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**HEALTH CARE BELIEFS OF NURSING STUDENTS AS PREDICTORS
OF INTENTIONS TO CARE FOR AIDS PATIENTS**

by

Catherine Ellen Earl

**A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Public Administration
School of Public Affairs and Administration**

**Western Michigan University
Kalamazoo, Michigan
April 1998**

HEALTH CARE BELIEFS OF NURSING STUDENTS AS PREDICTORS OF INTENTIONS TO CARE FOR AIDS PATIENTS

Catherine Ellen Earl, D.P.A.

Western Michigan University, 1998

The purposes of this study were (a) to determine if information about AIDS taught using two different formats, lecture discussion and video discussion, results in differential retention of content about AIDS; (b) to determine if health care beliefs about AIDS change after exposure to a lecture or a video about AIDS among first-year nursing students in rural community colleges; and (c) to examine whether the differences in intentions to provide care for AIDS patients are associated with health care beliefs about AIDS. In this study, both qualitative and quantitative research methods were used. The study was conducted over two occasions using a Solomon Four Group, pretest-posttest design. The quantitative study was experimental and tested the effects of lecture and video on retention of knowledge about AIDS, changes in health care beliefs, and willingness to work with AIDS clients. The health belief model was theoretically examined with two new additions, ethical orientation and moral sophistication. Pretested subjects in the lecture group showed significant gains ($p < .05$) in test scores from pretest to posttest. Subjects in the video group showed a significant change in the health care beliefs of seriousness, ethical orientation, and moral sophistication. Younger students were less willing to work with AIDS clients ($p < .05$). Most students were "sometimes concerned" about contracting AIDS ($p < .05$). Students knew the least about AIDS "symptoms"

($p < .05$). Nursing curriculums lack content about AIDS. Nursing students in rural community colleges feel they lack skill and confidence to care for AIDS patients.

The qualitative data were collected through fieldnotes and audiorecorded post group sessions for both experimental groups. Six themes evolved: fear, anger, sympathy, lack of confidence, knowledge, and morality. Qualitative results support the quantitative findings.

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Catherine Ellen Earl

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CHAPTER I

INTRODUCTION

Statement of the Problem

The first five cases of Acquired Immunodeficiency Syndrome (AIDS) were reported in 1981 (Centers for Disease Control [CDC], 1981) in Los Angeles, California. Over time the number of cases of AIDS has grown dramatically. For example, at the end of 1994, nearly 18 million adults and 1.5 million children worldwide were estimated to be seropositive for the human immunodeficiency virus (HIV). Each day, 6,000 additional persons become infected (Merson, 1994; World Health Organization, 1995).

In the United States, more than 1 million persons have been infected with the AIDS virus and at least 401,789 have been diagnosed as having the acquired immunodeficiency syndrome (AIDS) (CDC, 1994; World Health Organization, 1995).

The January 1996 report from the World Health Organization (WHO) estimates that as of June 30, 1995, 13–15 million persons worldwide are living with the HIV infection. Nationally, up to 900,000 adults and adolescents are believed to be living with HIV infection (Rosenberg, 1995).

According to the Michigan Department of Public Health, the number of HIV infected cases in Michigan residents (both in the upper and lower peninsula) is up to 11,500 persons. There are approximately 1,000 new cases reported each year. The

population in the State of Michigan is 9,549,353 (United States Census Bureau, 1995). According to a recent *Michigan Quarterly HIV Report* (Michigan Department of Community Health, 1997) there were 7 total reported cases in the previous 3-month period in the upper peninsula counties of Michigan including and adjacent to where the study was conducted; and in the rural areas from which data were collected including and adjacent to where the study was conducted in the lower peninsula, there were 67 total reported cases.

Since approximately 5% of HIV infected persons will receive an AIDS diagnosis each year following their initial HIV infection, at some time nurses across the country will be caring for AIDS patients as those who are currently infected develop HIV related illnesses (Mullins, 1996; Pantaleo, Graziosi, & Fauci, 1993).

Nurses are in a unique position to encounter both patients with AIDS and those at high risk to develop the disease. If the nursing profession is to respond to the intensity of the disease, its role in providing care for AIDS patients, and combating the spread of the virus, nurses must have the knowledge and skills that will make interventions possible. In particular, nurses' attitudes toward people with AIDS must be humane to enable them to intervene in a positive and professional manner (Chitty, 1989).

Individuals choosing nursing as a profession today are aware of the HIV/AIDS epidemic and need to have accurate and up-to-date information about this disease. This is as true for students receiving their education in communities where there is a low incidence of HIV/AIDS as it is for those being educated in communities where the area is thriving with AIDS patients. It cannot be assumed that all students will eventually practice in a low incidence area.

A study conducted by Bernstein, Rabkin, and Wolland (1990) suggests that AIDS-related anxiety may influence students' career choices and behaviors and the quality of care patients receive. This study also suggested that educational training must include alleviating unjustified fears.

It is important to remember that given the grim statistics about AIDS and its spread to all populations, the practicing nurse will be providing care to someone who is HIV positive, even though the nurse may not be aware of the individual's HIV status. It is most important in areas of low incidence that nursing students do not become sluggish in their knowledge about HIV and AIDS (Williams, Benedict, & Pearson, 1992).

It is imperative that all nurses are educated in order to provide safe, quality care to persons with HIV/AIDS as the epidemic spreads to affect every community, from the original urban epicenters into rural areas (Corwein & Berry, 1991). Earlier in the AIDS health crisis, several studies revealed patterns of reluctance to care for persons with AIDS among nursing students (Lester & Beard, 1988; Wiley, Heath, & Acklin, 1988).

A recent review of the nursing literature revealed a paucity of studies that examined these issues (Swanson, Cheitz, Zalar, & Stoll, 1990). Wiley et al. (1988) found willingness to provide care was greater among students with more nursing education. In addition to a threat to patient care, students problematic attitudes toward persons with AIDS (Blumenfield, Smith, Milazzo, Seropian, & Wormser, 1987; Currey, Johnson, & Ogden, 1990; Ficarroto, Grade, & Zegans, 1991; Foley & Fahs, 1994; Leasure, Hawkins, & Merrill, 1996; Lester & Beard, 1988; O'Brien & Pfeifer, 1993; Royse & Birge, 1987) as well as knowledge deficits about AIDS have

been found (Campbell, Maki, Willenbring, & Henry, 1991; Cole, 1996; Cole & Slocumb, 1994; Flaskerud, 1989; Lewis, Doyle, & Roemer, 1994).

The educational preparation of nurses providing care to persons with HIV/AIDS has been known to affect the attitudes of the nurse and the effectiveness of the care (Armstrong-Esther & Hewitt, 1990; Bormann, Brent, & Mood, 1995; Cerny, Amundson, Mueller, & Waldron, 1996; Dols & Bradley-Magnuson, 1996; Ficarrotto, Grade, Bliwise, & Irish, 1990; Nettle et al., 1995; Tesch, Simpson, & Kirby, 1990; Turner, Gauthier, Ellison, & Greiner, 1988). Research has demonstrated the relationship between lack of knowledge about HIV/AIDS and poor attitudes in providing client care (Cerny et al., 1996; Dols & Bradley-Magnuson, 1996; Flaskerud, Lewis, & Shin, 1989; Gaskins & Brown, 1992; Meeks-Festa, Uhle, Munjas, Gerszten, & Creger, 1994; Wertz, Sorenson, Liebling, Kessler, & Heere, 1987).

Some researchers have identified a positive correlation between increased knowledge about providing direct care to persons with HIV/AIDS and a corresponding increase in a positive attitude toward providing care to persons with HIV/AIDS (Armstrong-Esther et al., 1990; Flaskerud, Lewis, & Shin, 1989; Lawrence & Lawrence, 1989).

It is of major concern to nurse educators to know how to handle students' fears and negative attitudes about AIDS while providing students with the most current information about AIDS.

Most recently, the virus has reached the rural communities in growing proportions. It is recommended that "[studies] in rural area[s] where the experiential components of attitudes do not exist should be undertaken quickly" (Barrick, 1988, p. 371).

Further, recommendations from research indicate that “it is [also] imperative that future studies address methods by which negative [attitudes] beliefs about AIDS and AIDS care can be altered” (VanServellen, Lewis, & Leake, 1988, p. 8). It is speculated that education will have a profound impact on those who provide care for AIDS clients. “Education is a powerful tool that can be used by health care workers to change how AIDS is perceived” (All, 1989, p. 162). In addition, a review of the literature on the impact of AIDS on recruitment and retention in hospitals indicates a fear of contagion and the need for strong educational training (Nagelkerk, 1994).

In view of this situation it is important to examine whether nursing education has an impact on the willingness of students to care for AIDS patients in rural areas. According to a research study by Preston, Koch, and Young (1991), “there are no research studies that document the extent to which AIDS has affected rural nursing practice” (p. 111). Further, as reported by DiIorio, Parsons, Lehr, Adame, & Carlone (1993), AIDS “is rapidly expanding and invading populations previously assumed to be at low risk” (p. 159).

More conservative attitudes and lower tolerance for diverse lifestyles meant that patients with AIDS (PWA) and their families who live in rural areas have experienced problems accessing care and finding support networks (Graham et al., 1995; Weinert & Long, 1991). It has been noted that the slow dispersion of information to rural areas may mean that rural nurses lack education about AIDS. Currently, little is known about rural nurses’ response to AIDS, especially their risk for exposure to HIV through not using universal precautions (Young, Forti, & Preston, 1996).

Purpose of the Study

The purposes of this study are (a) to determine if information about AIDS taught using two different formats, lecture and video, results in differential retention of content about AIDS; (b) to determine if health care beliefs about AIDS change after exposure to a lecture or a video about AIDS among first-year nursing students in rural community colleges; and (c) to examine whether the differences in intentions to provide care for AIDS patients are associated with health care beliefs about AIDS. There is a substantial amount of research that indicates that intentions are key determinants of behavior (Ajzen & Fishbein, 1976; Davidson & Jaccard, 1979; Fishbein & Ajzen, 1975; Goldenberg & Laschinger, 1991; Jorgensen & Sonstegard, 1984; Lierman, Young, Kasprzyk, & Benoliel, 1990; Manstead, Profitt, & Smart, 1983; Pender & Pender, 1986; Schifer & Ajzen, 1985).

Statement of the Research Questions

The goal of this qualitative and quantitative study was to determine the effects of two types of teaching methodologies in Associate Degree nursing programs on the nursing student's knowledge, beliefs, and intentions to care for AIDS patients. The the following three research questions provided the structure for this study:

1. Is there a difference in a nursing student's retention of knowledge about AIDS measured 2 weeks posteducational sessions?
2. Do students who have more knowledge about AIDS have greater perceived health care belief scores?

3. Is a nursing student who has more knowledge about AIDS and greater perceived health care belief scores more willing to work with an AIDS patient than a nursing student with less knowledge about AIDS?

Hypotheses

The following hypotheses were formulated based on the three research questions:

Hypothesis I: There is a difference between the lecture and video format on the nursing student's retention of knowledge about AIDS measured 2 weeks posteducational sessions.

Hypothesis II: A student nurse who has more knowledge about AIDS will have greater perceived health care belief scores of susceptibility, seriousness, benefit, health motivation, self-efficacy, moral sophistication, and ethical orientation than a student nurse with less knowledge about AIDS.

Hypothesis III: A nursing student who has more knowledge about AIDS and greater perceived health care belief scores of: susceptibility, seriousness, benefit, health motivation, self-efficacy, ethical orientation, and moral sophistication is more willing to work with AIDS patients than student nurses with less knowledge and lower perceived health care belief scores.

Significance of the Study

Nurse educators are now facing the complexities of curriculum development necessary in response to AIDS. Surveys of nurses' and student nurses' knowledge deficits regarding AIDS have been identified (Bennett, 1992; Campbell et al., 1991; Flaskerud, 1989), as well as students' problematic attitudes toward persons with

AIDS (PWA) (Bennett, 1992, 1995; Blumenfield et al., 1987; Bower, Webb, & Stevens, 1994; Cole & Slocumb, 1993, 1994; Currey, Johnson, & Ogden, 1990; Dunn, Stockhausen, Thornton & Barnard, 1995; Ficarroto et al., 1991; Foley & Fahs, 1994; Laschinger & Goldenberg, 1993; Leasure et al., 1996; Lester & Beard, 1988; O'Brien & Pfeifer, 1993; Royse & Birge, 1987). In addition, negative attitudes are responsible in part for "illness, requests for transfer, upward and lateral progression away from bedside care and career changes" (Boland, 1990, p. 40).

The necessity of redesigning nursing curricula in response to HIV has been addressed and specific suggestions for needed content have been made (Brown, Calder, & Rae, 1990; Cerny et al., 1996; Duffy, 1993; Hodges & Poteet, 1987; Martindale & Barnett, 1992; National League for Nursing, 1988, 1997; Nettle et al., 1995). However, no studies have addressed knowledge, beliefs, and student avoidance intentions associated with inadequate AIDS knowledge in nursing schools of rural community colleges. This study will assist rural nursing schools to correct curricular deficits which may exist in relation to AIDS education and clinical practice. To meet the challenges of rural nursing, the National Center for Nursing Research (NCNR) prepared an agenda of priorities for research; second in priority was the study of HIV positive patients, partners, and families. According to C. Everett Koop, former Surgeon General of the United States, ". . . I know with certainty that the fragile rural health care system has almost no tolerance for new patients who are infected with HIV . . ." (National Rural Health Association, NRHA, 1990, pp. 1-2).

A review of the published nursing research by Larson and Ropka (1991) indicates that although the topic of HIV infection is increasingly common, clinical nursing research with such patients is lacking. Their assessment indicated that vulnerable populations, such as sexually active adolescents, intravenous drug users,

pregnant women and their newborns, the homeless, and racial and ethnic minorities, are underrepresented in nursing studies. In addition to these groups being vulnerable for acquiring HIV infection, they are underserved in the mainstream of health care systems. These authors concluded that there is a continued gap in the research literature related to the care aspects of HIV infection.

The National Advisory Council for Nursing Research, at its February 1993 meeting, approved new research priorities for 1995–1999. One of these priorities represents a continued emphasis on HIV infection (NCNR, 1993).

Student nurses who are learning to practice in rural areas must become aware of the unique issues that affect patients with HIV. The issues of particular concern is the conservative belief systems found in rural areas (NRHA, 1990).

Student nurses in rural practice need accurate information about AIDS and its impact on rural populations for developing appropriate discharge planning, implementing care interventions, and managing symptoms in these patients. Among health care providers, those who will assume most of the care for patients with AIDS are nurses.

Nurses in the United States represent the largest group of caregivers with the longest history of bedside care of persons with AIDS and so have the experience on which to base leadership in education. It is important that nursing schools develop strategies for raising the level of education for health care professionals.

The President's Commission on AIDS (1988) has recommended two items that especially address health professionals' need for information and protection: a "large-scale" government study of human immunodeficiency virus (HIV) risk in health care settings, and permanent, enforceable rules issued by the Labor Department to help protect health care workers from bloodborne diseases.

Data from the American Association of Colleges of Nursing (AACN, 1986) on nursing graduates found that nursing schools are in the process of building curricula and clinical experiences to prepare practitioners who are skilled and confident in the care of patients with AIDS. New graduates ranged from feeling minimal to very prepared in various areas of knowledge about AIDS. Those with clinical experience in caring for AIDS patients are more comfortable in providing that care.

Because accurate AIDS education is considered to be of utmost importance, two states (Washington and Florida) have made AIDS education a condition of licensure or recertification for physicians, nurses, and all other health care professionals, effective in 1989 ("No License," 1988).

As the disease continues to spread, it is essential that nursing students should be skilled and confident, have accurate information about the disease, know how to protect themselves from acquiring the disease, and have the opportunity to work through their beliefs and feelings in caring for patients with AIDS.

The information obtained from this research study will help add emphasis to public health messages because many white heterosexuals, the majority of the population that live in rural communities, deny their vulnerability and, more than any other group, are not changing their behaviors (Flaskerud & Thompson, 1991). As reported by Samuels, Shi, Stoskopf, Richter, Baker, and Sy (1995), in addition, "almost one fourth (55 million) of all Americans live in rural areas. Recently, for the first time, the rural poverty rate has become higher than the national poverty rate" (p. 281).

Most recently, a school of nursing in the Midwest evaluated their nursing curriculum for adequacy of AIDS content. Two findings were apparent. First, as

students progress in the nursing program, they are more willing to care for patients who have AIDS; second, students believe that professional nurses have a greater responsibility to provide nursing care for patients who have AIDS than do student nurses. Recommendations to the faculty were (a) strengthen the content areas of AIDS clinical symptoms and HIV testing; (b) evaluate the need to strengthen content area for which less than 50% of seniors considered to be included in the curriculum; (c) administer the AIDS curriculum survey on an annual basis; and (d) develop a protocol of procedural guidelines for faculty to use when a student has an exposure to contaminated materials (Nettle et al., 1995).

Findings from a study conducted by Akinsanya and Rouse (1992) on knowledge and attitude of nurses about AIDS indicate that attitudes of nurses require urgent attention; in addition, there is a need for further education and training for nurses to assure the provision of good quality care for people with AIDS.

This research will assist nursing schools to examine curriculum plans and policies for how students are assigned to care for patients with AIDS, as well as to understand if nursing students are developing knowledge and skills needed to care for AIDS patients. This study will help rural and urban nursing schools evaluate the effectiveness of two teaching methodologies, lecture and video, and allow them to structure their curricula accordingly.

Assumptions of the Study

For the purpose of this study the investigator made the following assumptions:

1. All nursing curriculums follow the guidelines for Associate Degree Programs as required by the State Board of Nursing.

2. All nursing curriculums teach universal precautions.
3. A lecture about AIDS has not yet been conducted in the beginning medical surgical classes, the group targeted for this study.
4. Compared with the national average, there are higher rates of poverty, lower median incomes and more chronic illnesses in rural communities (Bushy, 1991).
5. All nursing schools in rural communities have predominantly rural residents attending the nursing program.
6. All students involved in the study may or may not have cared for an AIDS patient while they were student nurses.
7. No student nurse is diagnosed with AIDS.

Overview of the Chapters

This study is organized into five chapters. Chapter I includes the statement of the problem, purpose, research questions and hypotheses, significance, and assumptions underlying the research. Chapter II provides a review of the literature, the conceptual framework, and how that framework relates to the problem under study. Chapter III describes the methods and procedures. This chapter includes an explanation of the research design, sample population, setting of the study, instrumentation, data collection methods, coding procedures, and statistical analysis to be used. Chapter IV presents the research findings and data analysis. Chapter V provides conclusions and recommendations of this study along with their implications for public policy and recommendations for future research.

CHAPTER II

LITERATURE REVIEW

Introduction

While there are many elements concerning the AIDS issue that can be analyzed, key elements for this study are the knowledge and health care beliefs about AIDS, and whether these can be used as predictors of intentions to care for AIDS patients.

This review of the literature will address the disease and epidemiology of AIDS, AIDS in rural communities; nursing students' and college students' knowledge, attitudes, and willingness to care for AIDS patients; nurses' knowledge, attitudes and willingness to care for AIDS patients; the use of universal precautions; effective teaching methods for transmitting information; and the health belief model. Following a review of the literature, a conceptual framework and a schematic representation of the research model will be presented and discussed.

The Disease and Epidemiology of AIDS

The Disease AIDS

HIV is one of the four members of the lentivirus subfamily of retroviruses which affect humans worldwide. The lentiviruses cause infections to develop very slowly, and affect the nervous system profoundly (Baigis-Smith, Coombs, & Larson, 1994).

The AIDS virus attacks a person's immune system and damages his or her ability to fight other diseases. Individuals infected with the AIDS virus may have no symptoms at all or very minimal ones. Others may develop a mild version of the infection known as the AIDS-related complex (ARC).

ARC is a preAIDS condition caused by the AIDS virus in which a person tests positive for AIDS infection and has a specific set of clinical symptoms. These symptoms may include swollen lymph nodes, unexplained fever, weight loss, night sweats, extensive diarrhea and other severe symptoms that accompany the destruction of T-lymphocytes (Alcamo, 1993). There is no way to determine which individuals will actually develop AIDS. It is estimated that 5% to 10% of symptomless individuals exposed to the virus will develop AIDS within 5 years; 20% of those with ARC will do so within 3 years.

In all cases (HIV-infected, ARC, or AIDS), the individual is both infected and infectious and thus capable of transmitting the virus to others. For this research project, the term *AIDS* will be used to refer to infection with HIV, or AIDS-related complex, or acquired immunodeficiency syndrome.

Epidemiology of AIDS

The human immunodeficiency virus (HIV) and the acquired immune deficiency syndrome (AIDS) which it causes have been identified as something not formally known in global health (Mann, Chin, Piot, & Quinn, 1988). The first five cases of AIDS were reported in 1981 in Los Angeles, California (CDC, 1981).

The acquired immunodeficiency syndrome epidemic in the United States continues to expand and invade populations previously assumed to be at low risk. AIDS, first thought to be only in the homosexual population, is now common among

intravenous drug users and is invading populations previously assumed to be at low risk, such as the heterosexual community. For example, in Michigan, cases among women have increased faster than among men. Women accounted for 14.3% of cases in 1990 and 17.5% cases in 1995. Cases among Blacks are increasing; in addition, persons with AIDS are growing older. The proportion diagnosed who are age 40–49 has increased from 24–28% of the total, while those aged 25–39 with AIDS diagnosis has dropped from 61% to 54% of the total (Michigan Department of Community Health, Fall 1996).

AIDS will continue to be an epidemic until an effective vaccine is discovered. On May 18, 1997, President William Jefferson Clinton gave the commencement address at Morgan State University, in Baltimore, Maryland. He proposed that science focus its efforts on finding a vaccine to prevent contracting AIDS. In speaking for the nation, the President asked for a united goal to fight this disease and to have a vaccine available by the year 2007.

Michigan's annual rate of AIDS per 100,000 population is 10.9, 31st in the United States (Michigan Department of Community Health, Fall 1996, p. 12). Michigan's AIDS population is estimated to be 8,500–11,500 total in the state. The highest incidence of AIDS in Michigan is in the Detroit area, followed by Kent, Genesee, and Kalamazoo counties. The rural areas generally have anywhere from 5 to 7 cases annually; however, these numbers have increased since the beginning of the epidemic.

AIDS in Rural Communities

There is only limited information about the extent of the HIV epidemic in areas with lower population densities (Steel & Haverkos, 1992). Fifteen percent of

AIDS cases have been reported in localities with populations under 500,000 (CDC, 1991). The incidence of AIDS in rural areas of the United States is growing more rapidly than in urban areas. In 1989, reported AIDS cases in small metropolitan and nonmetropolitan areas were 35% higher than in 1988. In larger areas, the rate of increase was much smaller (7.7%) (CDC, 1990). Diagnosed cases of AIDS in rural America increased by 37% in 1990 compared with a 5% rise in urban centers with populations over 500,000 or more (National Commission on AIDS, 1990). From 1991 to 1992 the numbers of new cases in nonmetropolitan parts of the country increased 9.4% as opposed to 3.1% in centers of populations of 500,000 or more (Centers for Disease Control, 1993). Evidence supports an in-migration of people infected with the AIDS virus to rural areas as more people with AIDS return to their families of origin for support and care as the disease takes on its course (Shannon, Pyle, & Bashshur, 1991; Stapleton, 1991).

Rural nurses are central to the management of care for patients with AIDS (PWAs) Providing care for PWAs in rural communities has been found to be more challenging than in urban settings. Rural infrastructures that involve geographic distances, lack of public transportation, shortages of medical and social services, fewer health care providers, limited technology, high levels of poverty, more people without medical insurance which all serve as barriers to providing care (Bushy, 1991; Graham et al., 1995).

More conservative attitudes and lower tolerance for diverse lifestyles meant that PWAs and their families who live in rural areas have experienced problems accessing care and support networks (Graham et al., 1995; Weinert & Long, 1991). Because many small towns and rural communities generally have low incidence of

HIV/AIDS, fear, hostility, misunderstanding, and ignorance related to the disease is common (Smith, Landau, & Bahr, 1990).

It has been noted that the slow dispersion of information to rural areas may mean that rural nurses lack education about AIDS. Currently, little is known about rural nurses' response to AIDS especially their risk for exposure to HIV through not using universal precautions (Young, Forti, & Preston, 1996).

According to Berry (1993), AIDS in rural areas is increasing at a fast pace. He suggests a national study of AIDS in rural America as mandatory. In addition, it is necessary to know the epidemiology of AIDS in order to develop health policies and programs. Based on his review of the literature, Berry suggests that an understanding of the Epidemiology of AIDS could be achieved by implementing existing legislation. While Public Law 101-381, Ryan White Comprehensive AIDS Resources Emergency Act of 1990, is primarily directed at emergency relief for the cities hardest hit by the AIDS epidemic, it also provides states with resources for organizing and delivering HIV services in rural areas. Section 403 also focuses specifically on the need to better understand the rural epidemiology of AIDS. It states:

(a) . . . the secretary of HHS, after consultation with the Director of the Office of Rural Health Policy, shall: (1) conduct a study for the purpose of estimating the incidence and prevalence in rural areas of cases of acquired immune deficiency syndrome and cases of infection with the etiologic agent for such syndrome; and (2) in carrying out such a study, determine the adequacy in rural areas of services for diagnosing such cases and providing treatment for such cases that are in the early stages of infection. (PL 101-381, in Berry, 1993, p. 302)

Rural Nurses' Knowledge and Attitudes

To date, there is only one research study conducted relating to knowledge and attitudes of nurses in rural communities. In a longitudinal study conducted by

Young, Koch, and Preston (1989), significant positive changes were seen in rural nurses' knowledge and attitude toward AIDS and homosexuality when measurements were taken before, immediately after, and 3 months after an all-day educational workshop.

Preston et al. (1991) studied experiences and attitudes of nurses from rural communities in Pennsylvania and New York. Their findings suggest that their sample held many negative attitudes towards AIDS patients. They thought rural physicians and health care facilities were not yet well prepared to care for persons with AIDS. In addition, Dillman and Hobbs (1982) indicate that rural people are slower in adopting new ideas and are known to resist change more stubbornly than those in urban areas.

A comparison of mortality rates among women with AIDS in rural and urban Georgia (Whyte & Carr, 1992) found that the median survival rate of all women was significantly greater in metropolitan Atlanta than in other areas (400 and 296 days, respectively). The researchers' findings suggest that women in areas outside the major metropolitan area were seen at a later stage of their disease or with different diseases or they had poorer access to medical care (p. 577).

Carwein, Sabo, and Berry (1993) indicate that the "smalltown grapevine" is very difficult for those with HIV infection. They further report that the traditional rural community, which holds conservative values and less tolerance for diversity, prevents HIV individuals from receiving care and services and "certainly decreases the quality of care that is received" (p. 234).

Smith, Goudeau, Katner, and Farmer (1993) studied health care workers in low incidence AIDS nonurban areas. All groups of respondents showed a lack of understanding of AIDS, and negative attitudes were common. The authors report

that attitudes expressed suggest that there is more importance on the rights of the caregiver than the welfare of patients.

Nurses' Knowledge, Attitudes, and Willingness to Care for AIDS Patients

Knowledge

Haughey, Scherer, and Yow Wu (1989) conducted a study regarding nurses' knowledge about AIDS. Respondents were most knowledgeable about issues pertaining to treatment and care. Nurses who had cared for patients with AIDS scored significantly higher overall than those without experience.

Armstrong-Esther and Hewitt (1990) investigated the effect of education on nurses' perception of AIDS. Based upon a 4-month study of 60 registered nurses, they found a number of positive changes occurred over the period of the study. Nurses were better informed and attitudes toward the disease and patients had become more positive.

In contrast to this is the following study where after reports of concern among health care workers regarding occupational risk of infection with HIV, a symposium was held at three hospitals in New York City. The symposium consisted of three presentations of varying formats, 1 week apart. After the symposium the attending health care providers completed a questionnaire assessing the impact of the symposium on their attitudes. Twenty-nine of the 100 responding participants reported that the symposium had increased their concerns about infection. The findings suggest that the symposium which was designed to decrease concerns may have had the opposite effect. Thus, education alone may be inadequate to reassure

some providers (Feit, Melzer, Vermund, & Shelov, 1990). It is clear that in addition to education, clinical experience is also necessary to change attitudes about AIDS.

In a study conducted in Edinburgh, Scotland, Plant and Foster (1993) found that levels of AIDS-related knowledge among nurses was not high and a substantial proportion of nurses reported lacking basic AIDS information and professional support to enable them to work effectively with people who have AIDS.

Reeder, Hamblet, Killen, King, and Uruburu (1994) replicated a 1991 study that surveyed the attitudes, knowledge, and practices of nurses in 1992. The investigators believed that perioperative nurses in the study would be more knowledgeable about risk reduction strategies than the 1991 study participants as a result of education mandated by the Occupational Safety and Health Administration (OSHA). However, there were few differences in knowledge, attitudes, and behaviors noted between the original study of registered nurses and this study. Despite OSHA mandated education, there continue to be knowledge deficits among perioperative nurses.

Attitudes

The literature is replete with reports on nurses' attitudes toward AIDS. Overall, the result of these investigations showed that nurses hold negative attitudes toward AIDS patients. In addition, nurses fear contracting AIDS and in many cases are unwilling to provide care (Alexander & Fitzpatrick, 1991; Barrick, 1988; D'Augelli, 1989; Morgan & Treadway, 1989; Reed, Wise, & Mann, 1984; Royse & Birge, 1987). Breault and Polifroni's 1992 study identified feelings and attitudes that nurses associate with caring for people with AIDS, including fear, anger, sympathy, self-enhancement, fatigue, and helplessness. The authors noted that there were

differences in the way respondents perceived and treated AIDS patients who are intravenous drug users and those who are homosexuals. Cole and Slocumb (1993) found significant differences in nurses' attitudes toward AIDS patients according to the mode of acquiring the virus.

Although a review of the research over the last 7 years reveals that nurses' knowledge of HIV has improved, attitudes and fears about HIV have not changed with nurses' knowledge, according to Flaskerud and Thompson (1991). Similar findings were reported by Damrosch, Abbey, Warner, and Guy (1990).

A number of factors influence the nursing care of patients with AIDS. Two such factors may be nurses' attitudes toward the AIDS diagnosis itself, and nurses' attitudes toward members of the identified risk groups frequently afflicted with AIDS, such as gay/bisexual men and intravenous drug users (Blumenfield et al., 1987; Forrester, 1989, 1990a, 1990b; Kelly, St. Lawrence, Hood, Smith, & Cook, 1988; Van Servellen et al., 1988; Young, 1988).

A review of the literature regarding nurses' attitudes about AIDS by Bennett (1995) indicates published data do not support the frequently cited view that positive attitudes about AIDS are exceptional. According to Bennett, the essential question is "What do nurses need to learn?"

A study conducted by Damrosch et al. (1990) examined two samples of critical care nurses' (from a teaching hospital and a religious affiliated hospital) attitudes, concerns, and knowledge regarding AIDS. Sixty-five percent of those in the religious hospital would refuse to care for AIDS patients, and 45% of those in the teaching hospital would refuse. Those who would refuse to care had significantly higher levels of concern and less favorable attitudes than those who would not refuse.

Rae, Brown, and Calder (1992) who have studied nurses' knowledge and attitudes about AIDS suggest that it could be that those staff who have positive attitudes about AIDS were more willing to learn about AIDS and desire to increase their knowledge. It may be that the increased knowledge and comfort level with AIDS lead to more positive attitudes. And, most importantly, the educational program of nurses represents a formative period in the development of future practice beliefs. In this study, the student nurses were in the beginning sessions of their studies about nursing. Especially during this time, faculty need to be alert to attitudes of student nurses in order to address concerns. Potentially faculty input will have an impact on their attitudes.

Lewis, Doyle, and Roemer (1994) conducted a survey to assess the knowledge, attitudes, and practices of nurse managers and various other health practitioners. Findings indicated that there was a high incidence of independent practitioners who believe in the right to refuse treatment to patients infected with HIV.

In their paper which reported on what is currently known about attitudes of nurses and the care provided to HIV infected individuals, Siminoff, Erlen, and Lidz (1991) found that there is a paucity of data concerning quality of care for AIDS patients and that the concept of "stigma" and infectiousness may have an impact on the provision of quality care.

Willingness to Care for AIDS Patients

Willingness to work with AIDS patients and feelings of empathy toward them have been examined in several studies (Froman, Owen, & Daisy, 1992). A values conflict was found between patient advocacy and ethical standards of service versus

an ostracized population with a stigmatizing of disease (Barrick, 1988; Lester & Beard, 1988; Royse & Birge, 1987; Sherer, Haughey, & Wu, 1989).

Forrester and Murphy (1992) used vignettes to measure nurses' attitudes toward patients and their willingness to interact with patients. Vignette questionnaires were randomly assigned to 360 acute-care nurses. Although sexual orientation was found not to influence the Prejudicial Evaluation Scale and Social Interaction Scale scores, an AIDS medical diagnosis and a history of intravenous drug use did increase nurses' negative attitudes toward patients. The findings of this study indicate that nurses' attitudes did not vary according to nurses' age, academic preparation, or previous practice experience with patients with AIDS.

On the other hand, in a study of nurses' willingness to provide care to patients with AIDS, nurses with the Bachelor of Science in Nursing (BSN) degrees and Master of Science in Nursing (MSN) employed in hospitals were the most willing to provide nursing care for AIDS patients (Kemppainen et al., 1992).

Recently, a study conducted by Dols and Bradley-Magnuson (1996) suggests nurses' fear of contagion has decreased, yet their willingness to care has not increased in the same proportion. In addition, formal education demonstrated no impact on nurses' desire to care for patients with AIDS. Conclusions from this study suggest the more a nurse provides hands-on care, the more the nurse is willing to provide care.

Perinatal nurses were surveyed to determine their knowledge, attitudes, and fears concerning AIDS. Nurses' knowledge correlated positively with attendance at conferences and in-service programs. More than 85% of the respondents reported moderate to high fear of AIDS. A discrepancy occurred between the nurses' beliefs that persons with AIDS deserve the same care as any other patient and the nurses'

willingness to volunteer to care for these patients (Prince, Beard, Ivey, & Lester, 1989).

A study of the relationships among spirituality, perceived social support, death anxiety, and nurses' willingness to care for AIDS patients was conducted among female RNs in New York City (Sherman, 1996). Willingness to care for AIDS patients was positively correlated with spirituality and perceived social support, and negatively correlated with death anxiety.

Rae et al. (1992) found nurses who have positive attitudes toward patients living with AIDS were more willing to learn about AIDS, therefore increasing their knowledge about this disease.

Nursing Students' Knowledge, Attitudes, and Willingness to Care for AIDS Patients

Knowledge

Most recently, studies regarding nursing students have addressed AIDS knowledge and attitudes (Goldenberg & Laschinger, 1991; Jemmott, Jemmott, & Cruz-Collins, 1992; Lawrence & Lawrence, 1989; Lester & Beard, 1988). Oermann and Gignac (1991) studied Canadian nursing students' knowledge about AIDS and found knowledge increased as they progressed through the nursing program. Although knowledge scores increased as students progressed through the program, students' attitude scores were low and did not vary from one level to the next.

On the other hand, according to Nunnally (1967), the absence of the relation of attitudes to specific knowledge is not an uncommon finding in social psychology. Attitudes toward AIDS and its treatment among a group of preclinical students did

not correlate with knowledge about the condition but instead were related to attitudes in general concerning homosexuality (McManus & Morton, 1986).

Bower, Webb, and Stevens (1994) conducted a quasiexperimental study to examine the effectiveness of an experiential workshop on nursing students' knowledge and anxiety about AIDS. Results indicated that recognition of anxiety through experiential exercises contributed to learning about AIDS. In another study conducted in New Zealand, nurses indicated the need for reinforcement of education regarding HIV and AIDS (van Wissen & Siebers, 1993).

Attitudes

There have been reports that practicing nurses have avoided and neglected patients with AIDS (Douglas, Kalman, & Kalman, 1985; Jemmott, Freleicher, & Jemmott, 1992; Kelly et al., 1988; Kemppainen et al., 1992; Laschinger & Goldenberg, 1993; Young, 1988). Nursing students have described similar attitudes in refusing to be assigned a patient with AIDS (Armstrong-Esther & Hewitt, 1990; Bowd & Loos, 1987; Goldenberg & Laschinger, 1991; Jemmott, Jemmott, & Cruz-Collins, 1992; Lev, 1986; Wiley et al., 1988). Reeder et al. (1994) found nurses to be reluctant to provide care to AIDS patients if given a choice.

Most recently a study conducted by Bormann et al. (1995) indicated that 124 nursing students were reporting discomfort in touching and talking with persons with AIDS. AIDS-related stigma and homophobia was found to exist among nursing students who responded to open-ended questions about AIDS (Eliason, 1993). West, Leasure, Allen, and LaGrow's (1996) findings demonstrated overall that baccalaureate nursing students were the most stigmatizing toward persons who had developed AIDS through injecting drugs followed by sexual conduct and least

stigmatizing toward those who contracted the virus through maternal transmission or blood transmission. The demographic characteristics of the respondents did not influence AIDS attitudes. This indicates placing a value judgment on persons with AIDS.

A study which examined nursing students' degree of comfort in providing basic care to patients with AIDS revealed no statistically significant decrease in the amount of discomfort associated with providing care for patients with AIDS after a 1-day workshop about AIDS. Some nursing procedures were more comfortable for nursing students to perform than others. For example, procedures that were associated with the greatest degree of discomfort involved blood and body fluids. However, there were changes in the ranking of nursing procedures (a score of "1" was very uncomfortable to "5" very comfortable) following the workshop (Williams et al., 1992). Obtaining a sputum specimen ranked with more discomfort on the posttest. This can be explained through information that was shared during the seminar about AIDS and tuberculosis (TB).

Cole (1996) examined the influence of selected factors on student nurses' intent to provide physical and psychosocial care to persons with AIDS. Attitudes toward a person with AIDS acquired through homosexual activity and through sharing needles were positively related to the intent or willingness to provide care.

Leasure et al. (1996) studied baccalaureate nursing students' attitudes toward persons living with AIDS. Findings from a sample of 281 baccalaureate nursing students suggest that there is no stigma associated with sexual preference of AIDS patients among nursing students.

Willingness to Care for AIDS Patients

A survey of 319 students in medical, dental, and allied health care professions revealed that over one third had some reservations about treating AIDS patients. Unwillingness to treat AIDS patients was strongly associated with homophobic attitudes and concerns that patients with AIDS posed a risk to health professionals. (Currey et al., 1990).

In a national study conducted in two phases by the American Association of Colleges of Nursing (AACN), deans of baccalaureate nursing schools indicated that they are in a process of building curricula and clinical experiences to prepare practitioners who are skilled and confident in the care of AIDS patients. On the average, their student nurse participants reported moderate feelings of preparedness. Yet given a choice of patient assignment, two thirds of students would provide direct care for AIDS patients, taking appropriate precautions (Cassells & Redman, 1989).

In a comparison of nursing students in the United States and Zimbabwe, the investigators concluded that although the United States students had higher levels of knowledge, they did not have a higher commitment to care for AIDS patients (Munodawafa, Bower, & Webb, 1993).

AIDS Prevention: Universal Precautions

The fear of AIDS has been found to be prevalent among health care workers (Bagley, 1988; Link, Feingold, & Charap 1988). In some cases, this has led to staff refusal to care for AIDS patients. The most recent recommendation for prevention of transmission of HIV is the use of "universal precautions" (UP) for all patients. The Center for Disease Control (CDC) recommendations include the use of gloves,

masks, goggles and impermeable gowns, puncture resistant containers for all sharp objects, hand washing, and ventilation devices.

Currently, the implementation of universal precautions has been in effect in most health care settings throughout the country. Despite OSHA-mandated education, there continue to be health care professionals who do not consistently protect themselves with the use of universal precautions (McNabb & Keller, 1991; Reeder et al., 1994).

Emergency room nurses report that they do not use universal precautions because it takes too much time to don protective equipment and they fear loss of dexterity (CDC, 1987). The report by Eliason (1993) indicates nurses fail to use universal precautions with patients. Workplace factors and conflicting attitudes interfere with appropriate protection. First, there are workplace time demands, difficulty in performing skills (starting an IV); second, denial of risk, where nurses take precautions with stereotypical patients but not with others (McNabb & Keller, 1991).

According to one study, the costs of universal precautions (UP) for 1,000 workers including educational sessions is \$315,455. Benefits in using UP include the savings in future health costs because more people are well. Direct benefits included reduced costs of inpatient and outpatient care. The indirect benefits, the production gains to society because more people are well, are estimates of the value of increased output due to the reduction in mortality and morbidity rates. Output was a measure of income lost to the worker. Estimated direct and indirect benefits from the prevention of one case of AIDS through the use of universal precautions was estimated to be \$553,642 (Stock, Gafni, & Bloch, 1990).

The annual cost of universal precautions does not reflect the positive effects of universal precautions. The estimated annual budget projection for implementation of universal precautions on a surgical unit is \$48,914.94 (Pobanz, 1989). More recently, a study conducted by Earl (1995) indicated a substantial increase in costs for the use of universal precautions at a yearly fee of \$727,028.74.

As reported by Kemppainen et al. (1992), several studies have found that although health providers are informed about universal precautions, they fail to adhere to universal precautions in actual practice (Abiteboul et al., 1991; Pema et al., 1991; Salame, Palacios, Luna, Gonzalez, Ramah, & Valdespino, 1991). One study conducted with rural nurses supports these results (Young, Forti, & Preston, 1996).

Rural Nurses' Use of Universal Precautions

Few studies have investigated the use of universal precautions in rural communities. In one study which researched rural nurses (DeVries, Burnett, & Redmon, 1991), the use of performance feedback resulted in nurses' increase in appropriate glove use behavior. However, ancillary data collected showed that use of gloves was difficult and that some nurses, even working in high-risk conditions, did not use universal precautions when necessary.

Results from a study conducted by Young et al., (1996) investigating rural nurses' use of universal precautions in relation to perceived knowledge of HIV status, found that younger nurses, nurses who had less experience caring for a PWA, and those with more conservative attitudes about homosexuality and AIDS were more likely to wear gloves for noninvasive procedures. The most important finding in this research was that nurses reported increased barrier use if they knew their patients were HIV positive. The mean age of the sample of nurses used in their study was 41

years, whereas the mean age of the general nursing population nationally is 32 years (Department of Health and Human Services Secretary's Commission on Nursing, 1996).

Burtis and Evangelisti (1992) suggest that overuse of gloves reflects negative attitudes about AIDS. They also explain that older nurses who were educated in a more disease-driven infection control model may be more resistant to using universal precautions. However, the authors suggest that the main reason for lack of use may be related to the rural context in which the nurses practice. Weinert and Long (1991) suggest that since rural nurses know most of the people they care for (lack of anonymity for the patient), they may feel using precautions are unnecessary.

The Teaching Learning Process

The basic elements of learning involves a series of seven principles, according to Etienne Wenger, Ph.D. (1990), senior research scientist at the Institute for Research on Learning in Menlo Park, California. These elements are:

1. Learning is inherent in human nature; it is not a separate activity.
2. Learning is fundamentally social.
3. Learning changes who we are.
4. Learning is a matter of engagement in practice. This is a matter of belonging and being able to participate in community. What resources we have available to us are shaped by our practical engagement in communities.
5. Learning reflects our participation in communities of practice.
6. Learning means dealing with boundaries. Learning happens when boundaries are rich in interactions. It can occur formally or informally.
7. Learning is an interplay between the local and global.

According to Ostmoe, VanHoozer, Scheffel, and Crowell (1984), in order to learn, the learner “must be involved intellectually, physically, socially, and emotionally” (p. 27). Another assumption that underlies this philosophy is that if the students see the experience as being helpful to them with personal meaning, the student will “want to learn.” Ostmoe et al. (1984) have created a table evaluating potential attributes of selected strategies for teaching which is included in Appendix A. Some authors recommended that students should have an opportunity to experience a variety of learning styles (DiIorio et al., 1993; Rakoczy & Money, 1995).

John Dewey (1938) pointed out the importance of attitudes as the inevitable products of classroom learning:

Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at the time. Collateral learning in the way of formation of enduring attitudes, of likes and dislikes, may be and often is much more important than the spelling lesson or lesson in geography or history that is learned. For these attitudes are fundamentally what count in the future. The most important attitude that can be found is that of desire to go on learning. (p. 49)

Effectiveness of Lecture/Discussion

Respected educators Bloom (1953), Costin (1972), and Kulik and Kulik (1979) agree that discussion is the most valuable method for learning skills and problem solving. However, they disagree on the best teaching method for gaining knowledge. Bloom believes lecture is better, while his colleagues believe lecture and discussion are both good methods for knowledge gain.

Bloom (1953) concluded that lecture and discussions have different kinds of contributions to make:

... if the objective of education is the development of knowledge about a topic or field, the lecture is a far more efficient method of communicating such knowledge and of securing the attention of students to these ideas than is the discussion. However, if the objective is development of abilities and skills which are problem-solving in nature, the least efficient discussion is superior to most of the lectures. (p. 169)

Costin (1972) believes we need both lecture and discussion methods for gaining knowledge but would choose the lecture method in most circumstances because it is the most efficient method. In a review of the research on methods of teaching, Costin concluded:

Lectures do not differ from discussion in their end of course effect on student's acquisition of information. Therefore, lecturing would appear to be more efficient for facilitating this kind of learning. Discussion is probably more effective than lectures for teaching cognitive skills such as interpreting knowledge and solving problems. Discussion may be more effective than lectures for helping students retain information beyond the termination of a course, and for learning relatively difficult information, this is in need of further investigation. (p. 10)

Kulik believes there is no difference in knowledge gained from either the use of lecture or discussion for learning factual information. Kulik and Kulik (1979), as reported by Ostrow (1986), reported that the lecture method is a very common method used in teaching and concluded:

Teaching by lecture is neither more nor less effective than teaching by discussion when the criterion of effectiveness is learning factual information. Teaching by lecture is less effective than discussion for problem solving ability. Teaching by lecture is less effective than discussion for changing attitudes in students. (p. 149)

Kulik and Kulik support the lecture method for changing attitude, however, most recently inquiry based learning (IBL) has been recommended as a proposed teaching method to address attitudinal change regarding AIDS (Cerny et al., 1996). According to Cerny et al., this concept is operationally defined by the nursing faculty at the University of Hawaii as "an orientation toward learning that is flexible and

open and draws upon the varied skills and resources of faculty and students” (p. 220).

Lecturing is appropriate for many instructional goals of nursing coursework. However, there are strengths and weaknesses of this methodology (Bloom, 1953; Costin, 1972; Kulik & Kulik, 1979; Newsome & Tillman, 1990; Ostrow, 1986; Pederson, 1993; Roberts & Thurston, 1984). Strengths, as presented by Cashin (1985), include: Lectures can cover material not otherwise available; they can convey large amounts of information and communicate to many listeners at the same time; they model how professionals approach a problem; they permit maximum teacher control. Weaknesses include: Lectures lack feedback about learning; students are passive; students’ attention wanes quickly (in 15–25 minutes) according to a study by Bligh (1972); information is forgotten quickly, and the more active the student, the more senses involved, the more the student takes notes, the more she or he is likely to remember more material and for a longer time. Lectures are not well suited to higher levels of learning, to application, analysis, or synthesis, to influencing attitudes or values, or in the development of motor skills (Cashin, 1985).

Nursing Studies

In a study conducted by Newsome and Tillman (1990), the effects of both guided design (written simulations and small group interaction) and lecture teaching strategies were compared using two groups of first semester nursing students. Results indicated that students taught by guided design scored higher on a nursing care plan than those taught by lecture, but knowledge of the nursing process as tested by an objective examination was not significantly different for the two treatment groups. Two implications which were drawn from this study are: (1) guided design

can accomplish the same goal as lecture, and (2) guided design increases the ability to form and develop care plans.

Pederson (1993) compared structured controversy (students in small groups argue both for and against a position) versus lecture format on nursing students' beliefs about and attitude toward providing care for persons with AIDS. When compared with students who had listened to the lecture, students who participated in structured controversy were more positive on individual attitude and belief items.

Findings in a study conducted by Williams (1995) concluded that an elective course on HIV/AIDS did have a positive effect on knowledge levels of nursing students and the overall degree of comfort nursing students anticipated they would experience while providing basic care to people with AIDS. The results of this study support the use of a variety of teaching methods. The lecture teaching method was found to be useful in presenting content such as the epidemiology of HIV infection. Several studies have found the lecture to be an effective teaching method (Armstrong-Esther, 1990; Bower, Webb, & Stevens, 1993; Cashin, 1985; Duffy, 1993; Feit et al., 1990; Oermann & Gignac 1991).

Most recently, a school of nursing in the Midwest evaluated their nursing curriculum for adequacy of AIDS content. Two findings were apparent. First, as students progress in the nursing program, they are more willing to care for patients who have AIDS; second, students believe that professional nurses have a greater responsibility to provide nursing care for patients who have AIDS than do student nurses (Nettle et al., 1995).

Effectiveness of Video/Discussion

The use of films and videotapes for producing measurable changes in knowledge and attitudes in AIDS education has been established in several studies (Downer & Miller, 1987; Elliott & Byrd, 1983; Kohn, Goodstat, Cook, Sheppard, & Chan, 1982; Pejsach, 1985; Powers, Schlesinger, & Benson, 1983; Watson, Pettingale, & Goldstein, 1982). In a study conducted by Rhodes and Wolitski (1989), the effectiveness of four commercial videotape presentations in changing AIDS knowledge and attitudes among 584 college students was evaluated. AIDS knowledge and attitudes were measured prior to, immediately after, and 4–6 weeks following presentation of the informational videotapes. Results indicate that there was a significant immediate increase in knowledge attributable to four videotapes. With the exception of perceived effectiveness of AIDS prevention methods, attitudes toward AIDS showed no change as a result of exposure to any videotapes. According to the researchers, results indicate that videotapes can be useful tools for providing AIDS information. Knowledge gains and change on one attitude dimension (perceived effectiveness of prevention methods) occurred and were maintained over 4–6 weeks for three of the four 20-minute videotapes. Even though the videotape increased knowledge, it does not necessarily follow that this will cause students to change their behavior.

A study conducted by Manning, Barenberg, Gallese, and Rice (1989) on College Students' Knowledge and Health Beliefs About AIDS found students preferred small group discussions and formats such as movies or panel discussions as the methodology for AIDS education classes. This method allowed the students to remain "anonymous." The results from other studies are encouraging that changes in

knowledge can be demonstrated following exposure to video (Rhodes & Wolitski, 1989).

Feldman, Bell, Stephenson, and Purifoy (1990) found that small group discussions seem to be effective in alleviating unwarranted fears about HIV transmission. They suggested that collaborative learning techniques need to be implemented in the classroom.

In a study conducted to determine the effect of an AIDS education program for Vietnamese women on knowledge, attitudes, and practices of the participants, Flaskerud and Nyamathi (1988) found that using the educational intervention of a didactic slide-tape program resulted in significant differences in the experimental group's pretest/post-test measurements of knowledge, attitudes, and practices. Significant gains occurred in knowledge, but the most dramatic positive changes occurred in attitudes and intended changes in practice.

The efficacy of educational movies on AIDS knowledge and attitudes among college students was examined by Gilliam and Seltzer (1989). Researchers selected students from five classes who were randomly assigned to seeing a movie on either AIDS or first aid. Six weeks later, both groups of students filled out a questionnaire. In general, the differences between the two groups on knowledge and attitude measures were minimal, which suggests that one movie on AIDS may be insufficient to educate students in this area.

Napholz and McCanse (1994) report that research has shown that less teacher time is involved in student teaching with the use of interactive video instruction and computer assisted instruction (CAI), and that students who use CAI learn as well as and often better than students exposed to traditional lecture and discussion groups (Huckabay, Anderson, Holm, & Lee, 1979; Kirchhoff & Holzemer, 1979; Larson,

1981; Schleutermann, Holzemer, & Farrand, 1983). CAI courseware uses a variety of instructional strategies, so learning is not limited by individual style (Billings, 1984; Kirchoff & Holzemer, 1979).

The Health Belief Model

Overview

The Health Belief Model (HBM) was developed in the early 1950s by Hochbaum, Kegeles, Leventhal, and Rosenstock as a theoretical framework for explaining the likelihood of individual's undertaking a recommended preventive health action. It was originally tested in a tuberculosis screening program and since then has been widely researched (Becker, Maiman, Kirscht, Haefner, Drachman, & Taylor, 1976; Haynes, Sackett, & Taylor, 1980). The constructs of the original model have been empirically tested to examine both preventive and illness behaviors (Becker, Maiman, Kirscht, Haefner, & Drachman, 1977; Burns, 1992; Champion, 1984; 1987; Champion & Scott 1993; Facione, 1993; Kulbok & Baldwin, 1992; Lusk, Ronis, & Kerr, 1994; Parse, 1990; Seydel, Taal, & Wiegman, 1990; Wiedenfeld, O'Leary, Bandura, et al. 1990; Yates, 1992). Considerable research indicates that intentions are key determinants of subsequent behavior (Ajzen & Fishbein, 1976; Bamberg, Acton, & Goodson, 1989; Farrand & Cox, 1993; Fishbein & Ajzen, 1975; Fishbein, Bandura, & Triandis, 1991; Kirscht, 1983; Prochaska, Velicer, & Rossi, 1994; Weitzel, 1989).

Since its development in 1950, the Health Belief Model has been the basis for research regarding behaviors for the maintenance of health, prevention of disease, and detection of disease in an asymptomatic state (Becker, Drachman, & Kirscht,

1974; Becker et al., 1976; Hersey, Morton, Davis, & Reichgott, 1980; Hochbaum, 1956; Leavitt, 1979). Most studies have supported a relationship between health behaviors and variables included in the Health Belief Model (Janz & Becker, 1984; Rosenstock, Strecher, & Becker, 1988).

The HBM was developed by social psychologists with theories rooted in psychology, sociology and social learning. Many of the HBM studies have been carried out in these disciplines and pertain to matters of health prevention and promotion. Since nursing is intimately associated in these areas as well as concerned with patient compliance with medical regimens, the HBM is a conceptual tool that can be very useful to identify health care beliefs about AIDS.

Originally the model hypothesized that persons will not seek preventive care unless they have minimal levels of motivation and knowledge, view themselves as vulnerable and the condition threatening, see the interventions as beneficial, and see few difficulties in following the recommended action (Becker et al., 1974; Mikhail, 1981).

The Health Belief Model has been widely used in spite of the fact that few studies have supported the usefulness of the model in its entirety (Janz & Becker, 1984; Mikhail, 1981; Rosenstock, 1974). Inconclusive results of prior studies may have been caused by deficiencies in design, measurement or data analysis. Many studies have examined the effects of selected components of the model rather than the combined effects or their interactions (Mikhail, 1981; Pender, 1987)

Rosenstock (1985) views the HBM as a comprehensive conceptual framework which attempts to explain individual compliance as well as offering approaches for changing individual compliance. The HBM suggests that people learn to expect that certain behaviors lead to a valued outcome. These outcomes may be

positive or negative. With illness, the value placed on the outcome depends upon the person's perceptions of how a disease will affect the future.

Yet, Haefner (1974) characterized the Health Belief Model as "a confusing melange of inconsistent results obtained under widely varying conditions and susceptible to no univocal interpretation" (p. 430). Others feel that the model is a catalogue of variables more than a model (Baum, Taylor, & Singer, 1984). Another problem is the lack of consistent operationalization of variables, making comparisons across studies difficult.

The following are the primary concepts of the Health Belief Model as it was first developed (Rosenstock, 1974; 1985; Becker, 1974):

1. Perceived susceptibility is the vulnerability to a disease and its consequences.
2. Perceived seriousness is the negative impact the disease could have on a person's life.
3. Perceived benefits will come as a result of following a set of health recommendations that will reduce the threat or severity of the disease.
4. Perceived barriers are the costs that are associated with following the health recommendations far outweighed by the benefits.

The four concepts have been tested individually and in combination as predictors of health related behaviors.

Champion (1987) conducted a study assessing the relationship of breast self-examination to five health belief model variables: susceptibility, seriousness, benefits, barriers, and health motivation. Results showed that barriers, knowledge, and susceptibility were important variables explaining the frequency of breast self-examination. In 1993, Champion refined the instrument to measure the Health Belief

concepts of susceptibility, seriousness, benefits, barriers, health motivation, and confidence using the context of breast cancer and breast self-examination.

Champion and Scott (1993) tested the effect of a theoretically based nurse-delivered intervention on Breast Self-Exam (BSE) Behavior with 301 women using the Health Belief Model. Preliminary results indicate that nursing interventions may increase BSE frequency and proficiency over time. Personal contact emphasizing BSE may be all that is needed to increase frequency; however, proficiency was dependent upon a standardized teaching procedure and/or procedural/belief intervention.

In many studies, only one or two health belief concepts have been examined. Assessment of patients' perception of severity of the complications of diabetes was made by Given, Given, Gallin, and Condon (1983). Becker and Maiman (1975) focused on the perceived susceptibility to disease, while Brownell, Heckerman, Westlake, Hayes, and Monti (1978) focused on barriers and benefits of carrying out a therapeutic regimen. Few studies have measured all the primary concepts (Harris, Linn, Skyler, & Sandifer, 1987).

In a study using the Health Belief Model in determining the effects of group and individual teaching on women's knowledge and beliefs regarding breast self-exam, perceived susceptibility and perceived benefits of breast self-exam increased significantly with individual teaching as opposed to group teaching by nurses. Knowledge was not increased (Brailey, 1986).

Benefits/Barriers

Research has supported a significant positive relationship between perceived benefits and preventive behavior (Becker et al., 1974; Becker, Haefner, et al., 1977;

Haefner & Kirscht, 1970; O'Connell, Price, Robert, Jurs, & McKinley, 1985; Rutledge, 1987). For example, the perceived benefit of the preventive action included in universal precautions of wearing gloves is supported by some research studies (Korniewicz, Laughon, Butz, & Larson, 1989; Lowe, 1987; Miller, Collier, & Griffith, 1972).

In those studies where an attempt was made to measure the effect of perceived barriers on preventive actions, the majority showed a significant relationship, with greater barriers resulting in fewer preventive actions (Pender, 1982).

Tirrell and Hart (1980) examined the relationship of health beliefs and knowledge to exercise compliance in patients after a coronary bypass. The findings indicate that the greater the number of perceived barriers, the lower was the level of compliance.

Self-Efficacy/Health Motivation

Rosenstock et al. (1988) suggested adding a concept of confidence to the health belief model. This equates with Bandura's construct of self-efficacy. Self-efficacy was conceptualized in the development of social learning theory by Bandura (1977a). The concept of self-efficacy is described as the conviction that a person is capable of carrying out the health recommendation.

The concept of self-efficacy, relates to beliefs about capabilities and behavior (Strecher, DeVellis, Becker, & Rosenstock, 1986). It is these beliefs, not true capabilities that influence behavior. An individual's self-efficacy expectations will vary depending on the task (Schunk & Carbonari (1984).

Efficacy expectations are learned from four major sources:

1. Performance accomplishments. This refers to learning through personal experience, achieving mastery over a difficult task. Those accomplishments attained through experience are the most potent source of efficacy (Bandura, 1977a).

2. Vicarious experience. This type of learning occurs through observation of events and/or other people.

3. Verbal persuasion.

4. A person's physiological state. This can provide information that can influence efficacy.

Bandura (1977a) postulates that high physiological arousal usually impairs performance, and thus people are more likely to expect failure when tense and agitated. Perhaps this explains the "no, unsure" response to students' willingness to care for AIDS patients. According to Bandura, nursing students master skills more readily when in an environment that is supportive.

In addition to the four original concepts, Becker (1974b) suggested health motivation be used as part of the HBM as it refers to a generalized state of intent that results in behaviors to maintain or improve health.

Behavior Change

As a psychosocial model, the Health Care Belief Model is by definition limited to the explanation of his or her behavior as related to knowledge and beliefs. It cannot explain variances from social influences which may be effective in changing behavior (Carmel, 1990/1991). Peer pressure is an example.

Some studies have been conducted of AIDS related behavior change which applied variables of the health belief model to explain preventive health behavior.

Attitude theory analyzes the components of knowledge, attitudes, and behavior and

indicates that people strive for consistency; therefore, a change in one of these should lead to a change in the others (Back, 1977; Chaiken & Stangor, 1987). Many studies have shown that changes in all these areas is hard to accomplish (Back, 1977; Chaiken & Stangor, 1987; McGuire, 1985).

Studies related to sexual transmission of AIDS indicate that appropriate knowledge and attitudes are important prerequisites but do not assure behavioral change (Baldwin, Whiteley, & Baldwin, 1990; Becker & Joseph, 1988; Leviton & Valdisseri, 1990). The Health Belief Model suggests that preventive behavior can be understood as a function of an individual's beliefs about a disease in terms of (a) perceived susceptibility of acquiring the disease; (b) salience of the disease; (c) perceived severity of the disease; (d) perceived benefits to be realized by engaging in particular preventive behaviors; and (e) cues to action, that is, information or advice that focuses the attention of the individual on specific preventive behaviors (Becker & Maiman, 1975; Janz & Becker, 1984).

In a summary of 46 Health Belief Model studies, 24 of which examined preventive health behavior, there was "substantial empirical evidence supporting HBM dimensions as important contributors to the explanation and prediction of health behavior" (Janz & Becker, 1984, pp. 1-47). "Perceived barriers" proved to be the most powerful predictor among the HBM dimensions across these studies, and "susceptibility" appeared second in importance. The concept of "self-efficacy" relating to a feeling of self-competence in implementing a change has proved to be a good predictor of behavioral change (Bandura, 1990).

The Health Belief Model has not been widely used in the research of AIDS-related preventive behavior. Becker and Joseph's (1988) review of published studies on AIDS risk reduction show that most studies focus on the amount of change in

various AIDS-related behaviors. In only 8 of 23 studies were determinants of behavior change reported. Knowledge of AIDS and perceived susceptibility to contract AIDS were the most prevalent determinants in these studies.

Theoretical Perspective

Social Cognitive Theory

Social Cognitive Theory (SCT) and the Health Belief Model (HBM) will be used for the conceptual framework for this study. It has been noted by a number of authors that the HBM is closely related to Social Cognitive Theory (Maiman & Becker, 1974; Leventhal, Meyer, & Gutman, 1980; Rosenstock et al., 1988). This is hardly surprising because of the development of “value expectancy” theory (for example, the Health Care Belief Model) as well as cognitive theory which builds upon the seminal work of Tolman (1932) and Kurt Lewin (1936, 1951; Lewin, Festiner, & Sears, 1944). Therefore, a certain amount of overlap is expected (Rosenstock et al., 1988). The similarity of the HBM and Bandura’s social cognitive theory are shown by Rosenstock et al. (1988) in Table 1.

According to Social Cognitive Theory, there is an emphasis on several sources of information for acquiring expectations. Also, outcome expectation is quite similar to the HBM concept of “perceived benefits.” Efficacy expectation is defined as the conviction that one can successfully execute the behavior required to produce the outcomes. Bandura (1977a) produced the diagram presented in Figure 1 to show the relationship.

For this study, in order for a student (PERSON) to use universal precautions (BEHAVIOR) for health reasons (OUTCOME), the student must believe that use

Table 1

Comparison of the Social Cognitive Theory and Health Belief Model

SCT	HBM
1. Expectancies about environmental cues	1. Perceived susceptibility to and severity of illness or its sequelae (threat)
2. Expectations about outcomes	2. Perceived benefits of taking a particular action minus perceived costs or barriers to action
3. Expectations about self-efficacy	3. Implied in perceived barriers
Incentive	Health motivation: Value of reduction of perceived threats

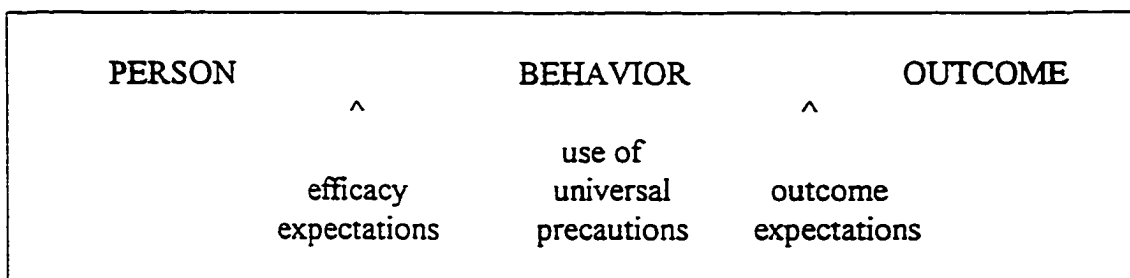


Figure 1. Bandura's Self-Efficacy.

will benefit health (OUTCOME EXPECTATION) and also that he or she is capable of using universal precautions (EFFICACY EXPECTATION).

Conceptual Framework

This study uses the health belief model to examine nursing students' knowledge, health care beliefs, and willingness to care for AIDS patient. The

following definitions of the Health Belief Model concepts are adapted from Janz and Becker (1984); Rosenstock (1974, 1985), and Rosenstock et al. (1988).

AIDS Health Care Beliefs include a set of perceptions a student holds: (a) the perceived susceptibility or probability the nursing student will contract AIDS; (b) the perceived seriousness, degree of emotional arousal, which means how threatening the disease is to the nursing student; (c) the perceived benefits in using precautions to reduce the threat of AIDS; (d) the perceived barriers of using precautions to prevent contracting AIDS; and (e) health motivation which includes positive health activities and intentions to comply (Becker et al., 1974).

Cues to Action are the triggers to appropriate action necessary for an individual to undertake the health-related behavior. The intensity of the cue varies between individuals and is often related to perceived susceptibility and seriousness. Cues for this study include information obtained from the AIDS information study questionnaire, awareness of transmission, perceptions of risk to the disease, and illness of friends or family.

Universal Precautions refers to the treatment of all blood and other potentially infectious body fluids as if they were infected. These precautions are “universal” because they are to be applied to all patients regardless of the diagnosis or the risk of AIDS. In addition, the health care worker must not recap needles but dispose of syringes and needles in puncture-resistant containers (Centers for Disease Control, 1988). These recommendations are published by the Center for Disease Control to protect the health care workers from infection by patients as well as the reverse, and to prevent the spread of HIV among patients through contaminated devices or surfaces.

Schematic Representation of the Health Belief Model

This study uses the health belief model to examine nursing students' knowledge, health care beliefs, and willingness to care for AIDS patient. It also will examine the effect that knowledge and health care beliefs has on whether a student will take the preventive action of using universal precautions to protect oneself from acquiring AIDS. Modifying factors may have an indirect influence on using universal precautions. Two new concepts, the ethical orientation of the nursing student and the moral sophistication of the nursing student, will be examined.

The schematic representation of the health belief model is represented in Figure 2.

Modifying Factors

There are a variety of modifying factors which may alter an individual's perception of the threat of disease (Figure 2). Modifying factors involved in the Health Belief Model consist of interpersonal variables which include demographic variables, character variables, and structural variables such as prior knowledge about the disease and prior contact with the disease. Prior knowledge as a modifying factor depicts events which lead to positive or negative attitudes toward taking recommended preventive health action. Therefore, AIDS information and inquiries about prior contacts with AIDS patients would be modifying factors. These factors are thought to affect the likelihood of taking action indirectly and to have a direct influence on individual perceptions (Maiman & Becker, 1974).

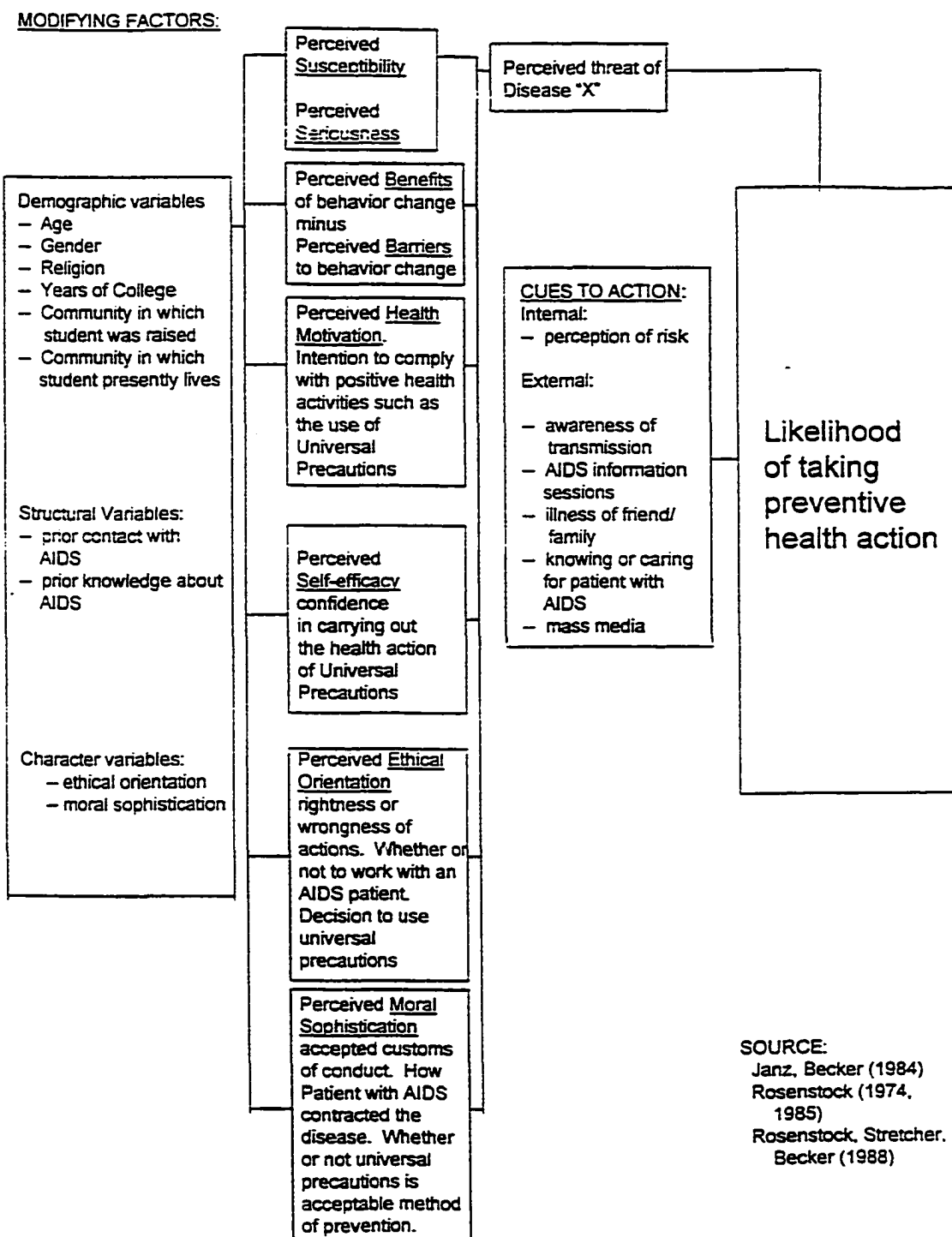


Figure 2. Health Belief Model.

Although demographic, structural, and character variables may have a direct impact on all perceived health care beliefs, they only indirectly influence the likelihood of preventive health actions (Becker & Maiman, 1975).

In summary, the modifying factors investigated in this study included age, gender, religion, years of college, community in which the student was raised, community in which the student presently lives, prior contact with AIDS patients, prior knowledge about AIDS, ethical orientation, and moral sophistication as character variables.

Health Care Beliefs

The Health Belief Model provides a paradigm for exploring the relationship between knowledge and health beliefs taken by individuals in nursing education. The framework for this study suggests that if nursing students are introduced to facts about the disease AIDS, this will change their health care beliefs, that is, their perceived susceptibility, seriousness, benefits, barriers, health motivation, self-efficacy, moral sophistication, and ethical orientation in regard to AIDS. This change will also influence patient care intentions among nursing students and also influence the likelihood of taking preventive action by the use of universal precautions as a benefit in preventing the contracting of AIDS.

According to the HBM, individuals who have a certain constellation of beliefs will be more likely to carry out a behavior (Rosenstock, 1966). Theoretically, beliefs associated with taking precautions on contracting AIDS would be perceived susceptibility to AIDS, perceived seriousness of AIDS, perceived benefits of using precautions to prevent contracting AIDS, few perceived barriers, perceived health motivation, perceived moral sophistication, and perceived ethical orientation.

Ultimately, interventions could be focused at developing the optimal set of beliefs set forth by the HBM that would result in increased use of precautions and more willingness to provide quality care to AIDS patients.

The Health Belief Model encompasses five concepts explaining the rationale for nursing students to practice preventive action when faced with the disease AIDS (Figure 2).

Perceived Susceptibility

The first factor is the factor of perceived susceptibility to disease X, that is, a student's own estimated subjective probability that he or she will encounter a specific health problem (in this case, AIDS), and that the disease is severe in its present or future ramifications. Susceptibility is defined by Rosenstock (1974) as "the subjective risk of contracting a condition" (p. 3).

According to Mikhail (1981), the individual's perception of personal susceptibility to a disease has been found to be positively related to the taking of a wide variety of preventive health actions. Inducing a high perceived severity can occur when the individual is given specific instructions on how to cope with the threat or reduce danger. Therefore, if nursing students are given specific instructions on how severe the AIDS disease is, they are more likely to be willing to follow universal precautions procedures.

Perceived Seriousness

The second factor is the perceived seriousness of disease X, in this case, AIDS. This can be deduced by the degree of emotional arousal (perceived threat) that thoughts of AIDS can cause or by the entanglement that a student believes a given

health condition would constitute. This may also include the impact this health problem would have on the student's work, family life, or social relationships and commitments. Perceived seriousness is an important factor in influencing behavior (Aho, 1979)

Perceived Benefits

The third factor, perceived benefits of the preventive health measure, includes beliefs about the effectiveness of recommended preventive actions which appear to be important determinants of health protecting behavior. In this study, the perceived benefits are those of using precautions as a means to reduce the threat of contracting AIDS.

Perceived Barriers

Fourth is perceived barriers, which are beliefs about the barriers or costs associated with taking an action. An action was thought to be more likely where, in the presence of a threat, in this case contracting AIDS, the use of universal precautions is seen as efficacious and possible at a tolerable cost to the health care provider. Barriers to action in the use of precautions include all perceived impediments to its use, cost, inconvenience, location of equipment and changing habits. In order for the use of precautions to actually occur, the barriers must be reduced to a minimum so that the benefits clearly outweigh the barriers.

Perceived Health Motivation

The fifth factor, health motivation, is the desire to attain or maintain a positive state of health, and the student's intention to comply with positive health activities.

Perceived Self-Efficacy

The sixth factor, self-efficacy, is not explicitly included in the HBM but is implied in “perceived barriers” (Bandura, 1986). This refers to the conviction that one can successfully execute the behavior required to produce the outcome, the confidence to carry out the health recommendation, in this case, the skills and knowledge of the use of precautions to avoid contracting AIDS (Rosenstock et al., 1988).

Findings in the literature support “social norms” (the degree of peer approval of [sexual] practices in one’s social network) as a good predictor of changing [sexual] habits (Emmos et al., 1986; Joseph et al., 1987) encourages the study of two additional concepts. For the purposes of this study there are two other characteristics that may influence health behavior that are under investigation: “ethical orientation” and “moral sophistication.”

Perceived Ethical Orientation

Ethical orientation refers to the “values relating to [student] conduct with respect to rightness or wrongness of certain actions and to the goodness or badness of the motives and ends of such actions” (Chandler & Plano, 1988 p. 17). For purposes of this study, ethical orientation is a student’s decision of whether or not to work with an AIDS patient, and concern for the student’s image if he/she contracted the disease AIDS.

Willingness to work with AIDS patients and feelings of empathy toward them have been examined in several studies (Froman, Owen, & Daisy, 1992). Typically, a values conflict is found between patient advocacy and ethical standards of service

versus an ostracized population with a stigmatizing of disease (Barrick, 1988; Lester & Beard, 1988; Royse & Birge, 1987; Sherer, Haughey & Wu, 1989).

Perceived Moral Sophistication

Perceived moral sophistication refers to “generally accepted customs of conduct and right living in a society and to the individual’s practice in relation to these” (Urdang & Flexner, 1968, p. 867). For this study, the student’s belief related to the means in which a person contracted AIDS, and whether universal precautions is an accepted method for prevention of transmission of disease, in this case, AIDS will be examined.

“The moral choices and ethical decisions nurses make every day profoundly affect their client’s care” (Millette, 1994, p. 660).

Motivational Cues to Action

In addition to factors which modify the individual’s perceptions of the threat of disease, there are motivational “cues to action” which may trigger the individual to preventive action in a balanced benefit-barrier situation or when perceived barriers outweigh perceived benefits. Sources of “cues to action” include both internal and external cues to action. An internal cue to action is the perception of risk an individual feels he or she is taking in caring for an AIDS client.

External cues to action include awareness of how AIDS is transmitted, AIDS information sessions, mass media information, awareness of transmission, illness of friends, or family, and knowing or caring for a patient with AIDS. The present study explored these “cues to action” among nursing students.

Likelihood of Taking Preventive Action

Certain variables are believed to influence taking preventive action. According to the Health Belief Model, health behaviors are more likely to occur if an individual feels susceptible to a specific condition and feels the condition is serious. In addition, the individual must perceive benefit to a specific action while perceiving few barriers. Finally, being concerned about health and feeling a sense of control over health outcomes is related to a specific behavior.

In summary, based upon the literature reviewed, additional research is indicated with nursing students in rural community colleges addressing the type of format conducive to learning about AIDS. Willingness to care for AIDS patients by nurses in rural communities may be effected by their health care beliefs. This study will contribute to the health belief model with the addition of two variables, ethical orientation and moral sophistication.

CHAPTER III

METHODS

Introduction

A discussion of the methods and procedures utilized in this study will be presented in this chapter. The sample, collection sites, questionnaire, human rights protection procedures, and procedures for statistical analysis are delineated.

An experimental Solomon Four pretest-posttest design was used to conduct this research (Huck & Cormier, 1996, p. 615). This research was proposed to test for differences in knowledge and health care beliefs of nursing students resulting from two teaching methods, lecture and video. The independent variable for this study was the format of the teaching intervention and the dependent variable was the information recalled 2 weeks posteducational sessions.

The treatment, factual information about AIDS conveyed by either video and discussion or lecture and discussion, was introduced in the classroom of community colleges. A questionnaire was used to collect data relative to the knowledge level of subjects prior to the classroom intervention. The questionnaire was distributed and collected by the researcher. The researcher remained in the classroom available to answer questions while the subjects completed the questionnaire. The subjects were asked to leave the classroom when they turned in their questionnaire and to return to the classroom after everyone had completed the questionnaire to receive further instructions. The same questionnaire was used 2 weeks after the educational sessions

to ascertain the knowledge level and health care beliefs of the participants posttreatment.

A review of the literature indicates that studies have used a 2-week time frame between implementation of the pretest and posttest (Bartfay & Bartfay, 1994; Dunn et al., 1995; Van Hoozer, Brink, & Oppliger, 1989). In addition, the use of visuals (overhead transparencies) have been found to promote learning as they direct attention to important information (Winn & Holliday, 1981). These techniques were used in the lecture for this study.

Research Methods

A combination of quantitative and qualitative research methods allowed for triangulation of data sources and analytical perspectives. Quantitative data were collected for pretest and posttest comparison through use of instruments tested in a prior study (Champion, 1993; Earl, 1990).

Solomon Four Group Design

A Solomon Four Group Design was chosen because it addresses both internal and external validity issues. Using this design the researcher can determine whether the experimental treatment made a difference, and to what populations, settings, treatment, and measurement variables effects could be generalized (Huck & Cormier, 1996). Figure 3 is a symbolic representation of this research design.

The O1 represents the pretest. The X1 represents the intervention using the conventional teaching methodology which was a lecture and discussion, the effects of which are to be measured. In this case the variables being measured are AIDS knowledge and health care beliefs. The O2 represents the posttest. The X2 represents

the intervention video and discussion, the effects of which are to be measured. The variables being measured are AIDS knowledge and health care beliefs.

For both treatment groups, the same information was delivered about AIDS. Every attempt was made to present similar information to all groups.

Group III represents the control group where students were pre- (O1) and posttested (O2) with no treatment. Group IV received the posttest (O2) only and is being used as a comparison group.

Symbolic Representation of the Research Design			
Group I	O1	X1	O2
Group II	O1	X2	O2
Group III	O1		O2
Group IV			O2

Legend. O1 represents pretest.

O2 represents posttest.

X1 represents intervention with 30-minute lecture/discussion on AIDS.

X2 represents intervention with 30-minute lecture/discussion on AIDS.

Figure 3. Solomon Four Group Design.

Treatment

Two different treatments were tested. The experimental Group I received a one-time lecture/discussion, each of 30-minutes duration (X1) delivered in person by the researcher that consisted of the pathophysiology of AIDS, and nursing care for AIDS patients, along with State of Michigan county statistical data reports on the number of people diagnosed with AIDS.

The experimental Group II viewed a video/discussion, each of 30-minutes duration (X2) from MEDCOM Trainex entitled, "AIDS: Caring for the Caregiver." The subject matter consisted of interviews with patients and nursing staff in a hospital setting communicating the experience of having AIDS and the physical and psychological aspects of nursing care. Following the video, a 30-minute audiotaped discussion session took place. Students were divided into six groups of 5 participants and given topics of discussion stemming from the video about AIDS. The researcher moved from group to group to facilitate group discussion and took notes of both verbal and nonverbal activities.

The control Group III took the pretest, received no treatment, then 2 weeks later received a posttest. Control Group IV received the posttest only. All data collection was conducted by the researcher.

Operational definitions include the following:

Lecture/Discussion Method is an instruction method in which the instructor presents the substantive material. The student takes notes on the material and is free to ask questions during the presentation. After the instructor initiated lecture, a discussion of the lecture content takes place in assigned small groups.

Video/Discussion Method is a method of instruction in which the instructor shows a video to communicate the substantive material. The student takes notes on the material and is free to ask questions during the presentation. A verbal discussion of the lecture content takes place after the video in assigned small groups.

Sampling Procedure

The target population for this study is student nurses enrolled in rural associate degree nursing programs. Four rural nursing schools were randomly

selected from the group of 10 rural associate degree nursing programs in the state of Michigan. The colleges were then randomly assigned to one of the four groups in the research design, again by a blind draw from a hat. Randomly assigning subjects controlled for possible sources of extraneous variations between the two groups in the sense that it can be assumed that the groups are equivalent (Polit & Hungler, 1995). The sample selection of nursing students consisted of four independent groups of first-year nursing students who were willing to participate in the study.

Sample Inclusion Criteria

The sample consisted of a total of 91 nursing students. Included in the sample were both males and females of various ages and educational backgrounds, enrolled in January 1997 in an associate degree nursing program.

First-year nursing students include students who are enrolled in a nursing program in a beginning medical surgical course, during their first year of an associate degree nursing program. In these four nursing programs, nursing students have taken courses which included Human Anatomy, Human Physiology, Introductory to Psychology, and Composition. None of these courses had a lecture regarding nursing and AIDS; however, AIDS physiology is discussed under the Immune System lectures. All students in the nursing curriculums are introduced to universal precautions, techniques which prevent one from transmitting disease, at the beginning of the first semester of the nursing program.

Rural Community College

For purposes of this study, 10 community colleges out of the 28 in the state of Michigan with a 5-year average student head count of less than 8,000 enrolled students and a county population of less than 46,000 fit the definition of rural.

Data Collection Site

Table 2 describes the four colleges included in this study.

Table 2
Data Collection Sites

College	Population Base	5-Year Average Number of Students
I	26,000	2,000
II	20,000	1,600
III	23,000	3,000
IV	32,000	4,000

Operational Definitions of Variables

Since many terms may be unfamiliar to the reader, the following operational definitions of the Health Belief Model concepts are delineated for review. These beliefs are adapted from Becker, Haefner, et al. (1977), Rosenstock (1966), and Janz and Becker (1984).

AIDS health care beliefs include a set of perceptions a student holds about
(a) perceived susceptibility or probability that the nursing student will contract AIDS;

(b) perceived seriousness, meaning how threatening the disease is to the nursing student; (c) perceived benefits in using universal precautions to reduce the threat of AIDS; (d) perceived barriers of using universal precautions to prevent contracting AIDS; (e) perceived health motivation which includes positive health activities and intentions to comply with positive health activities (Becker et al., 1974); and (f) perceived self-efficacy, the belief that one can use universal precautions to prevent contracting AIDS (Bandura, 1977a).

Perceived susceptibility refers to an individual's own estimated subjective belief that he or she will contract AIDS. Total possible scores on the Health Belief Scale for susceptibility range from 6–30. A higher score means more perceived susceptibility.

Perceived seriousness is the degree of emotional arousal created by the thought of the disease AIDS or by how threatening the condition AIDS is to the person. Total possible scores on the Health Belief Scale for seriousness range from 12–60. A higher score means more perceived seriousness.

Perceived benefits is the relative subjective effectiveness of the use of universal precautions in reducing the threat of AIDS. Total possible scores on the Health Belief Scale for benefits range from 6–30. A higher score means fewer perceived benefits.

Perceived barriers are the possible blocks that influence whether a nursing student uses protective measures to prevent one from contracting AIDS. Barriers are the negative components of an anticipated behavior which is undertaken to prevent the undesirable consequences of AIDS. The negative aspects might involve problems such as not knowing how to use equipment, changing habits, or a need for a new pattern of behavior in performing new skills. The inconvenience involved in learning a

new skill is also included. Total possible scores on the Health Belief Scale for barriers range from 9–45. A higher score means more barriers.

Perceived health motivation is a state of concern about general health matters, which results in positive health activities and willingness to seek and comply with orders. A positive health activity is the use of universal precautions. Total possible scores on the Health Belief Scale for health motivation range from 7–35. A higher score means less perceived motivation.

Perceived self-efficacy is a belief that one can successfully execute the behavior required to produce the outcomes (Bandura, 1977a; Rosenstock et al., 1988). Total possible scores on the Health Belief Scale for self-efficacy range from 7–35. A higher score means less self-efficacy.

In addition to these six health care belief constructs, two additional health belief constructs will be examined for purposes of this study:

Perceived ethical orientation refers to the “values relating to [student] conduct with respect to rightness or wrongness of certain actions and to the goodness or badness of the motives and ends of such actions” (Chandler & Plano, 1988, p. 17). Total possible scores on the Health Belief Scale range from 3–15. A higher score means less ethical orientation.

Perceived moral sophistication refers to “generally accepted customs of conduct and right living in a society and to the individual’s practice in relation to these” (Urdang & Flexner, 1968, p. 867). Total possible scores on the Health Belief Scale range from 4–20. A higher score means less moral sophistication.

Data Collection Instruments

Quantitative data were collected through use of the following four instruments: (1) an AIDS Education Information Questionnaire, (2) an AIDS Knowledge Questionnaire, (3) an AIDS Health Care Belief Scale, and (4) a Demographic Information Questionnaire.

Qualitative data were collected through the use of statements in an instrument prepared by Froman et al. (1992), AIDS Attitude Scale. This instrument went through further validation by Froman and Owen (1997).

AIDS Education Information

The AIDS Education Information contained 20 questions about sources contributing to a student's knowledge about AIDS, and 4 questions which addressed (1) if the students believed there was any chance they or their immediate family could contract AIDS, (2) if they personally knew anyone who had contracted AIDS, (3) if they had administered care to anyone with AIDS over the past year, and (4) if they were concerned about taking care of clients with AIDS.

These questions were developed by the researcher using two sources: the Health Interview Survey AIDS Knowledge and Attitudes from the National Center for Health Statistics developed by Dawson, Cynmon, and Fitti (1988), and the AIDS Action Committee Survey developed by Wertz et al. (1987).

AIDS Knowledge Questionnaire

AIDS knowledge refers to information about AIDS instruction in the classroom at rural associate degree programs in nursing. This includes explanation of

the virus, transmission, types of HIV infection, testing, treatment, psychosocial, and legal aspects of AIDS. AIDS knowledge is determined by the scores on the AIDS Knowledge Questionnaire. Total possible scores on the AIDS Knowledge Scale range from 0–25. A higher score means more knowledge.

The AIDS Knowledge Questionnaire contained 25 questions. These questions were also developed by the researcher using two sources: the “Health Interview Survey AIDS Knowledge and Attitudes” from the National Center for Health Statistics developed by Dawson, Cynamon, and Fitti (1988) and the AIDS Action Committee Survey developed by Wertz et al. (1987).

In the AIDS Knowledge Questionnaire, for items #1 through 12, subjects ranked their level of agreement with each statement as “very likely” (3), “possibly but unlikely” (2), to “very unlikely,” (1). For items #13 through 21, subjects ranked their level of agreement with each statement as “always necessary” (3), “sometimes necessary” (2), “rarely necessary” (1), and “don’t know” (0). Questions #22 and 23 were multiple-choice questions which were given a score of 1 for the correct response, and 0 for the incorrect response.

Question #24 relates to the subject’s evaluation of his/her competency in caring for a patient with AIDS. Question #25 relates to nurses who refuse to work with AIDS clients; Question #26 asks if the student were given a choice, would they choose to work with AIDS clients?

For Questions #27 through #40, subjects responded to statements as true, false, or don’t know. The responses were coded with a score of 1, indicating “don’t know”; 2, indicating “false”; and 3, indicating “true.” For all items in the questionnaire, 1 point was given for each correct response and 0 points for an incorrect response. Total possible scores ranged from 0 to 25. A higher score means

more knowledge. A passing score was considered to be 19 or more correct (76% or more). This score is a common passing rate for all nursing programs. The identical questionnaire was used for both the pretest and the posttest.

AIDS Health Care Belief Scale (AHCBS)

Functional properties of the Health Belief Model consisted of five concepts which will be measured by the AIDS Health Care Belief Scale (AHCBS). This scale is adapted from the “Breast Self-Examination Scale” which was developed by Victoria Champion (1984). The scale contains 40 statements regarding health care beliefs about AIDS. In addition, there are 7 items on self-efficacy adapted from Horan, Kim, Gendler, Froman, and Patel (in press); 3 items which evaluated ethical orientation, and 4 items which evaluated moral sophistication.

This instrument measured beliefs about susceptibility, seriousness, benefits, barriers, and health motivation. The AIDS Health Care Belief Scale includes 6 questions regarding susceptibility (1–6), 12 questions about seriousness (7–18), 6 questions pertaining to benefits (19–24), 9 questions related to barriers (25–33), and 7 questions related to health motivation (34–40). In addition, 7 questions adapted from Horan et al. (1993) for the concept of “perceived self-efficacy” were included (41–47). Three questions (48–50) measure perceived ethical orientation and 4 questions, (51–54) measure perceived moral sophistication and were created by the researcher to measure willingness to care for AIDS patients.

The AIDS Health Care Belief Scale subjects ranked their level of agreement on a 5-point Likert scale responding to each statement with “strongly agree” (5), “agree” (4), “neutral” (3), “disagree” (2), and “strongly disagree” (1). Total possible scores for susceptibility range from 6–30; seriousness, 12–60; benefits, 6–30;

barriers, 9–45; health motivation, 7–35; self-efficacy, 7–35; ethical orientation, 3–15; and moral sophistication 4–20. Total health care belief scores overall result in a low score meaning stronger health care beliefs; total scores may range from 54–270.

For perceived susceptibility, perceived seriousness, and perceived barriers, a higher score means more perceived susceptibility, more perceived seriousness and more perceived barriers. For perceived benefits, perceived health motivation, perceived self-efficacy, perceived ethical orientation, and perceived moral sophistication, a lower score means more benefits, more motivation, more self-efficacy, more ethical orientation, and more moral sophistication.

For self-efficacy, the psychometric analysis of the Osteoporosis Self Efficacy Scale (OSES) is based on data from a 1990–1991 osteoporosis project with 201 women, 35 years or older, as reported by Horan et al. (1993). The OSES has two subscales: Osteoporosis Self-Efficacy Calcium Scale and Osteoporosis Self-Efficacy Exercise Scale. Reliability coefficients for internal consistency (Cronbach alpha) of both subscales were .90.

Demographic Information Questionnaire

The last section entitled “Demographic Information” contains the following information: the size of the community where the student presently lives and was raised; gender; age; level of education; religious affiliation; and sexual orientation. This questionnaire was developed by the researcher.

AIDS Attitude Scale

Ten items from the AIDS Attitude Scale (AAS) were adapted for the discussion items in the qualitative portion of this study. According to the authors, Froman, Owen, and Daisy (1992), results from content validation, factor analysis, classical reliability estimation, and generalizability analysis show the AAS to have strong psychometric properties. Most recently Froman and Owen (1997) offered additional support for the internal consistency and stability of the two dimensions underlying the scale, as well as documenting the factorial and construct validity of the AAS.

Qualitative Research Method

The qualitative data were collected through fieldnotes and audiorecorded postgroup sessions for both experimental groups.

The discussion process involved 30 minutes of ongoing sharing of statements that people have made related to people with AIDS condensed from the literature (Froman et al., 1992). Students involved in the study at College I and College II were divided up at random into groups of 5 and asked to react to and discuss these statements about people with AIDS. The researcher facilitated the group sessions and answered any questions the students might have related to the items of discussion.

Qualitative reliability was established by having another nurse researcher independently code sections of the data and compare the results. Any areas of divergence were discussed and reevaluated until agreement was reached and themes were developed. The 10 questions included opinions about people with AIDS, the method in which people contracted AIDS, if laws should be established for

homosexuals, if patients who are HIV + should be placed in rooms with other patients, if assigned to a patient with AIDS would you worry about putting families at risk, should children be removed from the home if the parent is HIV +, and, if women who give birth to babies who are HIV + should be prosecuted (Froman et al., 1992).

Before collecting the data, the qualitative portion of the research study was explained; consent to participate was obtained when the research criteria were explained at the beginning of the study. The same criteria for anonymity and confidentiality were maintained. Students were assured that the taperecordings would be destroyed once all data were tabulated.

Data Collection Procedure

In January 1997, the nursing directors of each of the four rural community colleges selected to participate in the study were contacted by the researcher. At this time, an explanation of the study was given along with the verbal message that confidentiality and anonymity of study results would be maintained. All four colleges agreed to participate in the study. After the college's response to participate in the study, a formal letter of agreement which indicates the college's intent to participate followed. The college was asked to endorse the letter of agreement to participate and return it to the researcher.

In January 1997, each first-year nursing instructor was contacted and asked for her permission to have the first-year nursing students participate in the study. A brief outline of the contents of the questionnaires was shared verbally. A schedule during which the study could be conducted evolved as a result of our discussions.

In January and February 1997, four rural colleges were visited separately, three colleges twice, one college only once, as agreed upon. All potential subjects met in the classroom to attend a lecture/discussion (Group I) at College I, or video/discussion (Group II) at College II, about AIDS. Group III, at College III, received no treatment and received the pretest at the first visit, and 2 weeks later received the posttest. Group IV received the posttest only and only one visit.

College I, Group I, Lecture

The students took the pretest before the lecture. For College I, after the above criteria had been met and the subjects returned to the classroom, a 30-minute lecture on AIDS was delivered by the researcher. Included in this lecture was information about the disease AIDS, symptoms, how it is acquired, statistical data, and prevention methods.

Following the lecture, a discussion took place in collaborative work groups. There were five groups of 5 students who were randomly selected to be in groups. Each student counted numbers from 1 to 5; all 1's were together as one group, all 2's together as another group, etc., until all five groups were accounted for. Each group had the same set of questions to discuss regarding AIDS. The subjects were asked to respond as openly and honestly as they could to statements about people with AIDS. There was ample time allowed for each question. All groups followed the statements in order as written. While the researcher monitored discussion groups, if there was any discrepancy in the participant's responses, the researcher tried to clarify those responses. After 30 minutes, the tape recorder was turned off. The investigator thanked the respondents for their participation.

College II, Group II, Video

The students took the pretest prior to viewing the video. For College II, after the sample criteria had been met and the subjects returned to the classroom, the 30-minute video on AIDS was shown by the researcher. The researcher remained in the classroom while the students were viewing the video.

Following the video, groups were set up in the same manner as in the lecture session described earlier. Each group had the same set of questions to discuss regarding AIDS. The group was given the same instructions as the small group formed after the lecture session.

College III, Group III, Pretest-Posttest Only

For College III, the identical protocol was followed as for College I and II with the exception of the treatment. Following the pretest, there was no treatment given. The posttest was given 2 weeks following the pretest.

College IV, Group IV, Posttest Only

For College IV, the identical protocol was followed as for College III. This group was tested one time only, with the posttest.

Two weeks after the treatment on AIDS, a posttest using the same instruments was administered at the beginning of class to all nursing students involved in the study by the same investigator at all three community colleges, I, II, and III. Group IV was tested one time only. The identical verbal script used in the pretest was again read to all participants (see Appendix B). After the questionnaires were completed, they were immediately collected by the researcher.

Posttests were given to examine if the type of educational format had any effect on knowledge about AIDS: (a) to determine if information about AIDS taught using two different formats, lecture discussion and video discussion, results in differential retention of content about AIDS; (b) to determine if health care beliefs about AIDS change after exposure to a lecture or a video about AIDS among first-year nursing students in rural community colleges; and (c) to examine whether the differences in intentions to provide care for AIDS patients are associated with health care beliefs about AIDS. A comparison of Group III and IV allows the researcher to examine if there is an effect of the pretest on the posttest.

Reliability and Validity of Quantitative Data

The reliability of an instrument is the degree of consistency with which it measures the attribute it is supposed to measure (Polit & Hungler, 1995). Consistency is defined in that all items are part of the instrument and are measured to about the same degree and interitems correlate at the same level. The reliability of a measuring tool can be assessed to the extent to which the same results are obtained on repeated administrations (Polit & Hungler, 1995).

Reliability coefficients normally range between 0.00 and +1.00, if all item total correlations are positive. The higher the coefficient, the more stable the measure. For most purposes, 0.70 or above is considered to be a satisfactory reliability coefficient. However, high reliability of the instrument provides no evidence of its validity for an intended purpose; low reliability of a measure is evidence of low validity (Polit & Hungler, 1995).

Validity refers to the degree to which an instrument measures what it is supposed to measure (Polit & Hungler, 1995). According to Polit and Hungler

(1995), content validity is of the most relevance to individuals designing an intervention to measure knowledge in a specific content area. The validity question being asked is: How representative are the questions on this intervention of the universe of all questions that might be asked on this subject? Four nurse educator experts were called upon to analyze items in the AIDS Knowledge Questionnaire.

Construct validity, according to Polit and Hungler (1995), is more concerned with the underlying attribute than with the scores that the instrument produces. The scores are of interest as they constitute a valid basis for inferring the degree to which the subject possesses some characteristics. The significance of construct validity is the linkage with theory and theoretical conceptualization.

Validation of an instrument is a continual process according to Polit and Hungler (1995). The more evidence that can be gathered that an instrument is measuring what it is supposed to be measuring, the more confidence researchers will have in its validity.

Reliability of Instruments

Psychometric analysis of the AIDS Knowledge Questionnaire and AIDS Health Care Belief Scale was performed. To evaluate internal consistency of the AIDS Knowledge Questionnaire, the Kuder Richardson formula 20 was used. For the AIDS Health Care Belief Scale, Cronbach's alpha was determined.

Initial reliability coefficients for both the AIDS Knowledge Questionnaire and the AIDS Health Care Belief Scale were computed. From the total of 37 questions, 12 were rejected as they demonstrated low correlations with their respective scales and therefore were deleted after all four colleges took the test. This left 25

knowledge items in the analysis. The reliability coefficient for internal consistency for the AIDS Knowledge Questionnaire was .7061.

From a total of 54 items, 54 items were selected from the Health Care Belief Scale. The internal consistency of each of the subscales was evaluated to establish reliability. The reliability coefficients for each of the eight constructs of the Health Care Belief Scale ranged from .30 to .88 (see Table 3). Total reliability for the health care belief scale was .83.

Table 3
Internal Consistency for the AIDS Health Care Belief Subscales ($N = 91$)

Subscale	Number of Items $n = 54$	Cronbach Alpha
Susceptibility	6	.75
Seriousness	12	.86
Benefit	6	.76
Barrier	9	.86
Health Motivation	7	.76
Self-Efficacy	7	.88
Ethical Orientation	3	.30
Moral Sophistication	4	.73

All of the represented scales, with the exception of ethical orientation, exhibit sufficient reliabilities. All of the variables were retained for hypothesis testing.

Qualitative data were collected through discussions using the AIDS Attitude Scale (Froman et al., 1992). This was used with groups of students and based on the audiorecorded postgroup sessions.

This instrument consisted of a list of 10 statements about people with AIDS. After the treatment in Colleges I (lecture) and II (video), students were asked to discuss these statements. This qualitative portion of the research study was analyzed through the development of themes from student responses.

Threats to Internal Validity

Internal validity is attained in a study when the findings can be shown to result only from the effect of the independent variable of interest and cannot be interpreted as reflecting the effects of extraneous variables.

Van Hoozer et al. (1989) report that the findings of previous researchers support the idea that pretesting tends to increase posttest scores (Seltiz, Wrightsmap, & Cook, 1976). However, the strength of the Solomon Four Group Design used in this study controls for threats to internal validity. There were no statistically significant differences in posttest scores among the four groups, thus indicating that the pretest had no significant effect on the posttest. In this research study, the possible threats to internal validity are:

1. History threat. An event, such as additional teaching external to the treatment, could have taken place in the clinical setting, other than the intervention in the classroom. Threats affecting the accuracy of results of the posttest regarding knowledge and beliefs could be (a) the student attended an additional educational seminar about AIDS, and/or was exposed to a relative or friend who developed AIDS before or after they were in nursing school; and (b) the study needs to be viewed as a cross-sectional study of what was known about AIDS on the day the research was completed.

2. Selection threat. Students who had the ability to get to the college through inclement weather had a greater chance to be in the study. Inclement weather was a problem with record snowfalls during the 1997 winter season when this study was conducted. The sample was restricted to four nursing programs in the rural Midwest. Therefore, interpretation of the data must be taken with caution.

3. Maturation threat. If students had an exam prior to or following the pretest, they may have been fatigued.

4. Attrition. The loss of subjects during the course of the study may differ from one group to another. Comparison groups 2 weeks later may not be available to complete a posttest questionnaire due to illness, inclement weather, or other obligations. There were students who were there for the pretest but not the posttest, and students who were present for the posttest only. There were a total of 9 students that were excluded from the study. Only matched pairs were used in this study.

Other threats to the internal validity of this research design may involve the supposition that student nurses' health care beliefs about AIDS may be independent of any education they had in the classroom. Nursing students are typically anxious about their impending responsibilities and this anxiety could affect the responses to either the knowledge or health care beliefs unfavorably.

Threats to External Validity

External validity is achieved when the results can confidently be generalized to situations outside the specific research setting. The following are threats to external validity:

1. The Hawthorne effect. The subjects in this investigation may behave in a particular manner largely because they are aware of their participation in a study.

2. Novelty effects. These may alter the subjects' behavior in different ways.

People may be either enthusiastic or skeptical about the treatment method.

3. Experimenter effects. The performance of the subjects may be affected by characteristics of the researcher. The investigator may have unconsciously communicated expectations to the subjects or may be biased in her observations.

Limitations of the Study

Limitations of the study include the following:

Experience. The students participating in the study may or may not have cared for an AIDS patient in the clinical setting.

History. The knowledge questionnaire was composed of information that was currently known about AIDS and disseminated in the literature as of December 1996. There is new information about AIDS every day providing constant changes about what we know. For example, after the data collection for this study, a clinic at the Whitman Walker Clinic in Washington, D.C. began testing for AIDS through the use of an oral fluid test. The test, called OraSure, makes use of a pad that collects saliva, which in an HIV-infected person is rich in HIV antibodies ("Clinic Pushes Oral HIV Test," 1997). In addition, recently (April, 1997) a new vaccine was discovered that was effective on two chimpanzees.

Psychosocial variables. For example, health care beliefs can be subject to the influence of individual characteristics such as gender, age, and educational status. The life experiences of nursing students are varied. Demographic data were collected to support the equivalency of the groups.

Social acceptance. The subjects may have answered the questions in a way which was perceived to be socially acceptable. Peer expectations may have played a role in the responses to the questionnaires.

Outside factors. A family member who has had AIDS may have influenced the subjects in their responses to the questionnaire.

Maturation. Processes that occurred within the student during the 2 weeks' wait for the posttest may affect internal validity.

Strengths of the Study

Pilot Study. A pilot study was conducted and the reliability and validity of the instrument was tested. The pilot study identified shortcomings in the questionnaires that may not have otherwise been recognized (see Appendix C).

Randomization. This method was used in both the selection of sites of rural colleges and in the teaching methods used at the colleges.

Design. The Solomon Four experimental design controlled for the pretest-posttest effect.

Controls. Extraneous variables were controlled by testing the homogeneity of groups with respect to demographic variables, preAIDS knowledge, and preAIDS health care beliefs.

Triangulation. Use of triangulation. Both quantitative and qualitative research approaches were used.

Statistical Analysis of Data

Analysis of Variance

Analysis of variance (ANOVA) was employed to test the significance of differences between the means of the groups. The statistics computed in the analysis of variance was the F ratio. Variability due to differences between subjects can be eliminated from the experimental error through the use of ANOVA.

Analysis of Covariance

Analysis of covariance (ANCOVA) was used as a means of providing statistical control for one or more extraneous variables. ANCOVA is classified as an inferential statistical tool and is considered the method of choice for an experimental design that includes a preintervention measurement.

The ANCOVA allows the researcher to look at the total variation of scores after treatment and to partial out preintervention differences before comparing the experimental and control groups.

By using the F statistic, it allowed one overall comparison that tells whether there is a significant difference between the means of the groups. The analysis of covariance decomposed the total variability of a set of data into three components: (1) the variability resulting from the independent variable (educational format), (2) the variability attributed to individual differences of the preintervention, and (3) all other variability not explained by the factor and/or covariant (Polit & Hungler, 1995).

ANCOVA can also be used to make further adjustments for the slight differences between groups that may remain even with randomization. An example of covariance for this study is preAIDS knowledge and preAIDS health care beliefs.

Analysis of covariance (ANCOVA) was employed to analyze data for Hypothesis I. ANCOVA is classified as an inferential statistical tool and is considered the method of choice for an experimental design that includes a preintervention. The ANCOVA allows the researcher to look at the total variation of scores after treatment and to partial out preintervention differences before comparing the experimental and control groups. By using the F intervention, it allows one overall comparison that tells whether there is a significant difference between the means of the groups. The analysis of covariance decomposes the total variability of a set of data into the following three components: (1) the variability resulting from the independent variable (AIDS education), (2) the variability attributed to individual differences of the preintervention, and (3) all other variability not explained by the factor and/or covariant (Polit & Hungler, 1995).

Chi-square

The chi-square nonparametric test is used when a researcher is interested in the number of responses objects or people that fall in two or more categories. It is also known as a “goodness-of-fit” statistic. Goodness-of-fit refers to whether a significant difference exists between an observed number and an expected number of responses, people, or objects falling in each category designed by the researcher. The expected number is what the researcher expects by chance or according to some null hypothesis (Huck, Cormier, & Bounds, 1974).

Chi-square analysis was used for “information sessions about AIDS” demographics, and for Question #26.

Protection of Human Rights

In accordance with Western Michigan University's requirements, application was made to the University Committee on Research Involving Human Subjects for permission to conduct this research, and approval was received (see Appendix D).

Permission to conduct the study was obtained from the appropriate college administrators at the four rural colleges.

All participants in the study received an explanation of the purpose of the study, the approximate time involved in participation, and the nature of the questions encountered. There were no apparent risks to the study; the benefit was exposure to AIDS education and an opportunity to explore health care beliefs about AIDS.

Confidentiality and anonymity were maintained in this study. The students were asked to use the last four digits of their social security numbers as an identification number; these were analyzed in aggregate form. The two teaching interventions were given by the investigator. The participants incurred no expense, no grade for participation, nor was there compensation for participating in this study.

The students were read a statement that explained the study, that participation is voluntary, and that they may withdraw from the study at any time. In addition, they were assured that anonymity and confidentiality would be maintained.

CHAPTER IV

DATA ANALYSIS

Introduction

In the first section, the results of the study will be presented and analyzed. Both descriptive and inferential statistics were used. The sociodemographic characteristics of the sample will be described and the results of the hypotheses tested will be discussed.

For purposes of this study, Group IV who received the posttest only was not included in the data analysis for hypothesis testing. This group was used only to examine the effect of the pretest on the posttest scores.

Quantitative Results

Sample Characteristics

The sample consisted of 91 nursing students who served as the pool of participants. These students were enrolled in a beginning medical and surgical nursing course in four rural community colleges in the state of Michigan. Cases in which the data were missing were not included in the analysis. There were 28 students in Group IV who received only the posttest. These students were used as a comparison group only. Group IV was not included in the statistical analysis; however, demographic data were collected.

Sociodemographic variables are depicted in Table 4 ($N = 91$) (Groups I through III) and Table 5 ($N = 119$) (Groups I through IV).

Comparison of the Experimental and Control Groups in Respect to Demographic Variables

To support the equality of the experimental and control groups, an “AIDS Educational Information Questionnaire” evaluated sources and topics which may have contributed to the student’s prior knowledge regarding AIDS, and the “Demographic Information” questionnaire included the following variables: size of the community in which the subject lived, size of the community in which they were raised, gender, age, highest level of education, religious affiliation, and sexual orientation. These variables were compared using chi-square analysis. The chi-square analysis showed no statistical significance between the three groups on any demographic variables. This would indicate that the groups were comparable with respect to the selected demographic characteristics. The category population of the “community in which you presently live” was collapsed into three categories: “under 10,000,” “over 10,000,” and “don’t know.” Data were collapsed into these categories because the majority of the respondents lived in rural areas.

Fifty-nine percent of the respondents ($N = 91$) lived in communities of under 10,000 persons, 31% lived in communities of over 10,000 persons, and 10% of the total respondents did not know the size of the community where they live (Table 4). The inclusion of Group IV changed the data slightly (Table 5). Fifty percent ($N = 119$) lived in communities of less than 10,000 persons; 40% lived in communities of over 10,000 persons. Ten percent of students in Group IV did not

Table 4

Demographic Characteristics of Groups I, II, and III by Percent ($N = 91$)

	Group I ($n = 28$)	Group II ($n = 22$)	Group III ($n = 41$)	Group Total ($N = 91$)
Community Live				
<10,000	78	54	48	59
>10,000	18	36	34	31
Don't know	3	9	17	10
Community Raised				
<10,000	75	50	61	62
>10,000	21	45	31	32
Don't know	3	4	7	6
Gender				
Male	11	18	10	12
Female	89	82	90	88
Age				
18-28	46	36	39	40
29-39	39	31	54	44
40-53	14	31	7	15
Level of Education				
GED-High School	35	27	24	28
Some post	32	22	39	33
Comm. College	17	50	24	28
Bacc/Grad	14	0	12	10
Religious Affiliation				
Protestant	39	45	39	36
Catholic	43	18	39	35
Other	3	27	17	15
None	14	9	14	13
Sexual Orientation				
Heterosexual	96	100	95	97
Homosexual	3	0	5	3

Table 5

Demographic Characteristics of Groups I, II, III, and IV by Percent ($N = 119$)

	Group I ($n = 28$)	Group II ($n = 22$)	Group III ($n = 41$)	Group IV ($n = 28$)	Group Total ($N = 119$)
Community Live					
<10,000	78	54	48	21	50
>10,000	18	36	34	75	40
Don't know	3	9	17	4	10
Community Raised					
<10,000	75	50	61	25	53
>10,000	21	45	31	68	40
Don't know	3	4	7	7	6
Gender					
Male	11	18	10	7	11
Female	89	82	90	93	89
Age					
18–28	46	36	39	46	42
29–39	39	31	54	43	43
40–53	14	31	7	10	17
Level of Education					
GED–High School	35	27	24	28	28
Some post	32	22	39	36	28
Comm. College	17	50	24	29	28
Bacc/Grad	14	0	12	7	9
Religious Affiliation					
Protestant	39	45	39	32	35
Catholic	43	18	39	39	36
Other	3	27	17	25	17
None	14	9	14	3	10
Sexual Orientation					
Heterosexual	96	100	95	100	97
Homosexual	3	0	5	0	3

know the size of the community where they lived. Group IV had more subjects who lived in a more populated community than the other three groups.

The category population of the “community in which you were raised” was collapsed into three categories: “under 10,000,” “over 10,000” and “don’t know.” Data were collapsed because these categories are where the majority of the respondents were raised. Even with the addition of Group IV ($N = 119$), results were similar to responses in the category “community in which you currently live.”

Most respondents lived in the same size of the community in which they were raised.

In the category of “gender,” there were 80 females (88%) and 11 males (12%) included in the sample ($N = 91$). The addition of Group IV ($N = 119$) made no difference in the distribution between gender. The gender was predominantly female, which is not unexpected since nursing continues to be a profession that women pursue.

The category of “age” was collapsed into three categories. The majority of the ages were distributed among these categories. There were 40% of respondents ($N = 91$) ages 18–28, 44% ages 29–39, and 15% ages 40–53. The inclusion of Group IV ($N = 119$) made a difference in the distribution ($p < .05$). Most of the students were in the 29–39 age category. Of the four groups, Group IV, the comparison group, was the youngest in age (mean age 29.9). Group II, the video group, was the oldest group (mean age 33.7). The average age of a nursing student in most community colleges is 28.

The category of education was collapsed to “GED/HS Diploma,” “Some Postsecondary,” “Community College,” and “Baccalaureate/Graduate Degree.”

These categories are where the majority of the responses regarding educational background were dispersed.

There were 28% of subjects ($N = 91$) with a GED or high school diploma, and 33% with some postsecondary education; 28% of the sample group already had a community college degree, and 10% had a baccalaureate or graduate degree. The addition of Group IV ($N = 119$) made no difference in the distribution. Most of the respondents had some postsecondary education.

There were 24 categories for “religious affiliation,” which was collapsed to four categories: “Protestant,” “Catholic,” “Other,” and “None.” There were ($N = 91$) 36% Protestant, 35% Catholic, 15% “Other” and 13% “None.” The addition of Group IV ($N = 119$) made no difference in the distribution. Most of the students identified themselves as either Protestant or Catholic.

For the category of “sexual orientation” categories were collapsed from three categories to two: “heterosexual” and “homosexual.” These were collapsed because these were the only two category responses chosen. There were 97% heterosexuals and 3% homosexuals in the sample ($N = 91$); Group IV indicated they had 100% heterosexual orientation. Most of the respondents were of heterosexual orientation.

The mean age of the three groups ($N = 91$) was 31 years ($SD = 8.3$) (see Table 6). The mean age of the general nursing population is 32 years (Department of Health and Human Services Secretary’s Commission on Nursing, 1996).

Forty-two percent of the respondents ($N = 119$) (see Table 7) were 18–28 years of age, 44% of subjects ($N = 119$) were 29–39 years of age, 14% of subjects ($N = 119$) were between 40 and 53 years of age. The addition of Group IV ($N = 119$) changed the mean age only slightly for all four groups (see Table 7). Group IV was the youngest group with a mean age of 29.9 years.

Table 6

Frequency and Percentage of Age Range Distribution of Subjects ($N = 91$)

Age Range in Years	Number of Subjects	<i>M</i>	<i>SD</i>	Percentage
18–28	37			41
29–39	40			44
40–53	14			15
Total Sample	91	31	8.3	100

Table 7

Frequency and Percentage of Age Range Distribution of Subjects ($N = 119$)

Age Range in Years	Number of Subjects	<i>M</i>	<i>SD</i>	Percentage
18–28	50			42
29–39	52			44
40–53	17			14
Total Sample	119	30.8	8.1	100

In response to the question “Given a choice, would you choose to work with AIDS clients?” 46% ($N = 91$) indicated “yes” they would choose to work with an AIDS client, 42% indicated they were “not sure” if they would choose to work with AIDS clients, with 12% of subjects indicating they would not choose to work with AIDS clients. Most respondents would work with AIDS clients, yet a large percentage were undecided.

To evaluate responses to the question “Given a choice, would you choose to work with AIDS clients?”—“yes,” “no,” “not sure,”—with age, a chi-square analysis was conducted. There was no statistical significance (see Tables 8–10). However, a

majority of respondents who were in the younger age group ($N = 91$) were “not sure” if they would work with an AIDS client at the pretest phase.

Table 8

Chi-square Analysis by Age for the Question “Given a Choice, Would You Choose to Work With AIDS Clients?” at Pretest for Groups I, II, and III ($N = 91$)

Age	Yes	No	Not Sure
≤ 28	34%	42%	54%
29–39	46%	44%	36%
≥ 40	19%	13%	9%

$\chi^2 = 2.01$, $df = 4$, n.s.

Table 9

Chi-square Analysis by Age for the Question “Given a Choice, Would You Choose to Work With AIDS Clients?” at Posttest for Groups I, II, and III ($N = 91$)

Age	Yes	No	Not Sure
≤ 28	39%	37%	57%
29–39	46%	45%	28%
≥ 40	14%	17%	14%

$\chi^2 = 1.13$, $df = 4$, n.s.

The percentage under the category “not sure” if they would work with an AIDS client tended to increase in the younger group at the posttest. There was also an increase in the “yes” responses and a decrease in “no” responses in this group at the posttest (see Table 9). Some respondents changed their mind after the treatments and appeared to be more willing to work with AIDS patients at the posttest. The results were not statistically significant. However, there appears to be a possibility

Table 10

Chi-square Analysis by Age for the Question "Given a Choice, Would You Choose to Work With AIDS Clients?" at Posttest for Groups I, II, III, and IV ($N = 119$)

Age	Yes	No	Not Sure
≤ 28	40%	36%	70%
29–39	44%	48%	20%
≥ 40	14%	15%	10%

$\chi^2 = 3.9$, $df = 4$, n.s.

the younger group is uncertain about whether they would work with an AIDS client.

With the addition of Group IV, results showed an increase in the "not sure" category. This group, having taken the posttest only, perhaps did not have an opportunity to sort out their attitudes about AIDS. The results were not statistically significant; there was no difference between groups. However, Group IV, the youngest age group, continues to be unsure about whether to work with an AIDS client.

ANOVA did not show statistically significant results for willingness to care for AIDS clients and "age" with the sample group ($N = 91$) (see Table 11). However, the group of respondents who were willing to care for an AIDS client ($N = 91$) were 1.27 years older than the mean age (32.2 mean years of age); those who were "not sure" were .45 years younger than the mean age (30.5 mean years of age), and those who said "no" were 3.1 years of age younger than the mean age (27.8 mean years of age). The mean age of the general nursing population nationally is 32 years (Department of Health and Human Services Secretary's Commission on Nursing, 1996).

Table 11

Analysis of Variance for Age and the Question "Given a Choice, Would You Choose to Work With AIDS Clients?" at Posttest for Groups I, II, and III ($N = 91$)

Variable	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Age					
Between	492.29	4	123.07	2.1	.07
Within	4439.30	79	56.1		

However, results were statistically significant when Group IV was included ($N = 119$). The analysis was computed with posttest scores (see Table 12). Group IV is a younger group of students who do not or are "not sure" if they want to work with an AIDS client. This group that is not sure may be the group that has not had the knowledge or exposure to AIDS patients. Given the large group number, it is likely they are still open to learning.

Table 12

Analysis of Variance for Age and the Question "Given a Choice, Would You Choose to Work With AIDS Clients?" at Posttest for Groups I, II, III, and IV ($N = 119$)

Variable	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Age					
Between	704.74	5	140.94	2.5	.03*
Within	5836.58	104	56.12		

* $p < .05$

To evaluate "religious affiliation" with health care beliefs, ANOVA was conducted. There was a statistical significance in the health care belief "susceptibility" at the posttest ($N = 91$) (see Table 13). Students who actively practiced their religion

or were church affiliated felt more susceptible to contracting AIDS at the posttest. Those with greater susceptibility scores believe that AIDS is a threat and is transmittable. They may have learned this through sermons delivered at their church or through conversations with members of their church. Perhaps their religion has taught them discipline, principle, and given them more structure, thus making it more likely they will “follow the rules” and use preventive health actions such as universal precautions.

Table 13

Analysis of Variance for Religious Affiliation and the Health Care Belief
“Susceptibility” at Posttest for Groups I, II, and III ($N = 91$)

Variable	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Susceptibility					
Between	149.75	5	29.9	2.6	.02*
Within	966.35	85	11.3		

* $p < .05$

To evaluate “AIDS education information” received by the experimental and control groups before the lecture, the subjects responded to 20 information items. For items 1–12 subjects were asked to respond to sources that contributed to their knowledge about AIDS.

The means and standard deviations of various items by category for information sessions are shown in Table 14. Knowledge sources included 12 categories. Subjects ranked their level of agreement with each information statement as “a good deal” (4), “some” (3), “not at all” (2), or “not applicable” (1). The

Table 14
Kruskal-Wallis ANOVA Results for Information Sessions
About AIDS Pre- and Posttest

	Mean Rank			H	H ₀ ^a	p*
	Exper. (n = 28) <i>Lecture</i>	Exper. (n = 22) <i>Video</i>	Control (n = 41)			
Knowledge Source:						
magazines	40.14	45.95	47.90	1.52	2.27	.32
books	43.28	43.57	45.81	.19	.259	.87
radio	49.38	45.95	39.63	2.5	3.06	.21
television	48.91	48.50	41.46	1.72	2.12	.34
friends	42.18	46.91	47.05	.65	.87	.64
college class	37.95	49.32	49.72	3.7	5.3	.07
family members	47.43	41.39	45.29	.68	1.2	.52
talk-AIDS network	40.20	36.95	38.27	.22	.90	.63
talk-family planning	38.14	34.84	37.50	.27	.94	.62
inservice training-AIDS	37.89	37.00	38.65	.07	.13	.93
physician	41.71	37.00	39.34	.46	1.5	.47
newspaper	46.13	44.81	43.17	.22	.30	.85
Sessions Attended:						
symptoms ^b	17.32	17.00	26.61	6.0	9.3	.00
transmission	18.50	19.06	25.63	3.1	4.3	.11
care of patient	16.75	24.30	23.28	2.3	2.6	.26
precautions w/ blood	25.67	23.23	23.52	.24	.44	.80
precautions w/ secretions	25.58	23.09	23.63	.22	.42	.81
precautions w/ body fluids	25.58	23.09	23.63	.22	.42	.81
infection	24.17	23.45	24.17	.02	.03	.98

^a Values of H corrected for ties in ranks.

^b $\chi^2 = 9.3$, $df = 2$, $p < .05$.

* p values are calculated for the total group ($N = 91$).

category “not applicable” was not included in the analysis because there were so few responses in this category.

Sessions attended included eight categories. Subjects ranked their extent of attendance at information sessions regarding AIDS as “a good deal” (4), “some” (3), “not at all” (2), or “not applicable” (1). The category “not applicable” was not included in the analysis because there were so few responses in this category (see Table 14).

The nonparametric Kruskal-Wallis one-way analysis of variance (ANOVA) was conducted for a comparison of the three groups. The nonparametric Kruskal-Wallis one-way ANOVA is analogous to the parametric one-way ANOVA. The Kruskal-Wallis ANOVA is used when a researcher wants to determine whether three or more independent samples come from the same population. It is not necessary to have an equal number of subjects for each sample (Huck, Cormier, & Bounds, 1974). The Kruskal-Wallis can be used when the measurement is weaker than the interval level; in this case, AIDS information items were based on ordinal level measurement.

The Kruskal-Wallis results indicated no significant differences among the experimental and control groups of any comparisons before the treatment was administered regarding information about AIDS (listed under “knowledge source”) with the exception in the “sessions attended” section (“If you have attended information sessions in the past year dealing with AIDS, to what extent were the following topics discussed?”) for “AIDS symptoms” ($\chi^2 = 9.3$, $df = 2$, $p < .05$) (see Table 14). There is a difference between groups in the extent of information received regarding “symptoms” about AIDS in the past year. Groups appeared to lack knowledge about the symptoms of the disease AIDS before any treatment was implemented. This may suggest that information sessions about AIDS may not

include “symptoms” in their presentations and discussions about AIDS and that these individuals may have been exposed to such sessions.

For responses to questions #3 through #6, results of the chi-square analysis suggests the three groups were not significantly different from each other. These results are shown in Tables 15 through 18.

For the question, “What do you believe are the chances that you or your immediate family may contract AIDS?” category choices were “good chance” (3), “some chance” (2), and “no chance” (1) (see Table 15). The majority of students thought there was “some chance” they or their immediate family would contract AIDS. Since AIDS has been around since 1981, the public has begun to recognize that vulnerability to contracting the disease is widespread.

Table 15

Responses to the Question “What Do You Believe Are the Chances That You or Your Immediate Family May Contract AIDS?” for Groups I, II, and III ($N = 91$)

Response	Experimental ($n = 28$) <i>Lecture</i>	Experimental ($n = 22$) <i>Video</i>	Control ($n = 41$)	Total ($N = 91$)
No Chance	7%	23%	17%	15.4%
Some Chance	86%	73%	80%	80.2%
Good Chance	7%	5%	2%	4.4%

$$\chi^2 = 2.7, df = 2, n.s.$$

For the question “Do you personally know anyone who has contracted AIDS?” category choices were “no one” (0), “1–5 persons” (1), “6–10 persons” (2), “11–15 persons” (3), and “more than 15 persons” (4) (see Table 16).

Table 16

Responses to the Question "Do You Personally Know Anyone Who Has Contracted AIDS?" for Groups I, II, and III ($N = 91$)

Response	Experimental ($n = 28$) <i>Lecture</i>	Experimental ($n = 22$) <i>Video</i>	Control ($n = 41$)	Total ($N = 91$)
No One	75%	68%	66%	63%
1–5 Persons	25%	32%	32%	27%
6–10 Persons	0	0	2%	10%

$$\chi^2 = .74, df = 2, n.s.$$

The findings suggest that most students did not personally know anyone with AIDS. Rural areas continue to have fewer clients with AIDS than more populated areas, which might explain the respondents' not knowing anyone who had AIDS. It may also be true that persons with HIV/AIDS are reluctant to let others know they have the disease.

For the question "Have you administered care for anyone with AIDS or HIV+ in the past year?" the choices were "no one" (0), "1–5 persons" (1), "6–10 persons" (2), "11–15 persons" (3), and "more than 15 persons" (4) (see Table 17). Items were collapsed to "no one," "1–5 persons," and "6–10" persons due to no responses in the last two categories.

Findings suggest that most students have not administered care to anyone with AIDS in the past year (see Table 17).

For the question "Are you concerned about taking care of clients with AIDS or who are HIV+?" category choices were "always" (3), "sometimes" (2), "rarely" (1), and "never" (0) (see Table 18).

Table 17

Responses to the Question "Have You Administered Care to Anyone With AIDS or HIV+ in the Past Year?" for Groups I, II, and III ($N = 91$)

Response	Experimental ($n = 28$) <i>Lecture</i>	Experimental ($n = 22$) <i>Video</i>	Control ($n = 41$)	Total ($N = 91$)
No One	89%	91%	85%	88%
1–5 Persons	11%	9%	12%	11%
6–10 Persons	0	0	1%	1%

$\chi^2 = .52$, $df = 2$, n.s.

Table 18

Responses to the Question "Are You Concerned About Taking Care of Clients With AIDS or Who are HIV+?" for Groups I, II, and III ($N = 91$)

Response	Experimental ($n = 28$) <i>Lecture</i>	Experimental ($n = 22$) <i>Video</i>	Control ($n = 41$)	Total ($N = 91$)
Always	29%	32%	17%	22%
Sometimes	50%	41%	37%	38%
Rarely	21%	14%	20%	17%
Never	0	14%	27%	14%

$\chi^2 = 6.4$, $df = 2$, n.s.

Kruskal-Wallis results suggest there is a difference between groups about concerns in taking care of clients with AIDS or those who are HIV+ ($\chi^2 = 6.4$, $df = 2$, $p < .05$), most groups were "sometimes" concerned. This result was reasonable to expect given the growing epidemic of the disease AIDS in rural communities.

In response to the question “Nurses who refuse to work with AIDS clients should: ‘not be disciplined’; ‘be supported’; ‘be counseled’; ‘be reprimanded’; ‘be fired,’ or ‘don’t know,’” 69 of subjects ($N = 91$) responded that nurses who refuse to care for AIDS patients should be counseled. This suggests that respondents support the idea that nurses should care for AIDS patients.

Comparison of Groups With Respect to PreAIDS Knowledge and PreAIDS Health Care Beliefs

The means and standard deviations of preAIDS knowledge for the experimental groups are shown in Table 19. The means and standard deviations of preAIDS knowledge for the control group are shown in Table 20. The total possible score on the AIDS Knowledge Questionnaire was 25.

The independent samples t test is used for comparing group means, and in situations in which “a large group of subjects are randomly assigned to two subgroups (possibly an experimental group and a control group)” (Huck et al., 1974, p. 52).

Table 19

PreAIDS Knowledge for Independent Samples for Groups I and II ($n = 50$)

	Experimental Groups				<i>t</i>	<i>df</i>	<i>p</i>
	Lecture (<i>n</i> = 28)		Video (<i>n</i> = 22)				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
PreAIDS Knowledge	17.1	2.9	17.0	3.0	.10	48	.91

Table 20
Pretest and Posttest AIDS Knowledge for Paired Samples
for Control Group III ($n = 41$)

	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
AK Score	18.07	3.1	-1.23	40	.22
AK Score	18.4	3.3			

The results of the t test for independent samples indicated that the two experimental groups did not differ significantly from each other on preAIDS knowledge. The mean score for the pretest for the experimental Group I (lecture, $n = 28$) was 17.1, and for experimental Group II (video, $n = 22$) was 17.0 (see Table 19).

Based on paired t test results, the control Group III did have a higher mean score for knowledge at the pretest, 18.07 ($n = 41$) than the experimental groups. The mean posttest score for the control group was 18.4. However, there was no statistical significance between groups (see Table 20).

In addition to the t tests, analysis of variance was conducted to evaluate if there were any differences between the three groups for preAIDS knowledge and preAIDS health care beliefs using pretest scores. There was no statistical significance between the groups (Table 21).

Table 21

Analysis of Variance for PreAIDS Knowledge and PreAIDS Health Care Beliefs for Experimental and Control Groups ($N = 91$)

Variable	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
PreAIDS Knowledge					
Between	19.712	2	9.85	1.03	.36
Within	838.706	88	9.53		
PreAIDS Health Care Beliefs					
Between	6.819	2	3.41	.01	.99
Within	28,506.47	88	323.93		

Data Presentation for Hypothesis Testing

The research hypotheses and data will be presented in the following section. Analysis of covariance (ANCOVA), analysis of variance (ANOVA), Scheffe test, and *t* tests were utilized to analyze the hypotheses.

All the hypotheses tested in this study involve: (a) knowledge, (b) health care beliefs, and (c) willingness to care for AIDS patients. Hypothesis I was tested with analysis of covariance (ANCOVA). Test results were considered to be significant only if the computed alpha level of probability was $p < .05$.

Before presentation of the ANCOVA results, the mean and standard deviations of the pretest and posttest will be presented. This information will be useful to identify if any group had an increase in the posttest score after controlling the pretest effect, based on results of the paired *t* test ($p < .05$). Group I had an increase in posttest scores (see Table 22). This suggests there was an increase in knowledge after the lecture intervention (see Table 23).

Table 22

Means and Standard Deviations, Posttest (Obtained) and Posttest (Adjusted) Knowledge Scores for Groups I, II, and III ($N = 91$)

	Pretest <i>M</i>	<i>SD</i>	Posttest (Obtained) <i>M</i>	Posttest (Adjusted) <i>M</i>
Group I	17.1	2.9	17.69	19.13
Group II	17.0	3.0	17.32	17.56
Group III	18.0	3.1	18.20	18.16

Table 23

Analysis of Covariance on Posttest AIDS Knowledge Scores for Groups I and II ($n = 50$)

Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i> *
Between Groups	31.430	1	31.430	6.025	.018*
Covariate	9.965	1	9.965	1.910	.173
Within Groups	245.186	47	5.217		

* $p < .05$, two-tailed.

Hypothesis I

There is a difference between lecture and video format on nursing students retention of knowledge about AIDS measured 2 weeks posteducational sessions.

AIDS Knowledge

For Hypothesis I the pretest score of AIDS knowledge was used as a covariate to control for the effect of this variable on the dependent variable (postAIDS knowledge). ANCOVA results showed no statistical significance for the

total sample ($N = 91$) after controlling the effect of preAIDS knowledge on all three groups, $F(1, 87) = 39.422$, $p > .05$ (see Table 24).

However, there was a statistically significant difference between Group I (lecture/discussion) and Group II (video/discussion), $F(1, 47) = 6.025$, $p = .018$ (see Table 23). The research hypothesis was accepted for Hypothesis I with Groups I and II. According to the results of the paired t test, there is a tendency to believe the lecture/discussion is the more effective teaching method for gaining knowledge about AIDS (Table 22). Since AIDS is an infectious disease, these results have implications for gaining knowledge about other diseases such as tuberculosis, syphilis, and hepatitis.

Table 24
Analysis of Covariance on Posttest AIDS Knowledge Scores
for Groups I, II, and III ($N = 91$)

Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i> *
Between Groups	31.960	2	15.980	2.880	.061
Covariate	218.723		218.723	39.422	.000
Within Groups	482.702	87	5.548		

*two-tailed test.

ANCOVA results show that there was no significant difference between Group I, the experimental group who received the lecture, and Group III, the control group who received the pretest and posttest only on postAIDS knowledge after controlling the effect of preAIDS knowledge for Groups I and III, $F(1, 66) = 43.171$, $p > .05$ (see Table 25). This indicates that there was no pretest effect.

Table 25

Analysis of Covariance on Posttest AIDS Knowledge Scores
for Groups I and III ($n = 69$)

Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i> *
Between Groups	18.435	1	18.435	3.471	.067
Covariate	229.267	1	229.267	43.171	.000
Within Groups	350.501	66	5.311		

*two-tailed test.

ANCOVA results show that there was no significant difference between Group II, the experimental group who received the video, and Group III, the control group who received the pretest and posttest only on postAIDS knowledge after controlling the effect of PreAIDS knowledge for Groups II and III, $F(1, 60) = 55.868$, $p > .05$ (see Table 26).

Table 26

Analysis of Covariance on Posttest AIDS Knowledge Scores
for Groups II and III ($n = 63$)

Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i> *
Between Groups	2.865	1	2.865	.585	.447
Covariate	273.425	1	273.425	55.868	.000
Within Groups	293.647	60	4.894		

*two-tailed test.

The research hypothesis was accepted for Hypothesis I. ANCOVA results suggest there was a statistical difference in posttest scores between Groups I and II after controlling for the effect of the pretest on the posttest.

Hypothesis II

Students who have more knowledge about AIDS have greater perceived health care belief scores of susceptibility, seriousness, benefits, health motivation, self-efficacy, moral sophistication, and ethical orientation than students with less knowledge about AIDS.

For Hypothesis II the t test for independent samples was used. Using frequencies, those subjects with a high AIDS knowledge score (a score of equal to or greater than 19, or 76%, the passing score in most nursing programs) and those with a low AIDS knowledge score (a score of less than or equal to 18 or less than 76%, not passing in most nursing programs) were computed for the two experimental groups ($n = 28$ lecture, $n = 22$ video) and control group ($n = 41$).

One-tailed independent sample t tests were used to test for increases from pre- to postintervention means for knowledge and health care beliefs for the experimental and control groups.

Experimental Group I, Lecture ($n = 28$)

For experimental Group I (lecture) there were no statistical significant results for health care belief scores of those students who scored 19 or higher on the knowledge questionnaire for susceptibility, seriousness, benefits, barriers, health motivation, self-efficacy, ethical orientation, and moral sophistication. Those with greater knowledge did not have greater perceived health care belief scores.

The research Hypothesis II was rejected, for those students with greater knowledge will have greater perceived susceptibility, seriousness, benefits, health

motivation, self-efficacy, ethical orientation and moral sophistication scores (see Table 27).

Table 27

t Test for Independent Samples Comparison of AIDS Knowledge Scores With AIDS Health Care Belief Scores Pre- and Posttest for Group I ($n = 28$)

Variable	Knowledge ≤ 18		Knowledge ≥ 19		<i>t</i>	<i>p</i> [†]
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Susceptibility	12.5	3.3	11.9	3.3	.42	.33
Seriousness	42.7	4.5	41.3	5.6	.69	.24
Benefit	22.7	6.1	21.3	6.2	.56	.29
Motivation	23.9	6.2	20.8	4.2	1.39	.09
Self-Efficacy	23.9	8.0	25.0	7.9	-.36	.36
Ethical Orientation	9.2	2.0	8.0	1.2	1.61	.06
Moral Sophistication	6.7	2.8	6.6	2.5	.03	.48

[†] one-tailed test.

Experimental Group II. Video ($n = 22$)

For experimental Group II (video) there were no statistically significant results for those students who scored 19 or higher for six of seven perceived health care beliefs: susceptibility, benefits, health motivation, self-efficacy, ethical orientation, and moral sophistication. However, for the health care belief perceived seriousness there was a significant difference ($p < .05$) (see Table 28).

Students with greater knowledge about AIDS believed AIDS to be a serious disease, a threat, and they would be more likely to use universal precautions after viewing the video. The video appears to be effective in changing their beliefs about AIDS. Use of video has been known to be effective in changing behavior. Nurses

Table 28

t Test Comparison of AIDS Knowledge Scores With AIDS Health Care Belief Scores Pre- and Posttest for Group II (*n* = 22)

Variable	Knowledge ≤ 18		Knowledge ≥ 19		<i>t</i>	<i>p</i> [†]
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
^a Susceptibility	10.2	3.6	11.0	3.4	-.46	.32
^a Seriousness	36.9	11.3	44.7	6.9	-2.01	.02
^b Benefit	22.7	5.6	20.3	5.0	1.03	.15
^b Motivation	23.2	6.1	20.8	2.8	1.21	.12
^b Self-Efficacy	27.5	6.3	25.3	8.8	.62	.27
^b Ethical Orientation	7.7	1.4	7.8	1.5	-.24	.40
^b Moral Sophistication	6.5	2.7	6.5	1.6	.08	.47

^aHigh score means greater health care beliefs.

^bHigh score means less health care beliefs.

[†]one-tailed test.

were involved with caring for AIDS patients in the hospital on the video. Perhaps the nurses' role modeling the appropriate behavior when caring for AIDS patients changed the students' beliefs.

The research Hypothesis II was rejected for perceived susceptibility, benefit, health motivation, self-efficacy, ethical orientation, and moral sophistication but accepted for seriousness for this group.

Control Group III (*n* = 41)

For the control group, Group III, who received the pretest and posttest only, there was no significant difference for health care belief of those students who scored 19 or higher on the knowledge questionnaire for four of the seven health care beliefs: perceived susceptibility, health motivation, self-efficacy, and ethical orientation.

However, for the health care beliefs of perceived seriousness, benefit, and moral sophistication, results showed a statistically significant difference (see Table 29).

Table 29

t Test Comparison of AIDS Knowledge Scores With AIDS Health Care Belief Scores Pre- and Posttest for Group III (*n* = 41)

Variable	Knowledge ≤ 18		Knowledge ≥ 19		<i>t</i>	<i>p</i> [†]
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
^a Susceptibility	11.8	4.1	9.8	3.0	1.65	.05
^a Seriousness	43.4	6.1	37.2	5.7	3.33	.00
^b Benefit	24.2	5.7	20.7	6.0	1.91	.03
^b Motivation	22.5	6.6	20.3	4.3	1.17	.12
^b Self-Efficacy	25.9	9.3	23.3	8.6	.89	.18
^b Ethical Orientation	8.3	1.7	7.5	1.3	1.66	.05
^b Moral Sophistication	7.2	2.3	5.9	1.8	1.87	.03

^aHigh score means greater health care beliefs.

^bHigh score means less health care beliefs.

[†]one-tailed test.

The group with higher knowledge scores and lower seriousness scores suggest that students in Group III believed they knew so much about AIDS and universal precautions that AIDS did not threaten them. This finding was in the opposite direction of the hypothesis. These students may have been overconfident.

Higher knowledge scores and higher benefit and moral sophistication scores suggest that this group would follow the correct procedure with use of universal precautions as necessary to prevent AIDS, and the manner in which the person contracted AIDS would not matter in their decision to care for an AIDS patient.

The research Hypothesis II was rejected for perceived seriousness, susceptibility, health motivation, self-efficacy, and ethical orientation, but accepted

for benefits and moral sophistication for Group III. Although AIDS knowledge and seriousness were statistically significant, the results were in the opposite direction of the hypothesis.

In summary, for Group I, the hypothesis was rejected; for Group II, Hypothesis II was accepted for perceived seriousness for the video group; for the control Group III, it was accepted for perceived benefit and moral sophistication.

Hypothesis III

Student nurses with higher AIDS knowledge and higher perceived health care beliefs scores of susceptibility, seriousness, benefits, health motivation, self-efficacy, ethical orientation, and moral sophistication, and lower barrier scores are more willing to work with AIDS patients than student nurses with lower AIDS knowledge and lower perceived health care belief scores of susceptibility, seriousness, benefits, health motivation, self-efficacy, ethical orientation, and moral sophistication, and higher barrier scores.

To examine this hypothesis, a *t* test was conducted. To evaluate “willingness to work with people with AIDS,” responses to the question “Given a choice, would you choose to work with AIDS clients?” was evaluated. There were three category choices for this question: “yes,” “no,” and “not sure.”

A statistical analysis was conducted. Mean differences between pretest and posttest knowledge scores were evaluated. For purposes of this study, only two groups were evaluated: high or low knowledge and willingness to work with AIDS clients, and health care beliefs and willingness to work with AIDS clients. This offers an opportunity for further study.

AIDS Knowledge—Groups I, II, III, Pretest

For Group I, II, III at the pretest, the mean AIDS knowledge score for the question, “Given a choice, would you choose to work with AIDS clients?” was 17.6 for those who responded “yes” they would be willing to work with AIDS clients, 18.0 “not sure,” and 15.4 “no” they would not be willing to work with AIDS clients. There was a total of 25 possible points ($N = 91$). Based on t test results, it appears more subjects with lower knowledge scores did not want to work with AIDS clients at the pretest; however, this was not statistically significant.

For Groups I and II, the lecture and video groups, the mean knowledge score was 68% at the pretest. For Group III, the control group, the mean knowledge score was 72%. Thus, the mean knowledge scores at the pretest for all groups would not have been a “passing score” in an examination given to nursing students. A passing score is 76%. This could mean nursing students do not have an adequate amount of knowledge about AIDS, prior to the intervention.

AIDS Knowledge—Groups I, II, III, Posttest

For Group I, II, III at the posttest, the mean AIDS knowledge score on the question, “Given a choice, would you choose to work with AIDS clients?” was 18.1 (72.4%) for those who responded “yes” they would be willing to work with AIDS clients, 18.1 (72.4%) “not sure,” and 15.5 (62%) “no” they would not be willing to work with AIDS clients. There was a total of 25 possible points ($N = 91$). It appears that those with less knowledge did not want to work with AIDS patients at the posttest. To gain more knowledge, other teaching methods need to be enforced. Even at posttest, all three groups did not have a “passing score” on the exam of 76%.

AIDS Health Care Beliefs

Means and standard deviations for health care belief scores for each subscale pretest and posttest for response to the question “Given a choice would you choose to work with AIDS clients?” are presented in Tables 30 and 31.

Table 30

Means and Standard Deviations for Health Care Belief Score Subscales Pretest for “Given A Choice Would You Choose to Work With AIDS Clients?” for Groups I, II, and III ($N = 91$)

Variable	Yes		No		Not Sure	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
^a Susceptibility	10.7	3.4	9.9	3.5	10.6	2.9
^a Seriousness	32.8	8.9	44.1	4.8	42.7	5.9
^b Benefit	22.9	4.6	23.0	4.5	21.6	5.8
^a Barrier	15.6	4.8	14.1	4.4	16.3	4.7
^b H. Motivation	22.4	6.0	21.0	3.2	21.7	4.6
^b Self-Efficacy	25.9	8.1	27.1	6.8	23.1	7.3
^b Ethical Orientation	7.2	1.6	9.1	1.6	8.5	1.6
^b Moral Sophistication	5.5	2.0	6.3	1.6	7.0	2.1

^aHigh score means greater health care beliefs.

^bHigh score means less health care beliefs.

Mean seriousness scores were slightly higher for those who said “no” they would not work with AIDS clients at the pretest than at the posttest. Mean ethical orientation scores were slightly lower for those who said “no” they would not work with AIDS clients at the posttest than at the pretest. For total groups ($N = 91$) the mean scores remained about the same from pretest to posttest. Perhaps the treatments were effective in changing students’ beliefs about working with AIDS

clients. Perhaps the disease was so threatening to these individuals that ethics was not considered. Ethical consideration requires reflection and an examination of the inner self; perhaps these students were not able to do this; fear blocked their way.

At the posttest, mean scores for the health care belief variables were about the same as the mean pretest scores (see Table 31).

Table 31

Means and Standard Deviations for Health Care Belief Score Subscales Posttest for "Given A Choice Would You Choose to Work With AIDS Clients?" for Groups I, II, and III ($N = 91$)

Variable	Yes		No		Not Sure	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
^a Susceptibility	10.9	3.4	9.5	3.9	11.5	3.5
^a Seriousness	37.1	7.2	41.5	4.1	43.4	6.7
^b Benefit	22.2	6.0	21.2	6.1	21.8	5.8
^a Barrier	15.3	4.1	16.1	5.8	17.1	4.5
^b H. Motivation	21.8	5.4	21.2	3.6	21.7	5.4
^b Self-Efficacy	26.1	8.2	26.1	9.5	23.7	7.9
^b Ethical Orientation	7.1	1.3	10.0	1.0	8.5	1.3
^b Moral Sophistication	5.7	2.0	6.5	1.7	7.3	2.4

^aHigh score means greater health care beliefs.

^bHigh score means less health care beliefs.

To evaluate both the "willingness to work with AIDS clients" and knowledge scores, and the "willingness to work with AIDS clients" and health care beliefs, a *t* test was conducted. For this statistical test, categories were collapsed to "yes," and "no, not sure." This follows the analysis conducted by Young et al. (1989). Both "no" and "not sure" responses were considered undesirable; if subjects are "not sure," then they are not willing to care for AIDS patients.

Since only two groups were evaluated, high or low knowledge and willingness to work with AIDS clients, and health care beliefs and willingness to work with AIDS clients, interpretation of the data must be read with caution.

Experimental Group I: Lecture ($n = 28$)

For Group I, the lecture group ($n = 28$), the mean knowledge score was lower (18.7) for 15 (54%) of the students who responded “no, not sure” if they would choose to work with an AIDS patient, than for the 13 students (46%) who responded “yes” (19.1) they would be willing to work with AIDS patients (see Table 32). However, only two groups were evaluated: high or low knowledge and willingness to work with AIDS clients, and health care beliefs and willingness to work with AIDS clients. Results were not statistically significant.

There were statistically significant results for perceived health motivation, self-efficacy, and moral sophistication. Those who indicated a willingness to work with AIDS patients had lower scores for health motivation and self-efficacy. These results were in the opposite direction of the hypothesis (see Table 32). Those with high moral sophistication scores will choose to work with AIDS patients no matter how the disease was transmitted; they would also use universal precautions. If individuals are more educated and less fearful, perhaps they are able to reflect on moral dilemmas. Education helps them with moral decision making.

Although some respondents did choose to work with AIDS clients, they were less motivated to even desire to deal with the disease. Even though they knew more about AIDS, the knowledge caused them to be less confident. Perhaps they did not believe universal precautions would protect them from contracting the disease, and their lack of confidence in its use added to their fears. These respondents thought the

Table 32

t Test for Comparison of AIDS Knowledge and Health Care Beliefs
Between Respondents Who Are Willing ($n = 13$) and Those
Not Willing ($n = 15$) to Work With AIDS Clients
for Experimental Group I (Lecture) ($n = 28$)

Variable	Willing to Work		Not Willing to Work		<i>t</i>	<i>p</i> [†]
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
^a AKS ≥ 19	19.1	1.6			.49	.31
^b AKS ≤ 18			18.7	2.8		
Susceptibility	12.4	3.9	11.8	2.6	.46	.32
Seriousness	40.8	7.0	42.6	2.9	-.87	.20
^c Benefit	21.8	5.7	21.8	6.6	.02	.49
Barrier	16.1	4.5	17.7	4.0	-.96	.17
^c H. Motivation	23.9	6.4	20.2	2.9	1.92	.03
^c Self-Efficacy	27.4	7.0	22.2	7.9	1.85	.03
^c Ethical Orientation	8.1	1.5	8.7	1.7	-.94	.17
^c Moral Sophistication	5.3	2.1	7.8	2.5	-2.92	.00
^c Total HCBS	156.15	16.3	153.06	13.1	.55	.29

^aAIDS Knowledge score high, will work with AIDS clients.

^bAIDS Knowledge score low, will not work with AIDS clients.

^cHigh score means less health care beliefs.

[†]one-tailed test.

disease to be so serious it scared them to the point where they seemed to miss the message of how to prevent transmission. After the lecture, they were not confident; this does not mean they did not know what to do, but they were not as confident. Fear of contracting AIDS, and even of death, blocked their way.

The research Hypothesis III was rejected for knowledge, benefits, barriers, health motivation, self-efficacy, and ethical orientation, and was accepted for moral sophistication.

Results indicate a significant difference between groups for willingness to care for AIDS patients among those respondents with greater moral sophistication ($p < .05$) in the lecture group.

Experimental Group II: Video

For the experimental Group II, the video group ($n = 21$), there was one student who did not respond to the question "Given a choice, would you choose to work with AIDS clients?" This resulted in a sample group of $n = 21$.

The mean knowledge score was slightly lower (17.0) for 12 (55%) of the students who responded "no, not sure" if they would choose to work with an AIDS client, than for the 9 (41%) students who responded "yes" (17.4) they would be willing to work with AIDS clients. However, only two groups were evaluated: high or low knowledge and willingness to work with AIDS patients, and health care beliefs and willingness to work with AIDS patients. Results were not statistically significant (see Table 33).

There were statistically significant results for those who were not willing to work with AIDS clients, and who had greater perceived susceptibility and seriousness scores (see Table 33). However, these beliefs were in the opposite direction of the hypothesis. Perhaps lack of knowledge blocked subjects' ability to know about and understand the disease AIDS, and this may have intensified their belief that AIDS was a threatening disease.

Table 33

t Test for Comparison of AIDS Knowledge and Health Care Beliefs
Between Respondents Who Are Willing ($n = 9$) and Those
Not Willing ($n = 12$) to Work With AIDS Clients
for Experimental Group II (Video) ($n = 21$)

Variable	Willing to Work		Not Willing to Work		<i>t</i>	<i>p</i> [†]
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
^a AKS ≥ 19	17.4	2.4			.35	.36
^b AKS ≤ 18			17.0	2.2		
^c Susceptibility	8.7	2.4	12.0	3.6	-2.48	.01
^c Seriousness	32.8	10.0	44.6	8.4	-2.84	.00
^d Benefit	20.5	5.8	22.6	5.3	-.85	.20
^c Barrier	15.1	3.2	16.2	4.4	-.68	.25
^d H. Motivation	21.0	3.8	23.6	6.1	-1.22	.11
^d Self-Efficacy	26.1	7.4	27.0	7.6	-.29	.38
^d Ethical Orientation	6.4	.7	8.7	1.0	-5.92	.00
^d Moral Sophistication	5.3	2.0	7.4	2.3	-2.19	.02

^aAIDS Knowledge score high, will work with AIDS clients.

^bAIDS Knowledge score low, will not work with AIDS clients.

^cHigh score means higher health care beliefs score.

^dHigh score means lower health care belief score.

[†] one-tailed test.

Among the two groups studied (high or low knowledge and willingness to work with AIDS patients, and health care beliefs and willingness to work with AIDS patients), those who stated they would work with AIDS clients had higher ethical orientation and moral sophistication scores. These results were statistically significant (see Table 33). These respondents thought AIDS was a serious disease, would use

universal precautions, and would work with an AIDS patient no matter how the disease was contracted. They were not blaming the persons for contracting the disease.

The research Hypothesis III was rejected for knowledge, susceptibility, seriousness, benefits, barriers, health motivation, and self-efficacy. There were statistically significant unanticipated results for susceptibility and seriousness, in the opposite direction of the hypothesis. The research hypothesis was accepted for those who were willing to work with AIDS patients and had higher ethical orientation and moral sophistication scores.

Control Group III ($n = 41$)

The mean knowledge score for the control group was lower (17.5) for 21 (51%) of the students who responded “no, not sure” if they would choose to work with an AIDS client, than for the 20 (49%) students who responded “yes” (19.3). These results were statistically significant (see Table 34). Those with higher knowledge were willing to work with AIDS patients. However, only two groups were evaluated. Perhaps the pretest triggered their curiosity, so they asked questions or went about getting information on their own during the interlude between taking the pretest and posttest.

Statistically significant results were found (between two groups of students: high or low knowledge and willingness to work with AIDS patients, and health care beliefs and willingness to work with AIDS patients) with those students who had a higher level of knowledge on the AIDS Knowledge Questionnaire and who responded “yes” to choosing to work with AIDS clients, $p < .05$, (see Table 34).

Table 34

t Test for Comparison of AIDS Knowledge and Health Care Beliefs
Between Respondents Who Are Willing ($n = 20$) and Those
Not Willing ($n = 21$) to Work With AIDS Clients
for Control Group III ($n = 41$)

Variable	Willing to Work		Not Willing to Work		<i>t</i>	<i>p</i> [†]
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
^a AKS ≥ 19	19.3	3.3			1.69	.04
^b AKS ≤ 18			17.5	3.1		
^c Susceptibility	11.0	3.0	10.3	4.1	.55	.29
^c Seriousness	36.6	4.4	42.7	7.1	-3.34	.00
^d Benefit	23.2	6.4	21.2	5.7	1.00	.16
^c Barrier	14.9	4.3	16.9	5.4	-1.30	.10
^d H. Motivation	20.9	5.2	21.5	5.7	-.36	.35
^d Self-Efficacy	25.2	9.5	27.0	7.6	.56	.28
^d Ethical Orientation	6.8	1.0	8.8	1.4	-5.02	.00
^d Moral Sophistication	6.2	2.0	6.7	2.2	-.69	.24

^aAIDS Knowledge score high, will work with AIDS clients.

^bAIDS Knowledge score low, will not work with AIDS clients.

^cHigh score means higher health care beliefs score.

^dHigh score means lower health care belief score.

[†] one-tailed test.

Those students who responded “yes” to choosing to work with AIDS clients, did have statistically significant results for ethical orientation (see Table 34). These students were not threatened by the disease AIDS. In addition, they would choose to use universal precautions.

Those students who responded “no “ to choosing to work with AIDS clients, did have statistically significant results for seriousness (see Table 34). This result was in the opposite direction of the hypothesis. Perhaps these students knew enough to know AIDS is serious, but not enough to know what universal precautions were, so they were not likely to use them. Once these individuals have more clinical experience and are subjected to using universal precautions repeatedly, they may have a different attitude toward working with AIDS patients.

The research hypothesis was accepted for higher knowledge and willingness to work with AIDS patients and perceived ethical orientation for the control group (see Table 34).

Total Groups ($n = 90$)

t test values for the total group ($N = 91$) indicated there was a statistically significant difference in knowledge (see Table 35). It appears that the lecture/discussion group may have gained more knowledge after exposure to this treatment.

The mean knowledge score for the total group was higher (18.8) for 42 (52%) of the students who responded “yes” they would choose to work with an AIDS patient, than for the 48 (48%) students who responded “no” or “not sure” if they would choose to work with an AIDS patient. These results were statistically significant (see Table 35). Those students in the two groups studied who choose to work with AIDS clients may have greater knowledge.

There were statistically significant results found between groups who were more willing to work with AIDS patients with higher ethical orientation and moral sophistication scores (see Table 35). Those with higher ethical orientation and moral sophistication scores thought the disease AIDS was not threatening in a clinical

Table 35

t Test for Comparison of AIDS Knowledge and Health Care Beliefs Between Respondents Who Are Willing ($n = 42$) and Those Not Willing ($n = 48$) to Work With AIDS Clients for Experimental and Control Groups (Total Groups) ($N = 90$)

Variable	Willing to Work		Not Willing to Work		<i>t</i>	<i>p</i> [†]
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
^a AKS ≥ 19	18.8	2.7			1.75	.04
^b AKS ≤ 18			17.8	2.8		
^c Susceptibility	10.9	3.4	11.2	3.6	-.39	.34
^c Seriousness	37.1	7.2	43.2	6.4	-4.19	.00
^d Benefit	22.2	6.0	21.7	5.8	.34	.36
^c Barrier	15.3	4.1	17.0	4.7	-1.77	.04
^d H. Motivation	21.8	5.4	21.6	5.1	.19	.42
^d Self-Efficacy	26.1	8.2	24.0	8.1	1.18	.12
^d Ethical Orientation	7.1	1.3	8.7	1.4	-5.52	.00
^d Moral Sophistication	5.7	2.0	7.2	2.3	-3.19	.00
^d Total HCBS	146.59	17.9	155.04	17.5	-2.25	.01

^aAIDS Knowledge score high, will work with AIDS clients.

^bAIDS Knowledge score low, will not work with AIDS clients.

^cHigh score means higher health care beliefs score.

^dHigh score means lower health care belief score.

[†] one-tailed test.

setting, and they would choose to use universal precautions. In addition, those with higher moral sophistication would work with an AIDS patient no matter how the disease was contracted.

Students who were not willing to work with AIDS patients had statistically significant results for the health care beliefs of perceived seriousness. The results for seriousness were in the opposite direction of the hypothesis. Further analysis indicated that those who were not willing to work with AIDS patients had high barrier scores, which were statistically significant (see Table 35). Students who did not want to use universal precautions as a barrier to contracting AIDS may have not understood how to use them. The inconvenience of using universal precautions seemed to be an excuse for not using them.

Those who choose not to work with AIDS patients did not appear to understand AIDS or how to prevent oneself from contracting the disease and thought the disease AIDS was threatening. However, typically traditional rural communities hold conservative values and have less tolerance for diversity (Carwein et al., 1993).

The research hypothesis was rejected for susceptibility, seriousness, benefit, self-efficacy, and health motivation, but accepted for those who were willing to work with AIDS patients and had higher knowledge.

Those who were willing to work with AIDS patients also had greater ethical orientation and moral sophistication scores and lower barrier scores, which were statistically significant for the total group ($N = 90$) (see Table 35).

Posttest Scores

To examine whether the pretest had an effect on the posttest, all four posttest scores were compared using one-way ANOVA. A one-way analysis of variance is based upon the assumption that the scores in each of the various groups have approximately the same variance. According to Huck & Cormier (1996),

If there are an equal number of scores in each of the various groups, the researcher does not have to test this assumption. Previous experiments have shown that the F test is valid when group variances are dissimilar, as long as the sample sizes are constant; that is, the F test is robust to violations of the homogeneity of variance assumption provided that the number of scores in the groups is the same. (p. 66)

The purpose of a one-way ANOVA is to gain insight into the population means, not the sample means. All subjects receiving a posttest score (four groups) were compared using one-way ANOVA. No statistically significant differences were found in the total posttest scores among the four posttest groups in knowledge (see Table 36).

Table 36
One-way Analysis of Variance on Posttest AIDS Knowledge Total
Scores for Groups I, II, III, and IV ($N = 119$)

Source of Variation	SS	df	MS	F	p
Between	49.352	3	16.451	2.314	.080
Within	817.438	115	7.108		

In addition, no statistical differences were found in the total posttest scores among the four posttest groups in health care belief scores (see Table 37).

To get a clearer picture of how scores compared over all four groups, the percentage of correct responses was computed for all four groups for knowledge. The mean percentage of correct responses on the posttest only groups was 69% for the experimental Group I with the lecture, 69% for the experimental Group II with the video, 71% for control Group III, and 70% for the posttest only control Group IV. The results suggest that the posttest scores were similar in all groups, yet none of these scores were passing scores (passing score is 76%).

Table 37

One-way Analysis of Variance on Posttest Health Care Belief Total Scores for Groups I, II, III, and IV ($N = 119$)

Source of Variation	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between	579.244	3	193.081		
				.577	.631
Within	38,477.865	115	334.590		

Summary

An experimental design utilizing a pretest and posttest intervention format was employed to test for differences in nursing students' knowledge and health care beliefs about AIDS resulting from two teaching methods, namely, the lecture with discussion method, and the video with discussion method.

Data were collected from 91 first-year nursing students in a beginning medical surgical nursing course at four rural community colleges. There were three hypotheses tested in this study. Hypothesis I was supported; Hypotheses II and III were partially supported.

Hypotheses I, II, and III

It appears as if the lecture/discussion was an effective teaching method for increasing knowledge and for changes in the health care belief scores of "moral sophistication" (see Table 32). Paired *t* test results for this group show a statistical significance between pre- and posttest scores ($p < .05$).

The video/discussion appears to be an effective teaching method for changes in the health care belief "seriousness" (see Table 28) and for a willingness to work

with AIDS patients, and changes in the health belief scores of “ethical orientation” and “moral sophistication” (see Table 33). Although mean knowledge scores were higher after the video, results were not statistically significant.

Those in the control group with higher knowledge scores appear to be willing to work with AIDS patients (see Table 34). This group also had higher scores in benefit, moral sophistication (see Table 29), and ethical orientation (see Table 34).

In addition, those with higher ethical orientation and moral sophistication scores were more willing to work with AIDS patients (see Table 35). Those with higher knowledge scores were more willing to work with AIDS patients in all three groups ($N = 90$) (see Table 35). Results were statistically significant.

Additional Findings

It appears students do not know the “symptoms” of AIDS. It seems younger students were more likely not to be willing to care for AIDS patients. Data suggest those who were affiliated with a religious denomination believed they were more susceptible to the disease AIDS, viewed AIDS as a threat, and were more likely to use universal precautions.

It appears most students were “sometimes” concerned about taking care of clients with AIDS. Most students believed there was “some chance” they would contract AIDS.

Groups seemed to be more “unsure” about taking care of patients at the posttest ($N = 91$). Nurses support the idea that they should care for AIDS patients, yet results suggest younger student nurses did not want to care for AIDS patients (Table 12). It appears most of those who were undecided or not willing to care for AIDS patients were in the younger age group.

Qualitative Results

In this study, a combination of qualitative and quantitative methods were used to explore the relationship between student nurses' knowledge and health care beliefs about people with AIDS. Ultimately using both research methods provides a more complete picture of the study than that which can be obtained using one method alone.

The researcher collected qualitative data posttreatment sessions for both experimental groups. The data were collected through fieldnotes and audio recorded post group sessions. The advantages of this type of qualitative data collection is that it may be a less obtrusive method of data collection, and it provides richer data than the questionnaires in that it allows the respondents to express their beliefs on the issues as they perceive them. A disadvantage is that it may be difficult to interpret (Creswell, 1994).

This research was conducted in an attempt to identify and describe the experience of student nurses with the potential of giving care to AIDS patients.

Although there were similarities and differences in responses between the experimental groups, as a whole, attitudes and beliefs associated with willingness to care for clients with AIDS clustered into six themes: fear, anger, sympathy, lack of confidence, knowledge, and morality.

Fear

Fear is operationally defined by the researcher as any expression of anxiety associated with caring for AIDS clients. All respondents expressed some degree of fear and perceived risk associated with working with AIDS clients. Those factors

which caused fear included getting anxious about being able to protect oneself from contracting AIDS. Students felt they must be constantly aware and alert about the potential of contracting AIDS.

In addition to a risk for themselves, students expressed concern about putting their families at risk if they cared for AIDS patients.

You must be aware and alert of how you care for AIDS patients. If you get nervous to the point that you can't protect yourself, you should not do it.
(Lecture group)

A common reason for not wanting to work with AIDS patients was fear or disapproval of homosexuality. The student responses took many forms: moral, religious, and disapproval of specific behaviors.

If people get AIDS sexually, they deserve it.

Homosexuality—not in my town. (Lecture group)

The lecture group expressed more fears about being at risk for contracting AIDS than the video group. While the lecture method addressed concerns about AIDS, the video focused more on concerns and fears. The video was an effective measure in addressing fears about AIDS. However, both the lecture group and video group expressed anger.

Anger

Anger is defined as any expressed displeasure or blame associated with the way a person contracted AIDS. The majority of students in both groups expressed anger over the way a person contracted AIDS. In both the lecture and video groups there were clear differentiations made between patients who contracted AIDS through intravenous drug use, homosexual lifestyle, or transfusion. The video group brought up “religion”:

Homosexuality—not in my town. If a woman uses intravenous drugs I would take measures to take her child away. If couples were having unprotected sex, I am sorry, I am going to be upset. (Lecture group)

If you get AIDS from being promiscuous, you deserve it. Homosexuality should be illegal. (Lecture group)

Everything has to do with choice; you have a choice; if you choose to be promiscuous, you pay. (Video group)

After discussing promiscuity and deciding people deserve AIDS, there was a question raised about religion in the video group. (After a student expressed he/she would work with an AIDS patient, the following response was made by another student):

Are you a Baptist? It would be my choice not to work with an AIDS patient. Students thought if people were of a certain religion, they might choose to work with an AIDS patient. If they were not religious, they would not work with an AIDS patient. This also suggests that those who are religious are less judgmental. Religious affiliation may be a factor in willingness to work with AIDS patients.

Results from the quantitative data suggested people who were more “susceptible” to contracting AIDS actively practiced their religion or were affiliated with a church. Perhaps fear of contracting the disease and prejudice is blocking their ability to care for an AIDS patient. Students in the video group were extremely angry about the issue of fidelity and acquiring HIV:

You know the guys that end up getting it because they cheat on their wives? They deserve to die. (Video group)

This response raises concern for the quality of care afforded to AIDS patients from an individual who held the above belief.

Sympathy

Sympathy is defined as any expression of compassion, caring, feeling sorry, or defensiveness of AIDS patients.

I wouldn't treat AIDS patients any differently [than any other patient]. I would treat them with compassion and caring. (Lecture group)

There was more "sympathy" expressed in the lecture group than the video group.

Lack of Sympathy

I have no sympathy for people with AIDS. (Video group)

Some were even apologetic about their opinion:

I am sorry I can't change my feelings about these people who have problems; we all have problems. (Lecture group)

Some of the responses in both groups contained mixed messages:

I really am nonjudgmental when it comes to caring for AIDS patients except for the way they contracted it.

There was consideration for the way the disease was contracted and whether or not they would be willing to care for AIDS patients:

Many people are victims because of blood transfusions; I feel for these people. For IV drug users and homosexuals, forget it.

Some students were confused about whether they should be selective about the way AIDS was transmitted and how they would care for an AIDS patient. A rating system developed in the lecture group:

If you're an IV drug user, you get 25% of my sympathy; if you had a blood transfusion, you get 50% of my sympathy; if you got it sexually transmitted, 0% sympathy. (Lecture group)

Discussion continued about levels of sympathy in the lecture group:

I might feel sorry for a six-year-old. Each situation is different. (Lecture group)

Risk for families was of concern:

How about the woman whose husband ended up with HIV?

Who do you feel more sorry for—the husband, wife, or the children? (Lecture group)

Some in the lecture group felt all patients should be treated the same:

If you don't have sympathy for them, you're in the wrong profession.

Others thought they would have 100% sympathy for all with AIDS because they had an incurable disease.

Do you think you can measure out your sympathy? And treat them differently in the type of care you give? Do you think you can directly separate your emotions from the quality of care you're trying to give?

That's what we are trying to do. It doesn't matter what we feel at all. Doesn't compassion and sympathy run close together? How do you separate?

Sympathy is feeling sorry for someone. With compassion you don't have to put your emotions on your personal level. I can go in and give compassion and have little sympathy. You can give compassion and have no emotion at all? Compassion is not involved with emotion at all? Sure it is! We are trained as nurses to give compassion no matter what our emotional or personal thoughts are. You can't train an emotion in somebody; compassion is an emotion; it is indigenous in an individual. I don't understand what you're saying. I can have compassion without judging patients. (silence)

This last statement from the lecture group seemed to be key in turning the direction of the discussion toward a nonjudgmental attitude.

Lack of Confidence

Lack of confidence is defined as the lack of belief in one's abilities to perform skills.

The underlying fear of infection implies a low level of confidence in the current knowledge about AIDS. When discussing care of AIDS patients, many students in the lecture group were not comfortable with their ability to perform

universal precautions. Students did not report that they would avoid patients but that, in their opinion, if a person was not sure of the skills necessary to perform it, “they” should refuse to care for an AIDS patient. Comments were made about being “nervous” because they were beginning students. Their concern evolved around the risk of accidental exposure to HIV.

You are nervous enough as a beginning student; you make mistakes. You make a mistake and you contract AIDS. (Lecture group)

This statement also suggests students in the lecture group thought the disease AIDS to be very serious and threatening, and they did not have faith in their ability to use universal precautions. This supports the health belief model and the findings from the quantitative data.

Knowledge

Knowledge about AIDS is factual information acquired from the lecture or video. A common misconception about AIDS in the lecture group is that a means of transmission of AIDS was through contact with mosquitos. This was similar to the findings of a study conducted by Flaskerud (1991), who studied beliefs about AIDS, health, and illness in low income white women. Respondents were found to believe mosquitoes were carriers of the AIDS virus.

The odds are you could get it from a mosquito bite. (Lecture group)

Because of the remote rural locations with an abundance of lakes, fishing is a major pastime. This group thought fishing hooks transmitted AIDS, and gave their colleagues warnings:

Watch who you are hunting and fishing with; the hooks may carry the virus. (Lecture group)

The video group made a number of statements that showed lack of knowledge:

Homosexuality is illegal in this state.

With the progress they are making with vaccines, people won't be sentenced to death.

There were also accurate statements made about AIDS from the video group:

Their [AIDS patients'] immune system is down; pneumonia is an issue.

Some comments suggest students have inaccurate knowledge about the transmission of AIDS. People in this particular location need to have information that is applicable to their particular life styles. Homosexuality is not "illegal" in the state of Michigan. The AIDS vaccine is only effective for one strain of the virus. Some students thought that there were other infectious diseases that were more easily transmittable than HIV.

You have a bigger chance of getting Hepatitis B. Why don't they bring in somebody to talk about Hepatitis B? (Video group)

On the other hand, students expressed that there is always a chance they could "get" AIDS. This is congruent with the quantitative results where 80% of the total group of students thought there was "some chance" they could contract HIV.

You know on the questionnaire where it said, "Do you think you will ever get it [HIV]?" I was put in the middle because you never know what is going to happen; there is always a chance [to contract HIV]. (Video group)

I always use universal precautions.

Their perception of risk suggests they believe in the use of universal precautions and that gloves, masks, etc., are effective physical barriers. Without the use of these measures of protection, one would surely contract AIDS.

The subjects' knowledge of the prevention of AIDS through the use of universal precautions reflected current measures advocated by the CDC in the lecture group. The video group made reference to and seemed confident in the use of

universal precautions as a benefit in protecting one from AIDS, whereas the lecture group appeared less confident about its use and less likely to use it.

Students integrated knowledge from other courses and cited specific examples of instruction regarding HIV in the video group. This has critical implications for effective teaching.

Remember what the microbiology teacher said about the virus? He used a glove to show us that the virus could go right through a tiny hole. (Video group)

Morality

Morality is defined as the decision to make the “right” decision based on principle. Another way to look at this is understanding the difference between “right” and “wrong.” Some students in the lecture group thought that morality was the entire issue about AIDS.

Key word is moral. People are showing moral irresponsibility by getting AIDS through sex. (Lecture group)

People in the video group questioned their colleagues about AIDS patients and made judgments if their response was negative:

Why would you not want to work with these people? Are you a bad person? (Video group)

I totally disagree with the lifestyles of people with AIDS because of the morals I was brought up with.

My religious and personal beliefs don't allow for me accepting to care for AIDS patients.

Students were concerned that confidentiality be maintained about patients who had AIDS.

You shouldn't tell people what other patients have when they are admitted. AIDS patients should not be in a private room; that is discrimination.

Homosexuality should be illegal.

Most people with AIDS can blame themselves.

Summary and Recommendations

The qualitative results were supportive of the findings from the quantitative study. However, the qualitative data offer more insight about students' feelings toward AIDS patients.

The manner in which the person contracted AIDS appears to be of major importance to students in their willingness to provide care to AIDS patients in both the lecture and video groups. Data results indicate that homosexuality is not acceptable for students in both groups. There was severe opposition to homosexuality and promiscuity and little compassion toward those who contracted AIDS in any manner other than a blood transfusion. Discussions need to be more focused on nonjudgmental attitudes and professionalism when teaching students about AIDS.

Students in the lecture group were most concerned about putting their families at risk for HIV if they were assigned an HIV patient. Data suggest that the reason for this is their lack of confidence in universal precautions. The video group was not as concerned about the risk of contracting AIDS. However, they believed in and were confident in the use of universal precautions.

Students in the video group seemed more emotional about AIDS than those in the lecture group. Comments about the seriousness of the disease AIDS were more frequent in the video group; this supports the quantitative results. Perhaps the interviews with AIDS patients shown in the video caused them to be more concerned. Some students saw universal precautions as a benefit; others felt they

were not confident in knowing how to use it. More teaching needs to be conducted in this area.

Both groups agreed children should not be removed from the home if the parent is HIV +, nor should parents be prosecuted for child abuse if their baby is HIV +.

Knowledge gained from prerequisite coursework is vital to a student's understanding about AIDS. Students' retention of this knowledge in the video group was expressed with the use of a visual representation (gloves) a microbiology instructor used some time ago, which provided spontaneous recall when discussing transmission of AIDS.

The qualitative portion of this study demonstrates a need for a multifaceted educational approach. Students obviously lack information about HIV and are seriously compromised with their lack of confidence in the use of universal precautions. This information alone could reduce some of the fear associated with AIDS care.

Many of these students have had limited experience with AIDS patients and have rarely had opportunities to talk about their feelings about AIDS. Speakers or panels that include persons with AIDS, films, and focus group discussions can be a means of addressing stereotypes. In addition, volunteering to be a "mentor" for people with AIDS as a part of service learning could be a very effective means in which to develop compassion for this group of people. Several studies have found that people with direct contact with homosexuals have more favorable attitudes than people with no contact (Herek, 1991; Obear, 1991).

Nursing educators might consider framing their educational messages to reinforce correct information about AIDS, to include the understanding of human

behavior that will be effective in motivating behavior change. Qualitative results were consistent with other qualitative studies where judgmental attitudes were demonstrated (Akinsanya & Rouse, 1992; Breault & Polifroni, 1992).

The qualitative results from this study suggest that how the patient contracted the disease did have an impact on students' willingness to care for AIDS patients. This supports the findings of West et al. (1996) who found the most stigmatization from baccalaureate nursing students was the mode of transmission of the AIDS virus.

A summary of the data analysis results is presented in Appendix E.

CHAPTER V

IMPLICATIONS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purposes of this study were (a) to determine if conveying information about AIDS using two different formats, either lecture or video, results in a differential retention of content about AIDS; (b) to determine if health care beliefs about AIDS change after exposure to a lecture or a video about AIDS among first-year nursing students in rural community colleges; and (c) to examine whether the differences in intentions to provide care for AIDS patients are associated with health care beliefs about AIDS. The key elements for this study, knowledge and health care beliefs, were found to be useful in predicting student intentions to care for AIDS patients.

Implications related to the conceptual framework will be discussed followed by conclusions related to the treatments, recommendations for nursing education, implications for public policy, and recommendations for future research.

Implications Related to the Conceptual Framework

The Health Belief Model

The Health Belief Model (HBM) variables include those that address perceived susceptibility, seriousness, benefits, barriers, health motivation, and self-efficacy. The findings of this study must be evaluated in light of the fact that the

scales used to measure HBM variables here included two added characteristics, ethical orientation and moral sophistication.

Susceptibility

Those students in the video group who were not willing to work with AIDS patients had higher susceptibility scores, implying that this group of students may have felt the disease AIDS was more threatening to them. Less knowledge about how to protect oneself from getting AIDS may have led the student to feel more vulnerable to contracting AIDS. This result was unanticipated.

There was a statistically significant difference between the mean scores of groups of students who thought it was probable that they would contract AIDS (susceptibility) and religion (see Table 13). Students who indicated that they practiced their religion or were church affiliated were more likely to follow the guidelines of universal precautions. It is widely believed that churches teach principles and structure. People appear to trust the teachings of their own denominations. In this study, "religion" was not statistically significant with "willingness to care for AIDS patients." Religion did not appear to make a difference. However, in a study conducted by Sherman (1996), willingness to care for AIDS patients was positively correlated with spirituality. In other studies, susceptibility was found to be second in importance to predicting behavioral change (Bandura, 1990).

Seriousness

It appears this health care belief changed as a result of exposure to the videotape presentation, which was consistent with the results of a study by Brennan (1988) who found that whether a student had higher or lower knowledge scores did

not matter when it came to the concept of seriousness. The degree of emotion surrounding how threatening the disease AIDS is to the student created a significant reaction. The overwhelming idea of the disease AIDS constitutes a significant threat. Results from this study are consistent with results from Feit et al. (1990), where a symposium designed to decrease concerns about AIDS actually had the opposite effect on the participants.

Benefit

According to the results of the *t* test, the control group, who had higher knowledge about AIDS, had higher scores for benefit (see Table 29). This suggests that students who had more knowledge also believed in the effectiveness of the use of universal precautions in reducing the threat of AIDS. The benefit of the use of universal precautions outweighs the barriers, which supports the health belief model.

Barriers

Results from the *t* test for groups indicate those who were not willing to work with AIDS patients had higher barrier scores. This suggests that students may see the use of universal precautions as inconvenient, or that they may not know how to use universal precautions. This is consistent with the findings of Tirrell and Hart (1980), who found that the greater number of barriers to exercise regimes, the lower the level of compliance.

Perhaps these students' unwillingness to work with AIDS patients had to do with their lack of knowledge about being able to perform the tasks or acquire the clinical skills necessary to avoid contracting AIDS. Considerable research indicates that intentions are key determinants of subsequent behavior (Ajzen & Fishbein, 1976;

Bamberg et al., 1989; Farrand & Cox, 1993; Fishbein & Ajzen, 1975; Fishbein et al., 1991; Kirscht, 1983; Prochaska et al., 1994; Weitzel, 1989). Studies have found perceived barriers to be the most powerful predictor of behavior among Health Belief Model dimensions (Janz & Becker, 1984).

Health Motivation

Those in the lecture group with increased knowledge and who were willing to work with AIDS patients appear to have less health motivation. Students in the beginning of their nursing program may be very committed to their coursework with less time for positive health activities in their personal life.

Self-Efficacy

Those students who would choose to work with AIDS patients had lower self-efficacy scores. This was not the direction expected. These students were inexperienced; accomplishments through experience helps gain confidence (Bandura, 1977a). Students in this level of the nursing program lack confidence in their abilities to care for AIDS patients and in the technical skills necessary to prevent contracting AIDS. Students do not get enough practice in this skill. Results from other studies indicate that beliefs influence behavior (Rosenstock et al., 1988; Schunk & Carbonari, 1984; Strecher et al., 1986).

The concept of “self-efficacy” relating to a feeling of self-competence in implementing a change has proved to be a good predictor of behavioral change (Bandura, 1990). The results of the qualitative portion of this study, that student nurses lack skill and confidence in performing universal precautions, support this.

Ethical Orientation

For purposes of this study, ethical orientation was a concept added to the health belief model which addresses the decision of whether student nurses will work with an AIDS patient and, whether student nurses will use universal precautions. Although the reliability of the items used to measure this concept was low (.30), this concept contributes to the health belief model by offering an additional concept that further examines students' willingness to care for patients with AIDS, a stigmatized disease.

The video, whose content included interviews with nurses who were caring for AIDS clients and modeling the appropriate care for an AIDS patient, appeared to have an affect on students' ethical decision making. In this study, the use of video as a method of changing student behavior appears to be effective. This supports findings of other research (Downer & Miller, 1987; Elliott & Byrd, 1983; Kohn et al., 1982; Pejsach, 1985; Powers et al., 1983; Watson et al., 1982).

Moral Sophistication

The addition of the concept "moral sophistication" to the health belief model addresses the decision of whether a student nurse will work with an AIDS patient. This was found to be dependent upon the way a person contracted the disease, for example, if the virus were contracted intravenously by IV drug users, through homosexual activity, or through blood transfusions with hemophiliacs. In addition, the assessment of moral sophistication is based on a student's perception of whether the student nurse believes that the use of universal precautions prevents him or her from contracting AIDS.

Students who choose to work with AIDS patients had higher moral sophistication scores. Moral sophistication plays a central motivating factor in a nursing student's decision to care for AIDS patients. Both teaching methods, lecture and video, affected students' moral decision making. The lecture gave the students knowledge of how to use universal precautions; the video offered the application of the skills needed in universal precautions as well as a compassionate attitude role modeled by the nurse toward the patient. The nonjudgmental approach displayed by the nurse with the patient was effective in the student's acceptance of AIDS patients.

The results of this study support the research of Duckett et al. (1996), who found that moral reasoning, a component of ethical action, can be enhanced in students during the course of a baccalaureate nursing program. This study of baccalaureate nursing students between program entry and exit found that "the moral reasoning of nurses, like that of other groups, tends to increase with formal education" (p. 222).

According to Watney (1989), "the entire discourse [on AIDS] feeds into a moralistic rejection of 'fast lane' sex, and the implication, always mobilized around female sexuality, that sex per se is intrinsically dangerous" (p. 35).

Those nursing students with higher knowledge, moral sophistication, and ethical orientation scores appeared to be more willing to work with AIDS patients. This study supports the findings by Wiley et al. (1988), where willingness to care for AIDS patients is greater among student nurses with higher knowledge.

Universal Precautions

The acceptance of the likelihood of taking preventive health action, in this study, the use of universal precautions, depended on knowledge and health care

beliefs. These findings suggest the need for the addition of two new factors of ethical orientation and moral sophistication in the health belief model. Further research needs to be conducted to identify more precise indicators to measure these concepts.

Sociodemographics

The predominant sources of information which the nursing students had access to previously about AIDS were radio and television. This could indicate that students are not obtaining information from reliable sources, such as texts and research results, but instead rely on the popular media.

There was a statistically significant difference between the means for AIDS information related to “symptoms.” It seems that most of the information that was taught and retained about AIDS did not relate to the “symptoms” of AIDS.

Age

In this study, it appears younger student nurses, those between ages 28–30 years, a group who potentially will be assigned to care for AIDS patients, are not willing or are not sure if they want to work with AIDS patients. This finding supports the findings from a study conducted by Young et al. (1996) investigating rural nurses’ use of universal precautions in relation to perceived knowledge of HIV status. They found that younger nurses, nurses who had less experience caring for a PWA, and those with more conservative attitudes about homosexuality and AIDS were more likely to wear gloves for noninvasive procedures. Barriers are the negative components of an anticipated behavior which is undertaken to prevent the undesirable consequences of AIDS. Burtis and Evangelisti (1992) suggested that overuse of gloves reflects negative attitudes about AIDS.

Conclusions Related to Treatments: Lecture and Video

Experimental Group I: Lecture

In this research study, the highest achievable score on the AIDS Knowledge Questionnaire was 25. At the pretest, the students' mean score on the knowledge test for experimental Group I was 17.18; for experimental Group II, 17.09 (see Table 19); and for the control Group III, 18.07 (see Table 20). After the lecture, at the posttest, the Group I mean score was 18.9 on the knowledge test, which was statistically significant for paired *t* test results ($p < .05$). In other findings in the literature (Lawrence & Lawrence, 1989; Wertz et al., 1987), student test scores showed improvement after education about AIDS, but scores were lower at the pretest.

The pretest scores indicated that the students had only moderate knowledge about AIDS, with room for improvement. The mean posttest scores demonstrate that for Group I there was improvement in knowledge after the lecture.

Lecture/discussion continues to be an effective method of instruction. This study supports suggestions of Bloom (1953), who concluded that lecture and discussions have different contributions to make. After the lecture, student responses indicated that they were more willing to work with AIDS patients. One conclusion that can be drawn is that the instructor's lecture, in conjunction with the discussion, influenced students' scores on the posttest. Given the short amount of time for this lecture (30 minutes), it is safe to say the student's attention span can be maintained in this time frame.

Either education or merely exposing the student to testing may have played a role in swaying a student to take a stand on whether to work with AIDS clients. The

information sessions may have made the students more aware of their own opinions about AIDS. In contrast, those who took the posttest only may have been more blurred about AIDS issues because they did not have the chance to use the lecture as an opportunity to focus on what position they took about working with AIDS patients.

The results from this study also suggest that those in the lecture group who were not willing to work with AIDS patients had lower moral sophistication, health motivation, and self-efficacy scores (see Table 32). The lecture may have influenced students to base their decisions on statistical facts rather than on moral issues or an interest in their own healthy lifestyles. It is also possible that their new-found knowledge gave way to the realization that they did not know much about AIDS, and the recognition of this decreased their confidence in their own skill performance.

Using lecture/discussion as a teaching method is effective; that is, students seemed to know more about AIDS after the lecture than before the lecture. The results of this study support the findings of other research which found live lectures supplemented with overheads is still necessary to help students acquire, retain, recall, and apply relevant knowledge (Van Hoozer et al., 1989).

Those in the lecture group who chose to work with AIDS patients had lower health motivation and self-efficacy scores. Perhaps these students were not confident; maybe they did not realize the importance of or lacked clinical contact with AIDS patients, resulting in a lack of participation in positive health activities of using universal precautions.

Experimental Group II: Video

Video was one of the treatment formats for the study sample. The video appeared to be effective for changing health care beliefs of ethical orientation, moral sophistication, and seriousness. Students had higher scores on these beliefs on the posttest.

This study supports research results that suggest that there is reason to expect changes in personal risk behavior and knowledge on the part of nursing students solely as a consequence of viewing a video (Downer & Miller, 1987; Elliott & Byrd, 1983; Kohn et al., 1982; Pejsach, 1985; Powers et al., 1983; Watson et al., 1982). In this research study, the students were shown a video and involved in a discussion. Perhaps the students in the video group gained knowledge from both learning passively (through video) and actively (through discussion). For those who had less knowledge after the video, maybe fear blocked their ability to incorporate new knowledge.

Those in the video group who did not choose to work with AIDS patients had higher susceptibility and seriousness scores. Perhaps lack of knowledge contributed to the feeling that the disease was very threatening to them.

Teaching and Knowledge

Students in this study seemed to lack knowledge about the transmission of AIDS. Yet the students with higher knowledge scores were more willing to care for AIDS clients. The students need both knowledge and experience to confidently care for AIDS clients ($N = 90$) (see Table 35).

Students seemed least knowledgeable about AIDS symptoms and not knowledgeable about AIDS prevention. Most nursing curricula lacks content about AIDS. This supports findings by Chitty (1989) who reported few classroom hours were spent in nursing schools on HIV content. With the exception of universal precautions, there were no classroom hours spent on nursing care specific to AIDS in any of the rural schools. Through the efforts of this study, however, all nursing programs in this study became aware of and discussed future plans to include nursing care content about AIDS in their curriculum.

Knowledge is expected to modify behavior in a direction that is predictable (Byrne & Murphy, 1993). As a nursing student studies in the nursing program, there is an expectation of change in feelings, attitudes, and behavior so that the nursing needs of people can be met. Yet Bennett (1987) professes that facts and the way in which they are presented need to be “supplemented with personal beliefs and individual perceptions and feelings when dealing with individuals that are somewhat different” (p. 84). This has implications for faculty who are serving as role models when delivering information about AIDS. Consistent with the findings of this study, other studies have found that the more educated nurses are, the more willing they are to provide care for AIDS patients (Kemppainen et al., 1992) and that as students progress in the program, they are more willing to care for AIDS patients. Experience is a factor (Nettle et al., 1995).

On the other hand, findings of this study are inconsistent with those of Brailey (1986), who found knowledge was not increased after group teaching by nurses about breast self-exam. However, perceived susceptibility and benefits were increased. Findings of higher susceptibility were consistent with the findings of this study after teaching using the video/discussion method.

AIDS in Rural Communities

Contracting AIDS

A majority of students (80.2%) thought there was “some chance” that either they or someone in their immediate family would contract AIDS, yet most students (69.2%) indicated that they knew “no one” personally who had AIDS, nor had 88% of the students ever cared for a person with AIDS. Results suggest students may believe that they can contract the disease in a different manner other than the clinical site. Student nurses in rural areas are inexperienced with AIDS. Yet evidence exists that an “in-migration” of people with the AIDS virus are returning to their homes in rural areas (Shannon et al., 1991; Stapleton, 1991). It is necessary to be prepared for this new health care consumer in the rural area.

Rural nursing students feel they lack skill and confidence to care for AIDS patients. Negative attitudes prevail in rural communities among nursing students. This finding is consistent with other research studies (Dols & Bradley-Magnuson, 1996, p. 80). This study indicates that rural nursing students hold traditional conservative beliefs and less tolerance for diversity, which is consistent with the findings of Carwein et al. (1993). There continues to be a concern for the quality of care AIDS patients receive in rural communities.

Recommendations from this research include changes in the approach to nursing education, nurses' involvement in institutional policy, and topics to address for future research. Since what is at stake is the quality of care for people with an incurable disease, nursing educators need to revolutionize their curriculums, nurses need to become politically active, and institutional policies need further development and refinement.

Recommendations for Nurse Educators

Clinical Experiences

Rural nursing students must gain experiences with AIDS patients as well as with patients who have other stigmatized diseases. The delivery of quality of care for HIV individuals in rural areas will depend in large part on the expertise and leadership provided by rural nurses. As reported by Carwein et al. (1993), "Small towns and rural communities have not faced large numbers of patients with AIDS and fear, hostility, misunderstanding, and ignorance related to HIV disease often prevail" (Smith et al., 1990, p. 238).

Clinical experiences are recommended for students in AIDS clinics early in the first semester in a nursing program. Experience will help the students gain confidence. This supports the recommendations of Bandura (1977a). This could be an assignment where students are required to begin interviewing as part of their data collection to develop their plan of care for a patient. Experience with AIDS patients is crucial in order to allow students to be more comfortable with this population. Assignments for beginning nursing students in Hospice with AIDS patients are valuable to experience AIDS and the effect on family dynamics.

Lab experiences that require the student to master the skill of using universal precautions should be available. Practice time should be increased to promote confidence and decrease fear. Continuing education needs to be repetitive with updates on changing CDC guidelines. The only occupational protection nurses have against AIDS is consistent use of universal precautions.

Assessment of Attitudes

Evaluating student attitudes at the end of each semester for comparison purposes will help assess the effectiveness of experience as a necessary component in changing peoples' attitudes about AIDS. Nursing students must maintain confidentiality. Carwein et al. (1993) recommended "nurses [in rural communities] need to be particularly sensitive to the confidentiality issue and make every effort to preserve the individual's rights to privacy and assurance that health information will not be disclosed" (p. 234).

Steele (1986) reports that nurse faculty must factor in the student's value system in assessing the preparation of the nursing curriculum. The future generation of health professionals will need to create methods to assist students to examine their beliefs and provide quality care to AIDS patients.

Student Exchange Program

The future education and training of student nurses requires urgent attention. The difficulty that nurse educators have in offering students clinical experience in AIDS clinics may be an effect of a school's rural location. However, this could be redressed through student exchanges with other nursing programs which have a substantial AIDS client population. Both education and experience is necessary to change behavior about AIDS patients.

AIDS Partnership

Encouragement to join the AIDS partnership in Michigan where the "Buddy Program" offers needed services to homebound persons with AIDS might be

pursued. Education alone will not change behaviors. The experience of actually knowing a person with AIDS is necessary to promote quality nursing care.

Experiences for students are needed in long-term care facilities where the future AIDS patient will reside (Lewis et al., 1994). There is a likely probability that long-term care institutions will encounter a substantial increase in the number of patients infected with HIV. It will be necessary for nurse administrators to prepare licensed and unlicensed nursing staff to assist this population. Rural nursing schools need to prepare the future generation of nurses for this challenge.

Speakers Bureau

Individuals who have AIDS should be invited to campus to discuss what it is like to have this disease and how AIDS patients are cared for by nurses, followed by informal discussion groups using case studies that create interventions to solve patient care problems to help students understand AIDS.

Peer Group Interaction

Nurse educators need to address the concerns of the younger age group and develop strategies to change their behavior to one of wanting to care for AIDS patients. Peer group interactions with the older and younger students working together to discuss feelings about caring for AIDS patients might help. Perhaps the older students can be catalysts in changing the younger students' minds about working with AIDS patients.

Curriculum Changes

Nurse educators must strengthen the content areas of AIDS prevention and transmission. Infection control theory needs to include topics such as HIV, TB, AIDS, etc., in “Fundamentals of Nursing” (a first semester course). Educators should use multiple methods of teaching when discussing infectious disease, such as lecture, video, and the Internet. These combinations may be a valuable source of instruction for student nurses about AIDS.

Recently, a new website known as “Room 411,” sponsored by “Campaign for Our Children” contracted with the state of Maryland, allows teenagers to work out problems using a computer. It has an appeal as an alternative source of information about HIV, sex, and drug abuse. Although other Internet sites offer facts about sexually transmitted diseases, this website is the first to dramatize the consequences of risky behaviors using teens as role models. This method of information needs to be further explored as an alternative source for young people to learn about AIDS.

Lastly, faculty efforts need to be supported to develop their own clinical expertise through attending HIV clinical courses for nurses.

A summary of recommendations for AIDS content and experiences in rural nursing programs is presented in Figure 4.

Implications for Public Policy

There are clear policy implications which can be drawn from this study. They include HIV prevention efforts, comprehensive institutional policies for nursing education with regard to universal precautions, and a focus on human needs as a priority when developing nursing program conceptual framework and philosophy.

**Summary of Recommendations for AIDS Content
and Experiences in Rural Nursing Programs**

- Increase clinical experiences with AIDS patients during the first few weeks in the nursing program in long-term care facilities and/or Hospice.
- Provide additional lab experiences to promote confidence in the use of universal precautions.
- Evaluate student attitudes at the end of each semester and compare the findings.
- Arrange for student exchanges with other nursing programs who have an AIDS client population.
- Develop an AIDS partnership as a service learning project.
- Invite speakers with AIDS for informal discussions.
- Provide for peer group interactions with older and younger students.
- Strengthen the content of AIDS prevention and transmission information in curriculum.
- Seek Internet resources.
- Develop faculty expertise in the clinical area working with AIDS patients.

Figure 4. Summary of Recommendations for AIDS Content and Experiences in Rural Nursing Programs.

HIV Prevention Efforts

The recommendations of the National Commission on AIDS (1993) as reported by Nokes (1996) was that HIV prevention efforts need to be made in conjunction with efforts to change behavioral norms within communities. Nursing students are in an ideal position to communicate HIV prevention methods to other

students and to learn how to be effective change agents in public policy matters as well.

Suggestions that could be assignments for nursing students to promote effective campaigns about AIDS include teaching in elementary schools with a focus on destigmatizing the illness and speaking more directly about the homophobia of AIDS; teaching people to take responsibility for themselves, to have more confidence, self-esteem, and self-worth; focusing more on the behaviors that put people at risk for AIDS; assisting in creating a community hospice for AIDS patients; educating parents so they can talk to their children about AIDS; and assisting in disseminating AIDS information to the public using pamphlets and direct mail campaigns.

Universal Precautions

A comprehensive institutional policy must include clear direction on universal precautions, easy accessibility to equipment used for implementing precautions, and student practice in laboratory settings in the use of universal precautions until students are confident in using them systematically. Findings from a study by Prince et al. (1989) indicate we often fear what we do not experience.

The findings from this study indicate students are not confident with using universal precautions and, as a result, may not be using them. This finding is consistent with the results of Reeder et al. (1994) and McNabb and Keller (1991).

Rural nurses must be alert to the needs of people with stigmatized diseases.

To be an advocate for persons who are diagnosed with the disease [AIDS], nurses need to be aware of the special human needs of these persons and the impact of public policy on meeting essential human needs as well as providing care to these individuals. (American Nurses Association Council on Continuing Education, Peters & Connell, 1993, p. 95)

Recommendations for Future Research

The results of this study suggest the need for continued investigation of issues about AIDS in rural communities. In addition, the results of this study support the need for a major curriculum revolution in nursing schools where students begin their experiences of caring for patients.

Future Research

Studies need to be conducted in rural areas where an increase of people with AIDS is projected. The need for systematic research should focus on the actual caregiving behavior of nursing students and nurses as well.

The subjects in this study were first-year nursing students. Those who are already nurses working in various clinical areas may have had a different response. Research needs to be conducted with other groups of nurses in rural settings.

Further research should focus on testing the effectiveness of various approaches to disseminating AIDS information. Oerman and Gignac (1991) found that knowledge increased as students progress through the nursing program. Findings by Duckett et al. (1996) found that moral reasoning increased between program entry and exit. This study should be replicated using a sample of nursing students who are in their last semester of study. Since this study found moral sophistication and ethical orientation factors in student nurses' willingness to care for AIDS patients, additional questions should be included for "moral sophistication" and "ethical orientation" in order to increase their reliability.

More research should be conducted with religion as a variable. Additional research should be conducted to evaluate if certain religions are more effective in

their teachings about AIDS than others. Perhaps more information about AIDS should be taught by religious organizations.

Additional research to evaluate students' knowledge and comfort with universal precautions needs to be conducted. Since younger students were not willing to care for AIDS patients, age is a variable that needs to be explored further to determine whether the training of younger nurses should have a different emphases.

More research needs to be conducted to investigate if student nurses are investing time in their own health activities. Since students thought there was some chance they could contract AIDS yet did not know nor had not cared for an AIDS patient, data on drug or sexual behaviors of the subjects under study need to be collected.

Summary

In summary, due to the movement of people with AIDS into all geographic locations, it is imperative that all nursing programs educate nursing students about AIDS and provide experiences with AIDS patients. Approaches to teaching should include multiple types of educational methods. AIDS prevention education is urgently needed. In order to change beliefs, nursing curriculum changes that offer various clinical experiences with AIDS patients beginning in the first semester are necessary. Knowledge, age, and religion appear to be critical factors in a student's decision to care for an AIDS patient. The inclusion of ethical orientation and moral sophistication in other studies needs to be considered, with additional questions to increase the reliability of the concept of ethical orientation.

Appendix A
Attributes of Selected Teaching Strategies

TABLE
POTENTIAL ATTRIBUTES OF SELECTED STRATEGIES

POTENTIAL ATTRIBUTES	STRATEGIES	Live Lecture with Visuals	Seminar Discussion	Live Demonstration with Return Practice	Textbook	Models/Objects	Course Syllabus	Telem Film	Slides (Multiple Individuals)	Sound Slide Filmstrip & Built in Response	Audio Recording	Computer Assisted Instruction	Games (Individual or Group)	Print	Programmed Instruction	Video Conferencing	Video (Lecture Interview)	Audio Play (Group)	Audio Interview
Provides primarily direct, hands on active participation and overt student response		x	x		x						x	x	x				x	x	
Provides primarily indirect, abstract participation and covert response		x		x		x	x	x	x	x						x	x		
Provides color stimuli for differentiation		x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	
Conveys actual movement		x	x	x	x		x				x	x				x	x	x	
Provides multi-sensory input		x	x	x	x		x		x		x	x				x	x	x	x
Most suitable for promoting practice of psychomotor skills				x	x		x					x				x		x	
Content can be easily repeated by student				x	x	x	x		x	x	x	x	x	x			x		
Provides immediate feedback, reinforcement and objectivity			x	x	x							x	x	x	x		x	x	
Provides structured organization, step-by step sequencing, explicit objectives, student response, feedback, reinforcement			x	x								x	x	x	x		x	x	
Promotes peer or instructor affiliation and human interaction		x	x	x								x				x		x	x
Suitable for large group (100+), teacher-directed learning		x			x		x	x	x	x	x				x	x	x		x
Facilitates face-to-face, oral, two-way communication interaction		x	x	x								x				x		x	x
Transcends barriers of time, space or size; expands or contracts length of presentation in relation to "real time"; makes size manageable, magnifies or condenses					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Reveals information bit-by-bit in sequence		x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
Provides for alternative pathways or branching of content			x		x	x			x			x	x	x				x	x
Content is in a fixed sequence and not easily reordered by student		x		x			x	x		x		x				x	x		
Content can be easily reordered by student			x		x	x			x			x				x		x	x
Rate of presentation can be controlled by student			x	x	x	x	x		x			x	x	x				x	x

Source: Ostmo, P. M., VanHoozer, H. L., Scheffel, A. L., & Crowell, C. M. (1984). Learning style preferences and selection of learning strategies: Consideration and implications for nurse educators. *Journal of Nursing Education*, 23(1), 27-30.

Appendix B
Verbal Script

VERBAL SCRIPT

The purpose of this research study is to investigate Perceived Knowledge and health care beliefs of nursing students in rural community colleges as predictors of intentions to care for AIDS patients.

The procedure to which you will be subjected is response to a questionnaire consisting of knowledge and health beliefs about AIDS. Responses in no way affect your status as a student. Any inquiries concerning the research procedure will be answered by the researcher.

There are no risks of participation in this study. The contribution you are making in response to this questionnaire will assist educators to assess learning needs of students about AIDS as well as assist in providing quality care to AIDS patients.

You have been selected to be involved in this research project by virtue of the fact that you are a nursing student. Confidentiality and anonymity will be maintained in this study. That is, no individual name will be identified, only group data will be used for summarizing the results of the study.

Your completion of the questionnaire indicates your consent to participate. You are free to withdraw consent and to discontinue participation in this investigation at any time. Following the information session, a discussion will take place about AIDS, this will be taperecorded.

Thank you for your participation in this study.

Appendix C
Pilot Studies

Pilot Studies

Two pilot studies were conducted. The first pilot study (Earl, 1990), "The Effect of Education on Nursing Students' Knowledge and Health Care Beliefs About AIDS" ($n = 29$), examined the effects of AIDS education on knowledge and health care beliefs of nursing students. The study was conducted using a pretest-posttest quasi-experimental design. AIDS knowledge and health care beliefs were measured before and after a lecture was delivered about AIDS.

Using pilot study data, psychometric analysis of the AIDS Knowledge Questionnaire and AIDS Health Care Belief Scale was performed. To evaluate internal consistency of the AIDS Knowledge Questionnaire, the Kuder-Richardson formula 20 was used. For the AIDS Health Care Belief Scale (Champion, 1993) Cronbach's alpha was determined.

Initial reliability coefficients for both the AIDS Knowledge Questionnaire and the AIDS Health Care Belief Scale were computed by the researcher. From the total of 45 knowledge items, 7 were rejected due to low correlations with the total score. This left 38 knowledge items in the analysis. The reliability coefficient for internal consistency for the AIDS Knowledge Questionnaire was .62 (Earl, 1990).

From a total of 42 items, 41 items were selected from the HCBS using the same criteria as followed for the Knowledge Questionnaire. The internal consistency of each of the subscales was evaluated to establish reliability. The reliability coefficients for each of the five subconstructs of the HCBS ranged from .72 to .85.

A second pilot study was conducted in January 1997 consisting of all nursing students ($N = 46$) enrolled in nursing courses other than the one targeted for Spring 1997 before the formal research study was initiated. Participation criteria were the same as those used for the research sample.

The purpose of the second pilot study was to determine the feasibility of the data collection plan and obtain reactions to the instruments being used. Data from the pilot study were used to evaluate reliability and validity of the AIDS Knowledge Questionnaire and AIDS Health Care Belief Scale.

The results of the pilot study indicated that AIDS knowledge of the experimental group was not found to be different from that of the control group. On the posttest, the two groups were not significantly different on four of five health care beliefs: seriousness, benefits, barriers, and health motivation. A significant difference between the two groups with the susceptibility belief was found at the posttest ($p < .05$).

Reliability coefficients were computed for purposes of this research study. Using data collected for this study, psychometric analysis of the AIDS Knowledge Questionnaire and AIDS Health Care Belief Scale was performed. The Kuder-Richardson formula 20 was used to evaluate internal consistency of the AIDS Knowledge Questionnaire. For the AIDS Health Care Belief Scale Cronbach's alpha was determined.

Initial reliability coefficients for both the AIDS Knowledge Questionnaire and the AIDS Health Care Belief Scale were computed by the researcher. Items demonstrating low correlations with their respective scales were deleted and internal consistency coefficients were recomputed. A low Cronbach alpha indicates the concept is not reliable. When further deletion began to decrease the alpha coefficient, scales were considered to be at maximum reliability.

From the total of 37 knowledge items, 2 were rejected due to low or zero correlations with the total score. These items were in response to "How necessary do you think the following practices are for preventing the transmission of AIDS?"

(wearing shoe protectors and wearing protective eye-wear) and items # 13, 28, 29, and 40 had zero variance; This left 31 items in the analysis. The reliability coefficient for internal consistency for the AIDS knowledge questionnaire was .56.

To establish content validity of the AIDS Knowledge Questionnaire, four baccalaureate prepared nurses, one of whom worked with AIDS clients in Hospice, were asked to complete the questionnaire. Based on the answers from these experts, the content was examined and correct responses were agreed upon.

All of the 54 items were selected from the Health Care Belief Scale using the same criteria as followed for the Knowledge Questionnaire. Reliability coefficients for each of the eight subconstructs of the Health Care Belief Scale ranged from .65 to .87 with the exception of “ethical orientation subscale” (see following table). Even though the alpha for “ethical orientation” was low (.24), these three items were considered to be extremely important to the study and were included in the research project.

Internal Consistency for the AIDS Health Care Belief Subscales (*N* = 46)

Subscale	No. of Items	Cronbach Alpha
Susceptibility	6	.72
Seriousness	12	.83
Benefit	6	.66
Barrier	9	.65
Health Motivation	7	.65
Self-Efficacy	7	.90
Ethical Orientation	3	.24
Moral Sophistication	4	.87

Appendix D

Approval Letter From the Human Subjects Institutional Review Board



WESTERN MICHIGAN UNIVERSITY

To: Kathleen Reding
Catherine Ellen Earl

From: Richard A. Wright, Chair
Human Subjects Institutional Review Board

A handwritten signature in cursive script that reads "Richard A. Wright".

Subject: HSIRB Project # 96-09-02

Date: September 6, 1996

This is to inform you that your project entitled "Perceived Knowledge and Health Care Beliefs of Nursing Students in Rural Community Colleges as Predictors of Intentions to Care for AIDS Patients," has been approved under the exempt category of research. This approval is based upon your proposal as presented to the HSIRB, and you may utilize human subjects only in accord with this approved proposal.

Your project is approved for a period of one year from the above date. If you should revise any procedures relative to human subjects or materials, you must resubmit those changes for review in order to retain approval. Should any untoward incidents or unanticipated adverse reactions occur with the subjects in the process of this study, you must suspend the study and notify me immediately. The HSIRB will then determine whether or not the study may continue.

Please be reminded that all research involving human subjects must be accomplished in full accord with the policies and procedures of Western Michigan University, as well as all applicable local, state, and federal laws and regulations. Any deviation from those policies, procedures, laws or regulations may cause immediate termination of approval for this project.

Thank you for your cooperation. If you have any questions, please do not hesitate to contact me.

Project Expiration Date: September 6, 1997

Appendix E
Summary of Data Analysis Results

Summary of Data Analysis Results*

	Increased knowledge	Decreased knowledge	Yes, willing to work with AIDS clients	No, not willing to work with AIDS clients	Susceptibility	Seriousness	Benefits	Barriers	Health Motivation	Self-efficacy	Ethical Orientation	Moral Sophistication
Group I: Lecture (n = 22)												
Table 32	+		x									
Table 32				□ ss					-- u ss	- u ss		++ ss
Table 32			x									
Group II: Video (n = 28)												
Table 28	+					++ ss						
Table 33				□	++ ss	++ ss						
Table 33	+		x									
Table 33			x								++ ss	++ ss

(table continues)

Table—Continued

	Increased knowledge	Decreased knowledge	Yes, willing to work with AIDS clients	No, not willing to work with AIDS clients	Susceptibility	Seriousness	Benefits	Barriers	Health Motivation	Self-efficacy	Ethical Orientation	Moral Sophistication
Group III: Control (<i>n</i> = 41)												
Table 29	+					-- ss						
Table 34	+		x ss									
Table 34				□		+u ss						
Table 34			x								++ ss	
Total Groups (<i>N</i> = 90)												
Table 35	+		x ss									
Table 35				□ ss		++ ss						
Table 35			x					++ ss				

Key: + = high knowledge
 - = low knowledge
 ++ = higher health care belief scores
 -- = lower health care belief scores
 -u = lower health care belief scores, unanticipated
 +u = higher health care belief scores, unanticipated
 □ = not willing to work with AIDS patients
 x = willing to work with AIDS patients

* For purposes of this study, only two groups were evaluated: high or low knowledge and willingness to work with AIDS clients, and health care beliefs and willingness to work with AIDS clients. Therefore, interpretation of the data must be taken with caution.

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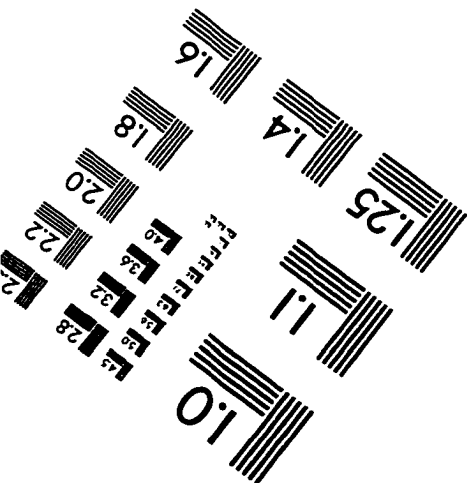
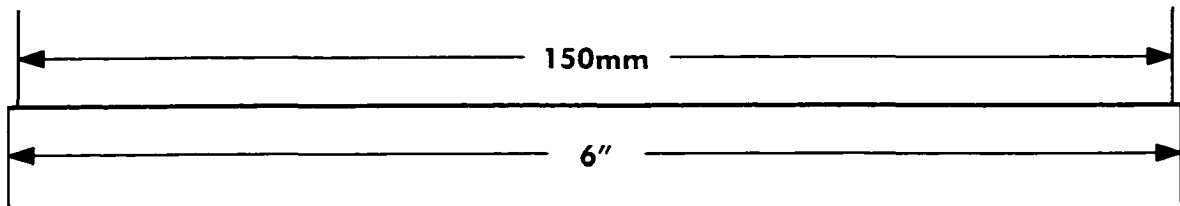
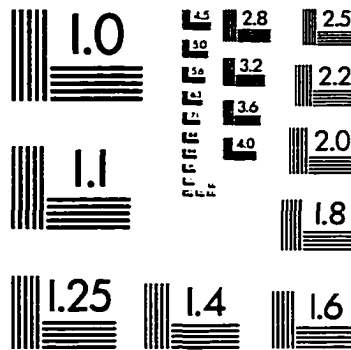
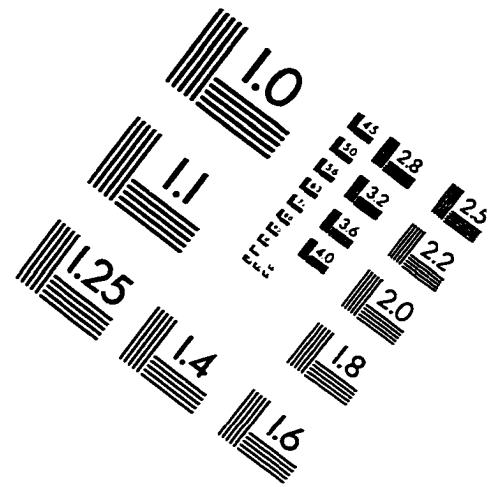
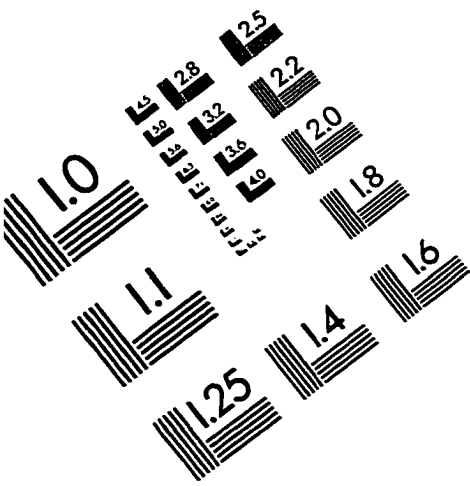
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IMAGE EVALUATION TEST TARGET (QA-3)



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