves against AIDS these days" (mean response = 2.444, 61.9% agreed). Similarly, there was disagreement with the statement, "Very few people are doing anything differently because of AIDS" (mean response = 3.354, 53.4% disagreed), and some disagreement that, "Even a disease as serious as AIDS is not going to change people's attitudes about having sex or using drugs" (mean response = 3.148, 46.7% disagreed).

There was less agreement with the item, "Most of the people I know have made changes in their lives to protect themselves against AIDS" (mean response = 2.825, 40.3%

agreed). This may relate to the previous section, in which respondents indicated that while AIDS is a problem for everybody, they personally (and perhaps people they know) are not at risk, and thus, have no need to change their behavior. Comparison of male and female mean responses yielded no significant differences on items in this section.

Desire for AIDS Information

Respondents in this study tended to indicate that there is a serious need for more AIDS education, although they indicated less of a need for education for themselves than for other people. Almost 90% agreed that there is a general need for more AIDS education and information (mean response = 1.601), and an overwhelming 93.3% agreed that AIDS education should be provided in the public schools (mean response = 1.413). On items regarding personal desire for AIDS information, nearly 70% expressed an interest in learning more about AIDS and how it is spread (mean response = 2.049), and 62% disagreed with the item, "I have already heard more than I want to hear about AIDS" (mean response = 3.719).

Comparison of male and female mean responses yielded significant differences on both items regarding personal desire for AIDS information (Table 5). Males indicated less desire than females to learn more about AIDS and how it is spread ($p < .05$), and also agreed more strongly that they have already heard more than they want to hear about AIDS (p

< .001). While both sexes generally agreed that they would like to learn more about AIDS, the finding that males are less interested than females may reflect a fear of homosexual association among some males through being associated with AIDS education in any way (Hirschorn, 1987; Edgar, Freimuth & Hammond, 1988).

Prevention Effectiveness

Most respondents endorsed the efficacy of AIDS preventive measures, although "safer sex" measures in specific were not overwhelmingly endorsed. Almost 90% of students disagreed with the statement, "There is really very little a person can do to keep from getting AIDS" (mean response = 4.336). Students may have based their response to this item on the fact that HIV transmission is prevented through abstinence from sexual activity and IV drug use (Koop, 1987).

Just under half of respondents agreed that the preventive measures currently available give good protection against AIDS (mean response = 2.709), although some may have considered abstinence a preventive measure. Respondents were divided over the item, "In my opinion, there is no such thing as 'safe' or 'safer' sex as far as AIDS is concerned," as 43.9% disagreed with the statement, 39.5% agreed, and 16.6% responded "neutral" (mean response = 2.982). However, many respondents endorsed the effectiveness of condoms in AIDS

prevention, as 62% disagreed with the statement, "I don't think that condoms can provide very much real protection against AIDS" (mean response = 3.821). Comparison of the mean responses of males and females yielded no significant differences on this part of the survey.

Table 5

Attitude Items with Significant Differences Between Male and Female Responses

Attitude Item	Male		Female	
	Mean	SD	Mean	SD
<u>Personal Vulnerability</u>				
6. I think I will be able to protect myself from being exposed to AIDS**	1.750	.770	2.057	.916
26. These days everybody is at risk for getting AIDS*	2.260	1.160	1.942	1.059
<u>Desire for AIDS Information</u>				
8. I would like to learn more about AIDS and how it is spread*	2.210	1.008	1.925	.838
14. I have already heard more than I want to hear about AIDS***	3.464	1.023	3.925	.989

Note: SD = standard deviation. Mean responses were calculated using a 5-point Likert-type scale (1 = agree strongly, 5 = disagree strongly). * = $p < .05$; ** = $p < .01$; *** = $p < .001$.

AIDS-Related Knowledge

Responses to AIDS-related knowledge items are listed in Tables 6 - 9. Table 6 (Appendix E) provides a breakdown of responses to knowledge items, by percentage. Table 7

organizes items in order of percentage of correct response. Table 8 shows items with statistically significant differences between male and female responses, and Table 9 (Appendix F) provides the mean response to each item.

Transmission Routes

Students tended to be quite knowledgeable about some routes of HIV transmission, although many demonstrated misconceptions about the viability of other routes. Most respondents knew that women can pass the AIDS virus to their male sex partners (92.9%), that transmission was likely to occur through sharing IV drug needles with someone infected with the virus (92.8%), and that a pregnant woman who has AIDS can pass the disease to her unborn baby (93.3%) (Table 7). They were also aware that it is safe to shake hands with somebody who has AIDS (93.3%), and that latex condoms can reduce the chance of passing the AIDS virus from one sex partner to the other (92.4%).

The majority of students knew that AIDS is most likely not spread through kissing (84.3%), and that one can't get AIDS by eating food that has been prepared by someone with the disease (82.9%). Just over three-quarters (76.7%) indicated that it is safe to use drinking fountains or public toilets that might have been used by somebody who has AIDS.

Fewer students were aware that HIV is not transmitted through donation of blood (74.9%), through contact of infected

children with other children (73.5%), through sneezing or coughing (70.3%), and from household pets to people (66%). Even fewer students knew that AIDS is not spread by mosquitos (56%), that AIDS is not transmitted by sharing drinking glasses and eating utensils with people who have the disease (42.2%), that it is very unlikely that a blood transfusion would give a person AIDS these days (40.8%), that there are no cases of people getting AIDS from contact with saliva (38%), that breast milk can transmit the virus from a mother to her infant (35%), and that a person is less likely to get infected with HIV through oral sex than through sexual intercourse (31.9%).

Table 7

AIDS-Related Knowledge Items, by Correct Percentage

Knowledge Item	Correct Response	% Correct Total
33. It is unsafe to shake hands with somebody who has AIDS	False	93.3
34. Women can pass the AIDS virus to their male sex partners	True	92.9
28. A person is not very likely to get AIDS by sharing IV-drug needles with someone who has the virus	False	92.8
36. Latex condoms can reduce the chance of passing the AIDS virus from one sex partner to the other	True	92.4
37. A pregnant woman who has AIDS can pass the disease to her unborn baby	True	93.3

Knowledge Item	Correct Response	% Correct Total
39. A person can be infected with the AIDS virus for five or more years without getting sick	True	86.6
47. More of the AIDS virus is found in blood and semen than in other body fluids	True	86.6
27. If you kiss someone with AIDS, you will probably get the disease	False	84.3
29. You can get AIDS by eating food that has been prepared by someone who has the disease	False	82.9
41. It is unsafe to use drinking fountains or public toilets that might have been used by somebody who has AIDS	False	76.7
35. A person can get AIDS by donating blood	False	74.9
50. Everyone who is infected with the AIDS virus has some visible symptoms	False	74.4
40. Children who have AIDS can easily spread the disease to other children	False	73.5
48. The AIDS virus is not spread by sneezing or coughing	True	70.3
42. Household pets can spread the AIDS virus to people	False	66.0
43. There is very little AIDS among Blacks and Hispanics in this country	False	63.7
53. Nearly all persons who get AIDS die within one year of being diagnosed	False	62.8
51. It is estimated that more than one million Americans are infected with the AIDS virus	True	59.6
56. Many health care workers have become infected as a result of treating AIDS patients	False	57.8
38. AIDS is spread by mosquitos	False	56.5

Knowledge Item	Correct Response	% Correct Total
32. AIDS was first identified by scientists in the early 1980s	True	52.0
44. It is safe to share drinking glasses and eating utensils with people who have AIDS	True	42.2
31. It is very unlikely that a blood transfusion would give a person AIDS these days	True	40.8
46. There are no cases of people getting AIDS from contact with saliva	True	38.1
55. In addition to damaging the immune system, the AIDS virus may also attack the brain	True	36.8
49. Breast milk can pass the AIDS virus from a mother to her infant	True	35.0
45. A person is less likely to get infected with the AIDS virus through oral sex than through sexual intercourse	True	31.9
57. In some parts of the world, AIDS is found mostly among heterosexual (straight) men and women	True	31.9
30. Many Lesbians have AIDS	False	31.0
52. The AIDS virus is easily killed by ordinary bleach or detergent	True	13.0

Note: Responses were considered correct regardless of degree of certainty (e.g., "true" = "true--very sure" and "true--somewhat sure"). Items are ranked in order item answered correctly most frequently to item answered correctly least frequently.

Disease Characteristics

Students tended to be generally less knowledgeable about the characteristics of AIDS than HIV transmission routes. The majority of students were aware that, "A person can be

infected with the AIDS virus for five or more years without getting sick" (86.6%), although only 74.4% knew that not everyone who is infected with the virus has visible symptoms. Most (86.6%) were also aware of the relatively high concentration of HIV in blood and semen in comparison to other body fluids.

Less than two-thirds (63.7%) correctly responded "false" to the item, "There is very little AIDS among Blacks and Hispanics in this country." Fewer knew that most persons with AIDS live for longer than one year after diagnosis (62.8%), that an estimated one million Americans are infected with HIV (59.6%), that few health care workers have become infected as a result of treating AIDS patients (57.8%), and that AIDS was first identified by scientists in the early 1980s (52.0%).

Very few students knew that in addition to damaging the immune system, the AIDS virus may also attack the brain (36.8%), that in some parts of the world, AIDS is found mostly among heterosexual (straight) men and women (31.9%), that not many Lesbians have AIDS (31%) and that the AIDS virus is easily killed by ordinary bleach or detergent (13%).

Discussion

While students in this study were knowledgeable about several key AIDS facts, including the role of IV drug use, sexual intercourse, and pregnancy in HIV transmission; the role of condoms in reduction of viral transmission; and the

lack of viral transmission through casual contact, the existence of many misconceptions is evident. Adolescent populations possessing knowledge of similar key AIDS-related facts, as well as numerous misconceptions, have also been identified by such researchers as McDermott, Hawkins, Moore, and Cittadino (1987), Goodwin and Roscoe (1988), Wolitski and Rhodes (1988a, 1988b), and Gray and Saracino (1989). The emphasis on such "key facts" by high schools and the public health service may be reflected in the knowledge exhibited by students in the present study.

The finding that many associate blood transfusions and blood donation with risk of HIV transmission, although quite inaccurate, is not uncommon. Although, as discussed in the previous chapter, the development of viral antibody tests in 1985 has virtually eliminated the risk of contracting HIV through a blood transfusion, Goodwin and Roscoe (1988) found that only 35% of college students were aware of the low risk--this is similar to the finding in the present study that nearly 60% could not correctly respond to a related item. In addition, although donating blood poses no risk for infection, 38% of respondents in one study (Katzman, Mulholland, & Sutherland, 1988) and 35.7% in another (Thurman & Franklin, 1990) identified that it is possible to become infected in that way. Just over one-quarter of respondents in the present study could not correctly respond to a related item.

Some confusion appears to exist in the present sample regarding the role of saliva in HIV transmission. Only 38.1% of students knew that there are no cases of people getting AIDS from contact with saliva, nearly 30% of were unsure or incorrect about the role of sneezing or coughing in viral transmission, and almost 60% were unsure or incorrect about the safety of sharing drinking glasses and eating utensils with people who have AIDS. Similar findings were reported by Krupka and Vener (1988), who cited a "lack of consensus by the scientific community" regarding the role of saliva in viral transmission as hindering student knowledge. Indeed, on Goodwin and Roscoe's (1988) survey instrument, the items, "A deep kiss is a means of transmitting AIDS" and "An exchange of saliva is a means of transmitting AIDS" are considered true statements.

The finding that only 31.9% of students knew that HIV infection is less likely to result through oral sex than through sexual intercourse may reflect confusion about the role of saliva in viral transmission, as may the finding that only 31% knew that not many Lesbians have AIDS. The latter item may also relate to an association between AIDS and homosexuality. Gray and Saracino (1989) found that 82% of students in their sample believed that the majority of gay men and lesbians have AIDS. They commented that, "Such thinking reinforces stereotypic images of persons who are likely to get

AIDS and leads to unrealistic self-assessment of an individual's risk for contracting the disease" (p. 201).

The item answered least correctly by students related to the fact that the AIDS virus is easily killed by ordinary bleach or household detergent. This may indicate that students perceive HIV as a hardy microorganism which can survive on toilet seats and in swimming pools, as well as through such a chemical barrage as bleach or household detergent. It could (as an informal poll of student employees at the Student Health Center showed) indicate that students typically don't associate AIDS prevention with the cleaning of IV needles. It may also be a reflection of students' unwillingness to believe they are at risk, and their subsequent non-awareness of risk-reducing methods.

Comparison of male and female mean responses yielded significant differences on three knowledge items (Table 8, $p < .05$). Females were more knowledgeable on the items, "A pregnant woman who has AIDS can pass the virus to her unborn baby," and "It is estimated that more than one million Americans are currently infected with the AIDS virus," while males were more knowledgeable on the item, "Breast milk can pass the AIDS virus from a mother to her infant."

Table 8

Knowledge Items with Significant Differences Between Male
and Female Mean Responses

Knowledge Item	Male		Female	
	Mean	SD	Mean	SD
37. A pregnant woman who has AIDS can pass the virus to her unborn baby*	1.4300	.769	1.2397	.671
49. Breast milk can pass the AIDS virus from a mother to her infant*	2.5200	.870	2.8099	.969
51. It is estimated that more than one million Americans are currently infected with the AIDS virus*	2.3300	.933	2.0826	.852

Note: Mean responses were calculated using a 5-point Likert-type scale (1 = true, very sure; 5 = false, very sure). *p < .05

AIDS-Related Behavior Change

Responses to behavior change items are listed in Table 10. Over half (50.7%) of respondents indicated that they had become more selective in choosing sexual partners to decrease their risk of contracting AIDS. Increased use of condoms was also cited by a number of students (42.4%), although significantly more males indicated an increase in condom use than females (Chi-square analysis, $p < .05$).

Table 10

Responses to AIDS-Related Behavior Items, by Percentage

Behavior Change Item		percent		
		yes	no	n/a
61. Increased use of condoms	Total	42.4	43.4	25.3
	male*	51.0	46.5	13.5
	female	31.5	39.8	34.7
62. Increased use of spermicide	Total	9.8	54.9	36.3
	male	13.7	60.0	26.3
	female	6.7	50.3	42.5
63. Become more selective in choosing sexual partners	Total	50.7	20.5	28.8
	male	50.5	29.5	20.0
	female	50.8	13.3	35.8
64. Increased asking new sexual partner about his/her sexual past	Total	35.8	36.7	27.4
	male	33.7	49.5	16.8
	female	37.5	26.7	35.8
65. Decreased having sex after drinking and/or drug use	Total	19.5	32.6	47.9
	male	17.9	52.6	29.5
	female	20.8	16.7	62.5
66. Decreased sharing IV needles for drug/steroid use	Total	1.9	2.8	95.3
	male	3.2	2.1	93.7
	female	.8	3.3	96.7
67. Increased cleaning IV needles for drug/steroid use	Total	2.8	1.9	95.3
	male	4.2	2.1	93.7
	female	1.7	1.7	96.7
68. Made other changes not listed here	Total	32.9	33.8	32.9
	male	35.8	40.0	23.2
	female	30.4	28.7	40.9

Note: N/A = not applicable (not sexually active/don't use drugs) *Chi-Square statistical difference by sex, $p < .05$

Over a third (35.8%) of respondents indicated that they have increased asking a new sexual partner about his/her sexual past, 19.5% indicated a decrease in having sex after drinking and/or drug use, and less than 10% cited increased spermicide use. However, nearly a third (32.9%) of

respondents indicated that they have made other changes to decrease their risk of contracting AIDS which were not listed on the survey.

Two items in this section dealt with risk reduction through decreased sharing and increased cleaning of needles for IV drug use, but the number of individuals responding to these items was so small that discussion of these items would probably be meaningless.

Discussion

Overall, many respondents in this sample indicated changing their behaviors to decrease their risk of contracting AIDS. Katzman, Mulholland, and Sutherland's (1988) finding that 44.2% of students had changed their behavior in some way in response to the AIDS epidemic was eclipsed by finding in the present study that 50.7% of students reported a specific behavior change, i.e., becoming more selective in choice of sexual partners. The finding that the most commonly reported behavior change was increased selectivity in choosing sexual partners is consistent with the findings of Carroll (1988).

Relationship Between Behavior Change and Knowledge

Analyses of the differences in mean knowledge scores of those indicating a behavior change and those indicating no behavior change (conducted using two-tailed tests of significance with t-values based on pooled variance estimates)

resulted in two significant findings. Those indicating that they had increased asking a new sexual partner about his/her sexual past were found to have a significantly higher mean total knowledge score than those who indicated that they hadn't changed their behavior in this way. Also, those indicating that they had decreased having sex after drinking and/or drug use had significantly higher mean total knowledge scores than those indicating no behavior change.

The relationship between knowledge and behavior change identified here is consistent with some researchers' findings. For example, Manning, Barenberg, Gallese, and Rice (1989) identified a relationship between knowledge, perceived barriers to practicing safer sex, and ultimately, safer sex practices. In addition, it is somewhat related to Atkinson's (in Edgar, Friemuth, & Hammond, 1988) finding that 59% of college students reported that knowledge about AIDS had affected their choice and number of sexual partners. However, it is contrary to the message of Keeling (1989) and other experts, who have indicated that it is not knowledge but risk perception that leads to adoption of risk-reducing behaviors.

Relationship Between Behavior Change and Risk Perception

Analyses of the differences in mean response to item 24 ("I consider my personal AIDS risk to be very low") between individuals indicating a behavior change and those indicating no behavior change for each item, (conducted using two-tailed

tests of significance with t -values based on pooled variance estimates), resulted in no significant correlations. This is contrary to the current trend identified by many researchers of adolescent populations, who have found that behavior change is related to perception of personal risk for AIDS (e.g., Keeling, 1989; Wolitski & Rhodes, 1988a, 1988b; Roscoe & Skomski, 1988; Gray & Saracino, 1989).

Limitations of the Study

Several factors necessitate the exercise of caution in generalizing these results to the University of Wisconsin-La Crosse student body at large and to other populations. They include:

1. Lack of a Random Sample. Although Health Education 101 is a University basic studies requirement and thus can be expected to attract a reasonable cross-section of lower level undergraduates, students in this sample may not be representative of the overall University population. One reason is that students who enroll in a Health Education course may have a greater interest in health issues and thus may be more aware and/or knowledgeable about such topics than the general student population. In addition, the knowledge, attitudes, and behaviors of lower-level undergraduates may not be representative of the general student body.
2. Homogeneity of the Sample. Very few members of racial/ethnic minorities and very few IV drug users were

represented in this sample. In addition, the survey instrument did not elicit certain specific demographic characteristics of the sample, such as the exact age and sexual preference of participants. This may limit the findings to populations which are similarly homogeneous, or inhibit generalizability to populations in which specific age or sexual preference frequencies are known.

3. Ambiguity of Some Survey Items. A number of items on the AIDS Information and Opinion Survey may yield inconsistent responses as a result of multiple interpretations of the item. For example, respondents may interpret the item, "I don't think AIDS will ever affect my own life" as "I don't think I will ever get AIDS" or "I don't think that anyone close to me will ever get AIDS" or "I don't think that, directly or indirectly, AIDS will ever affect my own life."

4. Limited Behavioral Information. A common criticism of AIDS-related behavior studies is that few have been sufficiently "in-depth" to accurately assess the extent of high-risk behavior, the consistency of behavior change, and the inhibitors and catalysts of risk-reducing behavior among this group (J. Gould, personal communication, February 1990). The behavioral assessment in the present study lacks such depth, and therefore, the usefulness of the findings may be limited.

5. Reliance on Self-Reported Data. As Carroll (1988) found, self-reported attitudes and behaviors are not necessarily the ones actually demonstrated by individuals. The validity of this study may be limited by its reliance on self-reported data.

6. Factual Items are Temporally Bound. Since new information about AIDS is collected at a "remarkable rate" (Quackenbush & Nelson, 1988), some facts which are currently considered true may be altered or disproven through future research. For example, two items on Goodwin and Roscoe's (1988) instrument referred to the risk of HIV transmission through saliva, a reflection of the state of scientific knowledge at the time. This may limit generalizability to future studies.

7. Use of 1 item to represent perception of risk. The use of only item 24 ("I consider my own AIDS risk to be very low") in assessing the correlation between behavior change and risk perception may not be an accurate measure. It was chosen because it seemed to be the least ambiguous of all risk perception items. However, one item may not be an accurate measure of risk perception.

CHAPTER V

SUMMARY

This chapter provides a summary of the present study, followed by a discussion of its limitations, both in terms of research design and generalization to other populations. Finally, recommendations for campus AIDS education programs and further research are presented and discussed.

Summary

This survey attempted to assess the AIDS-related knowledge, attitudes and behaviors of a sample of undergraduates at the University of Wisconsin-La Crosse. The purpose of the study was to provide educators with information regarding the present state of attitudes, knowledge, and behavior among these students so that programs may be designed to meet the specific educational needs of this population.

The sample consisted of 223 students enrolled in the course Health Education 101 at the University of Wisconsin-La Crosse during the spring semester 1990. Students were surveyed during class time using the AIDS Knowledge and Attitudes survey from California State University-Long Beach and a risk behavior change inventory developed by this author.

The assessment of students' attitudes showed that most students exhibit concern about AIDS, although they generally

are not concerned about their personal risk. Students tend to perceive AIDS as a severe and painful condition and are frightened by the thought of contracting the disease. Although they feel that everyone is at risk for AIDS, this concern does not appear to apply to them personally, as most believe that their personal risk of contracting the disease is low. Students also indicate that there is a serious need for more AIDS education and information in the public schools and for the general population, and to a lesser extent, for themselves. In addition, they believe that AIDS has led many people to make changes in their behavior, and although most believe that there are steps a person can take to keep from getting AIDS, less than half believe that the preventive measures currently available give good protection against AIDS infection.

The assessment of AIDS-related knowledge showed that students were generally quite informed regarding some key AIDS-related facts, although many students appeared to be misinformed about a number of others. Most students were aware of major HIV transmission routes (i.e., sexual intercourse with an infected person, sharing of IV needles with an infected person, infected mother to child during pregnancy). The majority also knew that it is safe to shake hands with someone with AIDS and that condoms can reduce the chance of viral transmission. However, there appeared to be

confusion among many students about the role of saliva, blood donation and transfusion, and such agents as household pets and mosquitos in the transmission of HIV.

Assessment of students' behavior presented an encouraging finding that many students reported changing their behavior in some way to reduce their risk of contracting HIV (although as will be discussed in the next section, these findings should be interpreted with caution). The most commonly reported behavior change was greater selectivity in choosing sexual partners, followed by increased use of condoms and an increase in asking a new sexual partner about his/her sexual past. However, many students indicated that they have **not** increased their use of spermicide or decreased having sex after drinking and/or drug use.

Contrary to many recent studies of adolescent populations, the present study found a relationship between certain behavior change items and knowledge level, and no relationship between behavior change and risk perception. Students who reported decreasing having sex after drinking and/or drug use and an increase in asking a new sexual partner about his/her sexual past had significantly higher mean knowledge scores than those who reported not changing their behaviors.

Recommendations

Recommendations for AIDS Education

As Reader, Carter, and Crawford (1988) have found, a targeted approach is necessary in providing effective AIDS/HIV education. The following recommendations for education, targeted at University of Wisconsin-La Crosse undergraduates, are based on the findings of the present study.

1. Accurate HIV/AIDS information should be provided. Educational programs should provide students with accurate, current information about AIDS/HIV and related issues to assist them in eliminating misconceptions they may have. In particular, an effort should be made to address those topics which students in the present study tended to answer incorrectly. For example, it should be stressed that donating blood poses no risk for HIV infection and that there is virtually no risk of infection through receiving a blood transfusion. Elimination of misconceptions may lead to alleviation of unreasonable fears about contracting the disease. In addition, as indicated in the present study, increased knowledge may relate to the adoption of risk-reducing behavior. On the University of Wisconsin-La Crosse campus, this may be accomplished by publishing columns in The Racquet, by preparing and distributing factual brochures, and by providing educational programs for different populations (e.g., speakers, programs by peer educators).

2. The separation of alcohol (and other drugs) from sexual activity should be stressed. The finding in the present study that 52.6% of males reported no decrease in having sex after drinking and/or drug use may be an indication that many continue to engage in this unsafe practice. Dissemination of information (as discussed previously) may provide factual information to students. In addition, joint programming efforts between the campus peer alcohol education program ("REACH") and the Peer AIDS/Sexuality Education program may be effective in making students aware of the risk involved in combining alcohol and sexual activity.
3. Educational programs should help students objectively evaluate their personal risk for AIDS/HIV. While 79% of respondents in the present study identify that everyone is at risk for AIDS, 80% believe that their personal risk for AIDS is very low. This viewpoint may or may not provide an accurate assessment of students' present lifestyle. Students should be provided with relevant information so that they can realistically assess their risk. Peer educators may be especially effective in this regard (Lomax, Keeling, and Gould, 1989), through such activities as skits and role plays of typical adolescent social situations.
4. Students should be assisted with developing necessary skills for adoption of risk-reducing behaviors. Educational programs should provide training in the specific behavioral

skills necessary for risk reduction, such as how to use a condom and spermicide, how to negotiate with a partner for condom use, how to introduce the topic of safer sex, and how to exit unsafe sexual situations if a partner refuses to comply with safe sexual requests (MacDonald, et al., 1990). The finding that only 10% have reported increasing their use of spermicide may reflect that students are unaware of its effectiveness in the prevention of HIV infection, or that they are not sure of how to use it. Also, the finding that significantly more males than females reported an increase in their use of condoms may indicate that females need specific training in behavioral skills associated with condom use. Again, peer educators may be particularly effective in helping other students develop such skills, especially those relating to social situations.

Recommendations for Further Research

The findings of the present study should provide an insight into the educational needs of this population. However, additional research is needed in order to more fully understand the characteristics of the UW-L student population and subpopulations with regard to AIDS so that educational efforts can be better targeted to these groups. The following are recommendations for further study.

1. More detailed behavioral information is needed. More detailed information is needed regarding the AIDS-related

behaviors of this population. Specific information regarding current sexual activity is needed, as is research into factors which inhibit or promote risk-reducing behavior changes.

2. Existing programs should be evaluated. Evaluation of existing educational programs is needed, in order to ascertain which methodologies are effective with which populations. A pretest-posttest format may work to measure changes in knowledge and attitudes; more "in-depth" follow-ups would be needed to assess behavior change.

3. Random samples and standardized instrumentation should be used. Future studies should utilize random samples and standardized instrumentation (one is currently being developed by the American College Health Association).

4. Assessments of special populations should be done. Studies should be conducted of AIDS-related knowledge, attitudes and behaviors of specific populations, such as IV drug users, homosexuals, racial/ethnic minorities, non-traditional students, or "at risk" groups (e.g., students diagnosed with an STD). Assessments of the educational needs and preferences of particular student populations, such as non-traditional students, would also be helpful in developing programs targeted at such groups.

5. Assessment of attitudes toward homosexuality should be done. Students' attitudes toward homosexuals and homosexuality should be assessed, and analyses should be

conducted to determine whether relationships exist between homophobic attitudes and reported risk perception and/or attitudes about AIDS education, and between homophobia and desire for AIDS education and information.

Conclusion

The present study should provide educators with valuable insights into the AIDS-related knowledge, attitudes and behaviors of University of Wisconsin-La Crosse undergraduates. The findings of the study, in addition to the resulting recommendations, may assist in the development of programs which target the specific needs of this population. However, more research into the specific characteristics of this population is necessary in order to provide students with educational programming targeted at their specific needs. The University must be committed to providing students with the most effective AIDS education possible if the spread of this deadly disease is to be halted.

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APPENDIX A

AIDS MONTHLY SURVEILLANCE REPORT (7/90)

AIDS SURVEILLANCE SUMMARY: WISCONSIN AND U.S.

JULY 2, 1990

TOTAL CASES

	Wisconsin ¹ (as of June 28, 1990)		U.S. (as of May 31, 1990)	
	Cases	Deaths	Cases	Deaths
As of this Report	721	420	136,204	83,145
One Month Ago	695	404	132,510	80,798
One Year Ago	483	297	97,193	56,468

Case-fatality Rate (%) and Deaths by Year of Diagnosis

	Cases	Deaths*	Rate (%)	Cases	Deaths*	Rate (%)
Through 1985	86	82	(95)	21,546	18,947	(88)
1986	92	79	(86)	18,055	14,785	(82)
1987	143	118	(83)	26,622	19,595	(74)
1988	158	81	(51)	31,328	17,668	(56)
1989	147	50	(34)	31,779	11,031	(35)
1990	95	10	(11)	6,874	1,119	(16)
TOTAL	721	420	(58)	136,204	83,145	(61)

Residence at Diagnosis of AIDS

	Cases	(%)
Wisconsin Cases	550	(76)
Non-Resident Cases	171	(24)

Exposure Categories²

	Cases	(%)	Cases	(%)
Homosexual/Bisexual Male	535	(74)	80,281	(59)
Intravenous Drug Use	54	(7)	28,727	(21)
Homosexual Male & IV Drug Use	33	(5)	9,149	(7)
Hemophilia/Coagulation Disorder	13	(2)	1,322	(1)
Transfusion Associated	20	(3)	3,425	(3)
Heterosexual Contact	24	(3)	6,724	(5)
Mother with/at Risk	6	(1)	1,914	(1)
Undetermined ³	36	(5)	4,662	(3)

Gender

	Cases	(%)	Cases	(%)
Male	684	(95)	122,537	(90)
Female	37	(5)	13,667	(10)

Race/Ethnicity

	Cases	(%)	Cases	(%)
White	560	(78)	75,684	(56)
Black	121	(17)	37,850	(28)
Hispanic	37	(5)	21,319	(16)
Asian/Pacific Islander	1	(<1)	835	(1)
American Indian	2	(<1)	185	(<1)
Other	0	(0)	331	(<1)

Age at Diagnosis

	Cases	(%)	Cases	(%)
Under 5	5	(1)	1,911	(1)
05-12	1	(<1)	404	(<1)
13-19	4	(1)	530	(<1)
20-29	165	(23)	27,561	(20)
30-39	319	(44)	62,832	(46)
40-49	152	(21)	29,144	(21)
50 years and over	75	(10)	13,822	(10)

1. Includes resident and nonresident cases (determined by the state of residence at diagnosis).

2. Cases with more than one risk factor other than the combinations listed in the tables are tabulated only in the category listed first.

3. Includes patients for whom risk information is incomplete (due to death, refusal to be interviewed or loss to follow-up), patients still under investigation, men whose only reported risk was heterosexual contact with a prostitute, and patients for whom no risk was identified.

APPENDIX B

SURVEY INSTRUMENT

Information and Opinion Survey

Instructions: Give your opinion about each of the following statements using the 5-point scale below.

A	B	C	D	E
Agree	Agree	Neutral	Disagree	Disagree
Strongly	Somewhat		Somewhat	Strongly

1. AIDS has become this country's number-one health problem.
2. I am not worried about getting AIDS.
3. There is a general need for more AIDS information and education.
4. I don't think that condoms can provide very much real protection against AIDS.
5. Dying of AIDS is one of the most painful deaths that I can imagine.
6. I think I will be able to protect myself from being exposed to AIDS.
7. Very few people are doing anything differently because of AIDS.
8. I would like to learn more about AIDS and how it is spread.
9. I am concerned that I might get exposed to the AIDS virus.
10. The preventive measures that are currently available give good protection against AIDS infection.
11. In my opinion, there is no such thing as "safe" or "safer" sex so far as AIDS is concerned.
12. I believe that AIDS education should be provided in the public schools.
13. I feel helpless against a disease like AIDS.
14. I have already heard more than I want to hear about AIDS.
15. AIDS has caused a lot of people to think more seriously about sex.
16. There is really very little a person can do to keep from getting AIDS.
17. The idea of getting AIDS really frightens me.
18. AIDS is a serious disease, but I can think of other diseases that would be even worse to have.
19. Most people are trying to protect themselves against AIDS these days.
20. I don't think AIDS will ever affect my own life.
21. AIDS has made people a lot more careful about who they have sex with.
22. I can't think of anything worse than getting AIDS.
23. Most of the people I know have made changes in their lives to protect themselves against AIDS.
24. I consider my own AIDS risk to be very low.
25. Even a disease as serious as AIDS is not going to change people's attitudes about having sex or using drugs.
26. These days everybody is at risk for getting AIDS.

(Continued)

Instructions: Tell whether you believe each of the following statements is true or false, and how sure you are of your answer, using the scale below.

A _____
True
(Very Sure)

B _____
True
(Somewhat Sure)

C _____
Not Sure

D _____
False
(Somewhat Sure)

E _____
False
(Very Sure)

27. If you kiss someone with AIDS, you will probably get the disease.
28. A person is not very likely to get AIDS by sharing IV-drug needles with someone who has the virus.
29. People can get AIDS by eating food that has been prepared by someone who has the disease.
30. Many Lesbians have AIDS.
31. It is very unlikely that a blood transfusion would give a person AIDS these days.
32. AIDS was first identified by scientists in the early 1980's.
33. It is unsafe to shake hands with somebody who has AIDS.
34. Women can pass the AIDS virus to their male sex partners.
35. A person can get AIDS by donating blood.
36. Latex condoms (rubbers) can reduce the chance of passing the AIDS virus from one sex partner to the other.
37. A pregnant woman who has AIDS can pass the disease to her unborn baby.
38. AIDS is spread by mosquitoes.
39. A person can be infected with the AIDS virus for five or more years without getting sick.
40. Children who have AIDS can easily spread the disease to other children.
41. It is unsafe to use drinking fountains or public toilets that might have been used by somebody who has AIDS.
42. Household pets can spread the AIDS virus to people.
43. There is very little AIDS among Blacks and Hispanics in this country.
44. It is safe to share drinking glasses and eating utensils with people who have AIDS.
45. A person is less likely to get infected with the AIDS virus through oral sex than through sexual intercourse.
46. There are no cases of people getting AIDS from contact with saliva.
47. More of the AIDS virus is found in blood and semen than in other body fluids.
48. The AIDS virus is not spread by sneezing or coughing.
49. Breast milk can pass the AIDS virus from a mother to her infant.
50. Everyone who is infected with the AIDS virus has some visible symptoms.
51. It is estimated that more than one million Americans are currently infected with the AIDS virus.
52. The AIDS virus is easily killed by ordinary bleach or detergent.
53. Nearly all persons who get AIDS die within one year of being diagnosed.
54. AIDS-related complex (ARC) is caused by the same virus that causes AIDS.
55. In addition to damaging the immune system, the AIDS virus may also attack the brain.
56. Many health-care workers have become infected as a result of treating AIDS patients.
57. In some parts of the world, AIDS is found mostly among heterosexual (straight) men and women.

Please Also Answer the Following

58. Age: [A] 18 or under [D] 30 to 39
[B] 19 to 24 [E] 40 or above
[C] 25 to 29
59. Sex: [A] Male [B] Female
60. Race: [A] White
[B] Black
[C] Hispanic/Latino
[D] Asian or Pacific Islander
[E] American Indian or Other

Please indicate whether you have made any of the following changes in your lifestyle to decrease your chances of getting AIDS, using the following scale:

A-----	B-----	C-----
yes	no	not applicable
have made changes	have not made changes	not sexually active/ don't use drugs

Have you:

61. Increased use of condoms?
62. Increased use of spermicide, such as nonoxynol-9?
63. Become more selective in choosing sexual partners?
64. Increased asking a sexual partner about his/her sexual past?
65. Decreased having sex after drinking and/or drug use?
66. Decreased sharing IV needles for drug/steroid use?
67. Increased cleaning IV needles used for drug/steroid use?
68. Made other changes not listed here?

APPENDIX C

LETTER GRANTING PERMISSION FOR USE OF INSTRUMENT

(213) 985-7508

AIDS Research & Education Project
Psychology Department
CALIFORNIA STATE UNIVERSITY, LONG BEACH

FAX: (213) 985-4618

March 23, 1990

Kathryn Koski
Student Health Center
University of Wisconsin
1725 State Street
Lacrosse, WI 54601

Dear Ms. Koski:

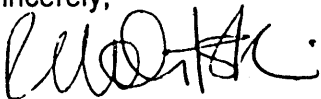
Enclosed is a copy of the most recent version of the AIDS Information and Opinion Survey developed by our project staff. This instrument has been used in a variety of on- and off-campus settings to assess the level of individuals' AIDS knowledge their health-related attitudes toward the disease. This instrument has been successfully administered to adolescents—analysis of the survey's readability utilizing the Flesch-Kincaid method yielded a grade-level equivalent of 7.3. Copies of paper presentations describing the development of the instrument and results from studies using earlier versions of the survey have also been included.

You are welcome to use the AIDS Information and Opinion Survey, in whole or in part, as a part of your own research activities. If you do present or publish a paper based upon data collected using the instrument, I would appreciate it if you would reference the development and previous administration of the instrument. References for paper presentations based on this instrument are included on the cover sheets of the enclosed research reports.

Please contact me before including one of these references as part of your final manuscript. As I mentioned to you on the phone, we are currently in the process of preparing some of these findings for publication. I will be happy to provide you with copies of the in-press manuscripts and publication information when available.

I hope that the information provided will be useful. If you would like more in-depth information about the survey itself or any of our other research/intervention programs please feel free to contact me.

Sincerely,



Richard Wolitski
Research Associate

RJW/jb
Enclosures

APPENDIX D

TABLE 4: RESPONSES TO AIDS-RELATED
ATTITUDE ITEMS, BY PERCENTAGE

Table 4

Responses to AIDS-Related Attitude Items, by Percentage

Attitude Item		agree strongly	agree somewhat	neutral	disagree somewhat	disagree strongly
<u>Severity of Disease</u>						
1. AIDS has become the country's number one health problem	Total	28.3	57.0	6.7	4.9	3.1
	male	25.0	58.0	9.0	5.0	3.0
	female	29.8	57.0	5.0	5.0	3.3
5. Dying of AIDS is one of the most painful deaths that I can imagine	Total	27.4	32.3	21.5	11.2	7.6
	male	20.0	38.0	23.0	12.0	7.0
	female	32.2	28.1	20.7	10.7	8.3
18. AIDS is a serious disease, but I can think of other diseases that would be even worse to have	Total	7.6	30.5	27.4	17.5	17.0
	male	11.0	30.0	30.0	17.0	12.0
	female	5.0	30.6	25.6	17.4	21.5
22. I can't think of anything worse than getting AIDS	Total	20.2	27.2	23.3	23.3	6.3
	male	17.0	27.0	22.0	22.0	12.0
	female	21.5	27.3	24.8	24.8	1.7

Attitude Item		agree strongly	agree somewhat	neutral	disagree somewhat	disagree strongly
Personal Vulnerability						
2. I am not worried about getting AIDS	Total	7.6	20.2	17.5	40.4	14.3
	male	8.0	14.0	21.0	43.0	14.0
	female	7.4	24.8	14.9	38.0	14.9
6. I think I will be able to protect able to protect myself from being exposed to AIDS	Total	32.7	50.2	10.8	4.9	1.3
	male	40.0	49.0	8.0	2.0	1.0
	female	26.4	52.1	12.4	7.4	1.7
9. I am concerned that I might get exposed to the AIDS virus	Total	17.9	39.5	21.5	14.3	6.7
	male	22.0	40.0	22.0	11.0	5.0
	female	14.9	38.8	21.5	17.4	7.4
13. I feel helpless against a disease like AIDS	Total	9.9	22.0	25.1	28.3	14.8
	male	11.0	22.0	22.0	24.0	21.0
	female	8.3	22.3	27.3	27.3	9.9
17. The idea of getting AIDS really frightens me	Total	54.3	27.8	9.9	5.4	2.7
	male	54.0	29.0	10.0	3.0	4.0
	female	54.5	26.4	9.9	7.4	1.7

Attitude Item			agree strongly	agree somewhat	neutral	disagree somewhat	disagree strongly
20. I don't think AIDS will ever affect my own life	Total		9.4	23.8	35.0	22.9	9.0
	male		13.0	24.0	36.0	21.0	6.0
	female		6.6	23.1	33.9	24.8	11.6
24. I consider my own AIDS risk to be very low	Total		46.2	33.6	13.5	6.3	0.4
	male		51.0	32.0	14.0	3.0	0.0
	female		41.3	35.5	13.2	9.1	0.8
26. These days everyone is at risk for AIDS	Total		35.0	40.4	9.9	10.8	4.0
	male		27.0	44.0	11.0	12.0	6.0
	female		41.3	38.0	8.3	9.9	2.5
<u>Perception of Social Norms</u>							
7. Very few people are doing anything differently because of AIDS	Total		3.6	23.8	19.3	40.4	13.0
	male		2.0	24.0	26.0	34.0	14.0
	female		5.0	24.0	14.0	46.3	10.7
15. AIDS has caused a lot of people to think more seriously about sex	Total		35.4	46.2	11.2	6.7	0.4
	male		39.0	41.0	14.0	6.0	0.0
	female		31.4	51.2	9.1	7.4	0.8
19. Most people are trying to protect themselves against AIDS these days	Total		11.7	50.2	21.1	16.1	0.9
	male		16.0	44.0	26.0	13.0	1.0
	female		17.4	55.4	17.4	19.0	0.8

Attitude Item		agree strongly	agree somewhat	neutral	disagree somewhat	disagree strongly
21. AIDS has made people a lot more careful about who they have sex with	Total	17.5	51.1	17.0	13.0	1.3
	male	17.0	47.0	21.0	14.0	1.0
	female	16.5	55.4	14.0	12.4	1.7
23. Most of the people I know have made changes in their lives to protect themselves against AIDS	Total	7.6	32.7	35.9	17.0	6.7
	male	8.0	27.0	38.0	20.0	7.0
	female	6.6	37.2	34.7	14.9	6.6
25. Even a disease as serious as AIDS is not going to change people's attitudes about having sex or using drugs	Total	6.3	30.9	16.1	35.0	11.7
	male	5.0	33.0	22.0	30.0	10.0
	female	6.6	29.8	11.6	39.7	12.4
<u>Desire for AIDS Information</u>						
3. There is a general need for more AIDS information and education	Total	55.6	32.7	8.1	3.1	0.4
	male	52.0	35.0	9.0	3.0	1.0
	female	58.7	30.6	7.4	3.3	0.0
8. I would like to learn more about AIDS and how it is spread	Total	31.8	38.1	25.1	3.1	1.8
	male	27.0	36.0	30.0	3.0	4.0
	female	35.5	39.7	21.5	3.3	0.0

Attitude Item		agree strongly	agree somewhat	neutral	disagree somewhat	disagree strongly
12. I believe that AIDS education should be provided in the public schools	Total	68.6	24.7	4.5	1.3	0.9
	male	63.0	29.0	5.0	1.0	2.0
	female	72.7	21.5	4.1	1.7	0.0
14. I have already heard more than I want to hear about AIDS	Total	3.2	8.1	26.7	37.6	24.4
	male	5.1	10.1	32.3	38.4	14.1
	female	1.7	6.7	22.5	35.8	33.3
<u>Prevention Effectiveness</u>						
4. I don't think that condoms can provide very much real protection against AIDS	Total	2.2	17.0	11.7	34.5	34.5
	male	2.0	13.0	16.0	36.0	33.0
	female	1.7	20.7	8.3	33.1	36.4
10. The preventive measures that are currently available give good protection against AIDS infection	Total	4.5	45.3	29.1	17.0	4.0
	male	5.0	44.0	36.0	14.0	1.0
	female	4.1	47.1	23.1	19.8	5.8
11. In my opinion, there is no such thing as "safe" or "safer" sex as far as AIDS is concerned	Total	16.6	22.9	16.6	33.6	10.3
	male	14.0	23.0	15.0	33.0	15.0
	female	18.2	23.1	18.2	33.9	6.6

Attitude Item		agree strongly	agree somewhat	neutral	disagree somewhat	disagree strongly
16. There is really very little a person can do to keep from getting AIDS	Total	1.3	3.6	6.3	37.7	51.1
	male	1.0	4.0	6.0	44.0	45.0
	female	1.7	3.3	6.6	33.1	55.4

APPENDIX E

TABLE 6: RESPONSES TO AIDS-RELATED
KNOWLEDGE ITEMS, BY PERCENTAGE



Table 6

Responses to AIDS-Related Knowledge Items, By Percentage

Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
27. If you kiss someone with AIDS, you will probably get the disease (F)	Total	2.2	7.6	5.8	28.7	55.6
	male	1.0	8.0	8.0	33.0	50.0
	female	3.3	7.4	3.3	25.6	60.3
28. A person is not likely to get AIDS from sharing IV-drug needles with someone who has the virus (F)	Total	4.0	1.3	1.8	4.5	88.3
	male	3.0	3.0	2.0	5.0	87.0
	female	5.0	0.0	1.7	4.1	89.3
29. You can get AIDS by eating food that has been prepared by someone with the disease (F)	Total	2.2	5.8	9.0	20.6	62.3
	male	2.0	4.0	12.0	25.0	57.0
	female	2.5	7.4	5.8	17.4	66.9
30. Many Lesbians have AIDS (F)	Total	5.9	22.1	41.0	21.2	9.9
	male	4.0	18.2	56.6	14.1	7.1
	female	7.4	24.8	28.9	27.3	11.6

Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
31. It is very unlikely that a blood transfusion would give a person AIDS these days (T)	Total	17.9	22.9	12.1	19.7	27.4
	male	18.0	21.0	11.0	25.0	25.0
	female	18.2	24.8	13.2	14.9	28.9
32. AIDS was first identified by scientists in the early 1980s (T)	Total	26.0	26.0	23.8	13.9	10.3
	male	31.0	25.0	25.0	11.0	8.0
	female	20.7	27.3	23.1	16.5	12.4
33. It is unsafe to shake hands with someone who has AIDS (F)	Total	1.3	3.1	2.2	6.3	87.0
	male	2.0	5.0	2.0	7.0	84.0
	female	0.8	1.7	2.5	5.0	90.1
34. Women can pass the AIDS virus to their male sex partners (T)	Total	80.3	12.6	4.9	0.4	1.8
	male	84.0	10.0	6.0	0.0	0.0
	female	76.9	14.9	4.1	0.8	3.3
35. A person can get AIDS by donating blood (F)	Total	7.2	9.4	8.5	17.9	57.0
	male	10.0	9.0	12.0	13.0	56.0
	female	5.0	9.9	5.8	22.3	57.0

Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
36. Latex condoms can reduce the chance of passing the AIDS virus from one sex partner to the other (T)	Total	59.2	33.2	5.4	0.9	1.3
	male	60.0	33.0	6.0	0.0	1.0
	female	59.5	33.1	4.1	1.7	1.7
37. A pregnant woman who has AIDS can pass the virus to her unborn baby (T)	Total	78.0	14.3	5.4	1.3	0.9
	male	70.0	20.0	8.0	1.0	1.0
	female	85.1	9.1	3.3	1.7	0.8
38. AIDS is spread by mosquitos (F)	Total	6.3	13.5	23.8	20.6	35.9
	male	7.0	15.0	25.0	20.0	33.0
	female	5.8	12.4	21.5	21.5	38.8
39. A person can be infected with the AIDS virus for five or more years without getting sick (T)	Total	59.2	28.7	8.1	2.2	1.8
	male	55.0	30.0	11.0	2.0	2.0
	female	62.8	27.3	5.8	2.5	1.7



Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
40. Children who have AIDS can easily spread the disease to other children (F)	Total	2.2	6.3	17.9	32.7	40.8
	male	2.0	7.0	24.0	32.0	35.0
	female	2.5	5.8	12.4	33.9	45.5
41. It is unsafe to use drinking fountains or public toilets that have been used by somebody who has AIDS (F)	Total	1.3	6.7	15.2	26.9	49.8
	male	1.0	7.0	21.0	21.0	50.0
	female	1.7	6.6	10.7	31.4	49.6
42. Household pets can spread the AIDS virus to people (F)	Total	1.4	4.5	27.9	23.9	42.3
	male	1.0	7.0	28.0	21.0	43.0
	female	1.7	2.5	27.3	26.4	42.1
43. There is very little AIDS among Blacks and Hispanics in this country (F)	Total	2.3	5.9	27.9	27.5	36.5
	male	4.0	8.0	25.0	24.0	39.0
	female	0.8	4.1	30.6	29.8	34.7



Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
44. It is safe to share drinking glasses and eating utensils with people who have AIDS (T)	Total	17.6	24.8	18.5	22.1	17.1
	male	13.0	20.0	28.0	26.0	13.0
	female	21.5	28.9	10.7	19.0	19.8
45. A person is less likely to get infected with the AIDS virus through oral sex than through sexual intercourse (T)	Total	10.8	21.2	22.5	19.4	26.1
	male	13.0	26.0	19.0	21.0	21.0
	female	9.1	17.4	24.8	18.2	30.6
46. There are no cases of people getting AIDS from contact with saliva (T)	Total	16.7	21.6	38.7	17.6	5.4
	male	15.0	21.0	43.0	17.0	4.0
	female	18.2	22.3	34.7	18.2	6.6
47. More of the AIDS virus is found in blood and semen than in other body fluids (T)	Total	53.6	33.3	10.8	1.4	0.9
	male	48.0	36.0	13.0	2.0	1.0
	female	58.7	31.4	8.3	0.8	0.8



Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
48. The AIDS virus is not spread through sneezing or coughing (T)	Total	47.7	27.9	17.6	4.5	2.3
	male	46.0	27.0	19.0	5.0	1.7
	female	49.6	28.1	16.5	4.1	2.5
49. Breast milk can pass the AIDS virus from a mother to her infant (T)	Total	12.6	22.5	53.2	7.7	4.1
	male	15.0	26.0	53.0	4.0	2.0
	female	10.7	19.8	52.9	10.7	5.8
50. Everyone who is infected with the AIDS virus has visible symptoms (F)	Total	3.2	7.7	14.0	27.1	48.0
	male	5.1	6.1	18.2	25.3	45.5
	female	1.7	9.1	10.7	28.1	50.4
51. It is estimated that more than one million Americans are currently infected with the AIDS virus (T)	Total	26.1	33.8	35.1	4.5	0.5
	male	22.0	32.0	38.0	7.0	1.0
	female	29.8	34.7	33.1	2.5	0.0

Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
52. The AIDS virus is easily killed by ordinary bleach or detergent (T)	Total	5.4	7.7	9.5	9.5	68.0
	male	6.0	8.0	15.0	8.0	73.0
	female	5.0	7.4	5.0	10.7	71.9
53. Nearly all persons with AIDS die within one year of diagnosis (F)	Total	7.2	16.7	13.1	29.7	33.3
	male	9.0	13.0	17.0	29.0	32.0
	female	5.8	19.8	9.9	29.8	34.7
54. AIDS-related complex (ARC) is caused by the same virus that causes AIDS (T)	Total	8.1	15.4	65.6	6.3	4.5
	male	9.1	14.1	64.6	8.1	4.0
	female	7.4	16.5	66.1	5.0	5.0
55. In addition to damaging the immune system, the AIDS virus may also attack the brain (T)	Total	9.0	27.9	46.4	9.5	7.2
	male	7.0	25.0	49.0	13.0	6.0
	female	10.7	29.8	44.6	6.6	8.3



Knowledge Item		True			False	
		very sure	somewhat sure	not sure	somewhat sure	very sure
56. Many health care workers have become infected as a result of treating AIDS patients (F)	Total	2.7	18.1	20.8	36.7	21.7
	male	3.0	22.0	21.0	34.0	20.0
	female	2.5	14.9	20.7	38.8	23.1
57. In some parts of the world, AIDS is found mostly among heterosexual (straight) men and women (T)	Total	11.8	20.4	36.7	21.7	9.5
	male	8.0	27.0	37.0	19.0	9.0
	female	14.9	14.9	36.4	24.0	9.9

APPENDIX F

TABLE 9: MEAN RESPONSES TO AIDS-RELATED
KNOWLEDGE ITEMS



Table 9

Mean Responses to AIDS-Related Knowledge Items

Knowledge Item	Mean	SD
27. If you kiss someone with AIDS, you will probably not get the disease	1.722	1.024
28. A person is very likely to get AIDS by sharing IV-drug needles with someone who has the virus	1.283	.898
29. You cannot get AIDS by eating food that has been prepared by someone who has the disease	1.650	1.015
30. Relatively few Lesbians have AIDS	2.928	1.031
31. It is very unlikely that a blood transfusion would give a person AIDS these days	3.157	1.491
32. AIDS was first identified by scientists in the early 1980s	2.565	1.292
33. It is safe to shake hands with someone who has AIDS	1.256	.767
34. Women can pass the AIDS virus to their male sex partners	1.309	.746
35. A person cannot get AIDS by donating blood	1.919	1.295
36. Latex condoms can reduce the chance of passing the AIDS virus from one sex partner to the other	1.520	.758
37. A pregnant woman who has AIDS can pass the virus to her unborn baby	1.327	.720
38. AIDS is not spread by mosquitos	2.336	1.262
39. A person can be infected with the AIDS virus for five or more years without getting sick	1.520	.758



Knowledge Item	Mean	SD
40. Children who have AIDS cannot easily spread the disease to other children	1.964	1.022
41. It is safe to use drinking fountains or public toilets that have been used by somebody who has AIDS	1.830	1.008
42. Household pets cannot spread the AIDS virus to people	1.986	1.004
43. AIDS has greatly affected Blacks and Hispanics in this country	2.099	1.037
44. It is safe to share drinking glasses and eating utensils with people who have AIDS	2.964	1.365
45. A person is less likely to get infected with the AIDS virus through oral sex than through sexual intercourse	3.288	1.345
46. There are no cases of people getting AIDS from contact with saliva	2.734	1.100
47. More of the AIDS virus is found in blood and semen than in other body fluids	1.626	.801
48. The AIDS virus is not spread by sneezing or coughing	1.856	1.010
49. Breast milk can pass the AIDS virus from a mother to her infant	2.680	.933
50. Not everyone who is infected with the AIDS virus has visible symptoms	1.910	1.100
51. It is estimated that more than one million Americans are currently infected with the AIDS virus	2.194	.894
52. The AIDS virus is easily killed by ordinary bleach or detergent	4.270	1.225



Knowledge Item	Mean	SD
53. Nearly all persons with AIDS will live longer than one year after diagnosis	2.347	1.291
54. AIDS-related complex (ARC) is caused by the same virus that causes AIDS	2.837	.837
55. In addition to damaging the immune system, the AIDS virus may also attack the brain	2.779	.989
56. Few health care workers have become infected as a result of treating AIDS patients	2.434	1.100
57. In some parts of the world, AIDS is found mostly among heterosexual (straight) men and women	2.968	1.130

Note: SD = standard deviation. Mean responses were calculated using a 5-point Likert-type scale; 1=true (very sure), 5=false (very sure). Items have been rephrased so that "true" is the correct response to each item.

