

THE UNIVERSITY OF CALGARY

HIV-Related Knowledge, Attitudes,
Beliefs, Behaviours and Learning Needs of
First Year Nursing Students in Calgary

by

James C. Zimmer

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF SCIENCE

DEPARTMENT OF COMMUNITY HEALTH SCIENCES

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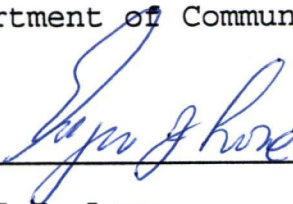


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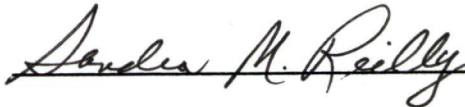
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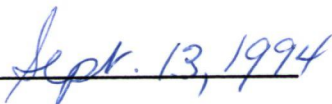
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ABSTRACT

This study examined HIV-related knowledge, attitudes, beliefs and behaviours of first year nursing students in Calgary. The investigator viewed students from two perspectives: as a group of predominantly young women who may be sexually active and at risk of sexually-acquired HIV infection; and as future professionals who may be asked to care for HIV positive persons. Self-administered questionnaires were completed by 283 students, 88% of whom were female. Respondents were highly knowledgeable about HIV transmission and its prevention. Despite this, 15 to 25% of female respondents reported engaging in behaviour increasing risk of sexually-acquired HIV infection. Practice-related attitudes around HIV and AIDS were generally positive, but not universally so. Study findings suggest that nursing students might benefit from targeted AIDS education promoting safer sexual behaviour, and that nurse educators should attend to affective learning needs in nursing program curriculum concerning HIV infection and AIDS.

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DEDICATION

This work is affectionately dedicated to my family: Becky, Josh, Jenny, Kayla, Mom and Dad. Without your encouragement, understanding and patience, completion of this project would not have been possible.

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CHAPTER 1

Literature Review

Introduction

Nursing students are affected by acquired immune deficiency syndrome (AIDS) and human immunodeficiency virus (HIV) infection in two important ways. First, as a group of predominantly young women who may be sexually active, nursing students represent a population at risk for sexually-acquired HIV infection. Recent epidemiologic studies indicate that heterosexual women constitute the fastest growing population of persons with AIDS in the United States, and in Canada, reports of new AIDS cases in women have increased steadily since 1985 (Health & Welfare Canada, 1993b; Wofsky, 1992). According to former United States Surgeon General Antonio Novello (1993), women and adolescents will constitute the next surge of the AIDS epidemic.

Second, nursing students represent a group of future healthcare professionals who will be expected to provide competent and compassionate care to individuals who are HIV positive or have AIDS (Canadian Nurses Association, 1987). In Canada, the number of reported AIDS cases has grown

steadily since the early 1980's (Health & Welfare Canada, 1993b). Through October 1993, over 8600 AIDS cases had been reported to Laboratory Centre for Disease Control, Ottawa. Adjusting for underreporting and reporting delay, it is believed that 12,000 Canadians may have developed AIDS by the end of 1992, and that annual AIDS incidence in Canada continues to rise. In Alberta, 619 AIDS cases had been reported through May, 1994 (Provincial AIDS Program, 1994). In Southern Alberta, over 900 HIV positive individuals are presently under the care of either Foothills Hospital Southern Alberta Clinic or Bow Valley Centre's Infectious Diseases Clinic (Adams, 1994). Given the incidence and prevalence figures noted above, nurses employed in the Calgary area are very likely to encounter HIV positive individuals in their practice, and will be expected to provide them with competent and compassionate care.

The current study explored HIV-related knowledge, attitudes, beliefs and behaviours of first year nursing students in the city of Calgary, and viewed nursing students from two perspectives:

1. as women in society who may be sexually active and at risk of sexually-acquired HIV infection in their personal lives; and

2. as future caregivers of persons with HIV infection and AIDS.

The literature review which follows is comprised of five sections: incidence and prevalence of HIV infection and AIDS in adult women; routes of HIV acquisition in adult women; HIV-related knowledge, attitudes and behaviours in adolescents and young adults; practice-related knowledge, attitudes and behaviours of nursing students and registered nurses; and conceptual framework for the study.

Incidence and Prevalence of HIV and AIDS in Adult Women

AIDS

Data collected by AIDS surveillance bodies suggest that the incidence of AIDS in adult¹ women has been rising steadily in both Canada and the United States (US) since the early 1980's. In the US, female AIDS cases reported to Centres for Disease Control (CDC) have increased 10 to 15% each year since 1990 (CDC, 1992a, 1993a). In 1992, women accounted for 14% of all incident AIDS cases reported in the United States (CDC, 1993a). Through June 1993, almost 37,000 women with AIDS had been reported to the CDC (Clark

¹For data from the United States, the term "adult" refers to 13 years of age and older. For Canadian data, adult refers to individuals aged 15 years and older.

et al., 1993). With respect to age, 85% of US women with AIDS are between 15 and 44 years old (Chu, Berkelman & Curran, 1992). Strikingly, 25% of US women diagnosed with AIDS are between the ages of 20 and 29. Given that 10 or more years may pass between acquisition of HIV infection and diagnosis of AIDS, many of these women were likely infected as teens (Libman, 1993). The rising incidence of AIDS among US women of childbearing age has been accompanied by increases in perinatally-acquired AIDS. Recent figures from CDC indicate that cases of perinatally-acquired AIDS increased 13.4% between 1991 and 1992 (CDC, 1993a).

In Canada, 447 cases of AIDS were reported in women through October 1993 (Health and Welfare Canada, 1993b). Thirty cases were reported in Alberta women through May, 1994 (Provincial AIDS Program, 1994). The age distribution of Canadian women with AIDS is very similar to that of US women, with 82% of cases occurring in women aged 15 to 49 years. Nearly one-third (32%) of cases in Canadian women are diagnosed in 20 to 29 year olds, and many of these women were likely infected as teens.

HIV Seroprevalence in Women

Given that 10 years or more may pass before an individual infected with HIV meets the criteria for diagnosis of AIDS, AIDS surveillance data do not accurately

convey the current prevalence of HIV infection in the population. HIV seroprevalence monitoring has emerged in recent years as a method which enables epidemiologists to estimate the prevalence of HIV infection in populations of interest, including women.

Mandatory, voluntary and anonymous approaches to HIV seroprevalence monitoring have been employed. Mandatory HIV testing is required of US military applicants and applicants to Job Corps, a program for disadvantaged and out-of-school youth. Between 1988 and 1992, prevalence of HIV infection in male Job Corps applicants decreased from 3.6/1000 to 2.2/1000, while in the same period, prevalence of HIV infection among female applicants doubled from 2.1/1000 to 4.2/1000 (Conway et al., 1993). At present then, in this population, a male:female seroprevalence ratio of 1:2 exists, a ratio in marked contrast to the male:female ratio of AIDS cases in the US, currently around 6:1.

Voluntary seroprevalence monitoring has been employed in a variety of clinic settings and in prisons. Selected Canadian and US studies are summarized in Table 1.1.

Table 1.1 Voluntary Seroprevalence Studies, US and Canada			
Population	Location	Seroprevalence	Reference
US women attending publicly funded HIV, STD or drug clinics, or incarcerated	United States	Clinics: HIV 3% STD 2.2% Drug 3.7% Prison 6.3%	CDC, 1991
Incarcerated Canadian women	Quebec, Canada	7.7%	Hankins & Gendron, 1989
Female injection drug users	Baltimore, Maryland	25.9%	Nelson, Vlahov & Cohn, 1991

While the seroprevalence figures cited in table 1.1 are striking, the populations studied are clearly at higher risk for HIV infection than women in the general population. Anonymous seroprevalence monitoring in newborns and pregnant women has been advocated as a method which more accurately reflects prevalence of HIV infection among women in the general population, specifically women of childbearing age. In the US, a population-based, anonymous seroprevalence survey of women giving birth was initiated in 1988 (Gwinn et al., 1991). In each year from 1988 to 1990, an estimated 6000 HIV positive women gave birth, yielding a nationwide rate of 1.5 HIV positive women per 1000 births. Assuming that HIV seroprevalence is similar in other US women of childbearing age, Gwinn and associates estimated that as many as 80,000 reproductive age US women were infected with HIV, five times the total number of female AIDS cases

reported at the time. Further, in that roughly 30% of infants born to HIV positive women are infected perinatally, it was estimated that 1800 infected infants had been born each year since 1988 (Gwinn et al., 1991).

In Canada, a population-based study of women giving birth has not been undertaken; however, anonymous seroprevalence testing in pregnant women is reportedly ongoing in several provinces, and is about to begin in Alberta (personal communication, Dr. M. Ricketts, July, 1993). Published Canadian data is limited. Hankins et al. (1990) reported an overall seropositivity rate of 0.61/1000 for women giving birth in Quebec, with much regional variation. Extrapolating from this rate, Hankins et al. estimated that close to 1000 women in Quebec were HIV positive, four times the number of reported AIDS cases in Quebec at that time. Schechter et al. (1990), in an anonymous seroprevalence study of women receiving prenatal care in British Columbia and the Yukon, observed an overall seroprevalence rate of 0.27/1000 women giving birth, again with much regional variation. Based on this rate, it was estimated that roughly 400 women of childbearing age in British Columbia and the Yukon were HIV positive. This figure compares with the 31 AIDS cases reported in women from this region at the time of the study. Similar studies in Manitoba, Ontario and Newfoundland found HIV

seroprevalence rates of 0.072/1000, 0.19/1000 and 1.2/1000 respectively (Health and Welfare Canada, 1993b).

Summary

Annual Canadian and American data indicate that AIDS is diagnosed in increasing numbers of women, particularly women of childbearing age. Reported AIDS cases underestimate the prevalence of HIV infection among women in the United States and Canada. Seroprevalence surveys suggest that for each reported case of AIDS in women, there are several times more women who are HIV positive.

Routes of HIV Acquisition in Women

AIDS surveillance bodies in both Canada and the United States record likely route of HIV acquisition for each AIDS case reported. While this provides the largest and most thorough picture of trends in HIV transmission available, it must be remembered that this data pertains to infections that were acquired many years earlier. Table 1.2 compares routes of HIV acquisition for US women diagnosed with AIDS in 1983 and 1990 (Guinan & Hardy, 1987; Ward & Drotman, 1992).

Table 1.2 HIV Infection Routes, US Women, 1983 and 1990				
Route	1983		1990	
	No.	(%)	No.	(%)
Intravenous drug use	96	(59)	2329	(48)
Heterosexual contact	36	(22)	1657	(34)
Blood; blood products	11	(7)	365	(7)
Other; undetermined	19	(12)	528	(11)
Total	162		4879	

Table 1.2 shows that while intravenous drug use was the leading route of infection for US women in both 1983 and 1990, the prominence of heterosexual acquisition increased markedly over this time period. This trend has continued in the years since 1990. In 1992, the number of female AIDS cases acquired heterosexually exceeded the number acquired through injection drug use for the first time (CDC, 1993a). The rising prominence of heterosexual transmission in US women is mirrored in US men. In 1992, male AIDS cases acquired through heterosexual contact increased 26% over the previous year, by far the largest increase of any route category (CDC, 1993a).

In Canada, the smaller total number of women with AIDS makes detection of trends in transmission more difficult. Table 1.3 summarizes transmission routes for all female AIDS cases reported in Canada through October, 1993. Table 1.4 summarizes transmission routes for more recently reported

cases, specifically those reported from January, 1991 through April, 1993 (Health and Welfare Canada, 1993a, 1993b).

Table 1.3 Routes of HIV Acquisition, Canadian Women, All Cases Reported Through October, 1993		
Route	No.	(%)
Injection drug use	49	(11)
Blood, blood products	76	(17)
Heterosexual contact	278	(62)
Occupational	1	(<1)
No identified risk	43	(10)
Total	447	(100)

Table 1.4 Routes of HIV Acquisition, Canadian Women, 1991-93		
Route	No.	(%)
Injection drug use	22	(13)
Blood, blood products	17	(10)
Heterosexual contact	107	(65)
No identified risk	40	(12)
Total	186	(100)

As shown in tables 1.3 and 1.4, heterosexual contact has been and remains the predominant mode of HIV acquisition for Canadian women with AIDS. The prominence of blood and blood products is falling, while that of injection drug use may be on the rise.

Summary

Heterosexual contact is the leading route of HIV acquisition for both US and Canadian women with AIDS. Experts in AIDS epidemiology suggest that as AIDS becomes established as a sexually transmitted disease among heterosexuals, it is less and less appropriate to consider AIDS a disease of high-risk groups (Carpenter et al., 1991; Clark et al., 1993; Novello, 1993).

HIV-Related Knowledge, Attitudes, Beliefs and Behaviours of Adolescents and Young Adults

Several recent studies, most from the United States, have addressed HIV-related knowledge, attitudes and behaviours in adolescents and young adults (Boswell, Fox, Hubbard & Coyle, 1992; Catania et al., 1992; CDC, 1992b; Cinelli, Sankaran, McContha & Carson, 1992; Kann et al., 1991; King et al., 1988; Ku, Sonnenstein & Pleck, 1993; Leigh, Temple, & Trocki, 1993; MacDonald et al., 1990; McCaig, Hardy & Winn, 1991; Melnick et al., 1993; Orr & Langefield, 1993; Ramsun, Marion & Mathius, 1993; Valdisserri, Arena, Proctor & Bonati, 1989; Varnhagen, Svenson, Godin & Salmon, 1991). Parameters reported in these studies include knowledge of HIV transmission and prevention; awareness of disease spectrum and treatment options; attitudes toward homosexuals and persons with AIDS; attitudes toward condom use; and prevalence of behaviours

increasing or decreasing risk of HIV infection.

Unfortunately, lack of consistency with respect to items and scales used in these studies limits comparability of findings.

Knowledge, Attitudes and Beliefs

Studies of Canadian and US adolescents and young adults suggest that awareness of established routes of HIV transmission² is high. In fact, several studies have reported that over 90% of respondents are aware of established mechanisms of HIV transmission (Holtzman et al., 1991; Kann et al., 1991; King et al., 1988). While awareness of established routes of HIV transmission is high, numerous misconceptions about HIV transmission persist. Specifically, beliefs that HIV infection can be contracted through casual contact, blood donation, and mosquito bite remain prevalent in many of the populations studied (Boswell et al., 1992; Holtzman et al., 1991; Kann et al., 1991; McCaig et al., 1991).

In addition to having a generally sound understanding of established routes of HIV transmission, awareness of behaviours that reduce risk of HIV transmission is also high

²Established routes of HIV transmission include sexual contact, injection drug use, blood or blood products, and perinatal.

among Canadian and US adolescents and young adults. Boswell et al. (1992) and Kann et al. (1991), in surveys of US high school students, found that more than 95% of respondents knew condom use during sexual intercourse protected against HIV infection. King et al. (1988), in a national survey of Canadian secondary and post-secondary students, found that more than 95% knew risk of HIV infection could be reduced by not sharing needles used to inject drugs. Varnhagen et al. (1991), in a survey of high school students in Northern Alberta, found that close to 90% of respondents knew that more careful selection of sexual partners and avoidance of sexual intercourse with injection drug users could reduce risk of HIV infection.

While basic knowledge of behaviours protective against HIV infection appears sound, numerous misconceptions persist. King et al. (1988) reported that more than 40% of Canadian secondary and post-secondary students believed vaseline to be a good lubricant to use with a condom. Further, 40% of participants in the study of King et al. (1988) were unclear as to the protective efficacy of spermicidal agents against HIV infection. Kann et al. (1991) found that 12% of US high school students surveyed believed that birth control pills offered protection against HIV infection.

As noted above, there is general awareness that condoms reduce risk of HIV infection during sexual intercourse. Despite this, a large proportion of sexually active youth fail to use condoms during sexual intercourse (CDC, 1992b). Negative attitudes toward condoms may be partially responsible for their inconsistent use by adolescents and young adults (Myers & Clement, 1994). Varnhagen et al. (1991) reported that over 60% of respondents felt uncomfortable about purchasing condoms, while 29% felt that condoms reduced sexual spontaneity. King et al. (1988) observed that close to 50% of sexually active Canadian youth felt condoms interfere with sexual pleasure. Valdisserri et al. (1989) reported that 80% of sexually active US women surveyed felt most men disliked using condoms. Several studies have found that positive attitudes toward condoms predicted condom use during sexual intercourse (Kegles, Adler & Irwin, 1989; Orr & Langefield, 1993; Orr et al., 1992; Valdisserri et al., 1989). These studies suggest that modification of condom-related attitudes and beliefs may be an important component of efforts to increase condom use among sexually active youth.

Other HIV and AIDS-related attitudes have been studied in US and Canadian youth. Kann et al. (1991) reported that 51% of US high school students surveyed felt HIV positive persons should be excluded from school, and that only 56%

would be willing to be in the same class as someone with HIV infection. Similarly, King et al. (1988) reported conservative attitudes toward persons with HIV infection among Canadian secondary and post-secondary students . In this study, more than 40% of participants felt that persons with HIV infection should not be allowed to attend regular school classes, more than 50% felt that persons with HIV infection should not be allowed to be teachers, and close to 90% felt that HIV positive persons should not be allowed to work in hospitals. The study of King et al. (1988) also revealed that a large proportion of Canadian youth held negative attitudes toward homosexuals. Only 31% of respondents felt that homosexuality was acceptable, while only 51% felt that homosexuals should be allowed to be teachers. Conversely, Ramsun et al. (1993) reported that homophobia and fear of AIDS was low among university students in British Columbia, and had decreased between 1988 and 1992. In this study, AIDS-related knowledge scores were negatively correlated with both homophobia and fear of AIDS, suggesting that increasing AIDS-related knowledge may be one approach to overcoming negative attitudes and fear.

The influence of sociodemographic variables on HIV-related knowledge, attitudes and beliefs is unclear. King et al. (1988) and Boswell et al. (1992) reported no differences between males and females in HIV-related

knowledge, while McCaig et al. (1991) observed lower knowledge scores among males, Blacks and Hispanics, those over 50 years of age, and those with less than 12 years of education. As for HIV-related attitudes, King et al. (1988) reported that males had more negative attitudes toward homosexuals than females, while Ramsun et al. (1993) observed no differences between genders on homophobia or fear of AIDS scores. Varnhagen et al. (1991) reported that several condom-related attitudes differed between males and females.

Behaviours

Several recent studies indicate that despite generally sound knowledge of HIV transmission routes and methods of prevention, sexual behaviours placing adolescents and young adults at risk of infection remain prevalent.³ Among US high school students, Kann et al. (1991) reported that 44% of grade 9 students, 53% of grade 10 students, 65% of grade 11 students and 71% of grade 12 students had had sexual intercourse. Of students that were sexually active, 40% reported four or more lifetime partners. A recent survey of more than 12,000 US high school students found that only 46%

³Such behaviours would include sexual intercourse with multiple partners, sexual intercourse with high-risk partners such as injection drug users, and failing to use condoms during sexual intercourse with a partner whose HIV serostatus is unknown.

of sexually active respondents reported using condoms at last sexual intercourse (CDC, 1992b). Condom use was significantly more likely for males than females in this study (54% versus 38%). Among Canadian high school students, King et al. (1988) reported that 49% of male and 46% of female grade 11 students had had sexual intercourse. MacDonald-Dichman (1991), in a study of high school students in south-central Alberta, reported that the proportion of students having had sexual intercourse was 24%, 49%, 53% and 67% for grades 9, 10, 11 and 12 respectively. Of sexually active students in this study, 33% reported having had more than one sexual partner in the preceding six months, while only 41% reported that they always used condoms during sexual intercourse. Males were more likely than females to report condom use.

Sexual behaviours which increase risk of HIV infection are also prevalent among young adults in the United States and Canada. Leigh et al. (1993) found that 51% of never-married US adults reported more than one sexual partner in the past year and inconsistent or no condom use. Catania et al. (1992) found in a survey of more than 10,000 US adults that 31% of respondents reported one or more risk factors for HIV infection⁴, and that rates of condom

⁴In this study, risk factors for HIV infection included the following: multiple sexual partners in the preceding 5

utilization were very low. Among participants reporting multiple sexual partners, only 17% reported using condoms all the time. Ku et al. (1993), in a longitudinal study of almost 1900 never-married men surveyed in 1988 and 1991, found that subjects regressed in terms of the vigilance with which they engaged in behaviours protective against HIV infection. Compared with 1988, the reported number of sexual partners and sexual acts in the preceding 12 months was higher in 1991, while the percentage of respondents reporting condom use at last sexual intercourse was lower.

Among Canadian college and university students, King et al. (1988) found that 77% of males and 73% of females had had sexual intercourse, and that 65% of males and 47% of females had had three or more lifetime sexual partners. Among sexually active students, 35% of males and 20% of females reported condom use all or most of the time. Among sexually active women, condom use was inversely related to number of sexual partners and use of oral contraceptives. Ramsun et al. (1993) noted encouraging changes in sexual practices of university students in British Columbia. While the percentage of students who reported having had sexual intercourse changed little from 1988 to 1992 (61% and 63% respectively), the proportion of sexually active students

years; receipt of blood transfusion between 1978 and 1985; being treated for hemophilia; and injection drug use in the preceding 5 years.

reporting multiple partners in the preceding 6 months declined from 30% in 1988 to 24% in 1992. Similarly, the percentage of sexually active students reporting condom use most of the time or always increased from 23% in 1988 to 40% in 1992. Use of condoms in this study was not related to AIDS knowledge, AIDS fear, number of sexual partners, or any demographic variable.

No published studies dealing with prevalence of HIV-related risk behaviours among nurses or nursing students were located in the literature. Based on existing studies of other health-related behaviours among nurses and nursing students, there is little reason to believe that nurses would have less behavioural risk for HIV infection in their non-professional lives than the general population (Hoskin, 1988; Mundt, 1992; O'Connor & Harrison, 1992; Schwartz-Barcott & Schwartz, 1990).

Summary

Studies addressing HIV-related knowledge, attitudes, beliefs and behaviours of adolescents and young adults in Canada and the United States suggest that:

1. knowledge of established routes of HIV transmission is high, but misconceptions persist as to the risk of HIV transmission associated with casual contact, insect vectors, and blood donation;

2. there is general awareness that condom use during sexual intercourse is protective against HIV infection. Individuals are less well-informed about more technical aspects of condom use, and misconceptions persist as to the effectiveness of spermicides and birth control pills in preventing HIV infection;
3. negative attitudes toward homosexuals and persons with HIV are prevalent;
4. high risk sexual behaviour remains prevalent, specifically the combination of multiple sexual partners and inconsistent use of condoms.
5. negative attitudes toward condoms may explain, in part, persistently low rates of condom utilization among sexually active youth;
6. HIV related attitudes and behaviours are not static, and appear to change over time.

Practice-Related Knowledge, Attitudes and Behaviours
of Nurses and Nursing Students

Studies concerning the practice-related knowledge, attitudes and behaviours of registered nurses and nursing students have been appearing in the nursing literature since the mid-to-late 1980's (Armstrong-Esther & Hewitt, 1989; Brown, Calder & Rae, 1990; Byrne & Murphy, 1993; Eliason, 1993; Goldenberg & Laschinger, 1991; Kerr & Horrocks, 1990;

Lester & Beard, 1988; Oermann & Gignac, 1990; Schillo & Reischl, 1993). Constructs assessed in these studies include knowledge of HIV transmission, disease spectrum and prevention; attitudes toward homosexuals and persons with AIDS; willingness of nurses and nursing students to care for HIV-infected persons; and awareness and use of universal precautions to reduce risk of HIV infection in the practice setting.

Several studies suggest that awareness of established mechanisms of HIV transmission is high among nurses and nursing students, but that significant HIV-related knowledge gaps persist. Armstrong-Esther & Hewitt (1989), in a study of Canadian university nursing students, found that more than 95% were aware that HIV could be transmitted through sexual activity, needle sharing and blood products. However, only 52% were aware that HIV could be transmitted in breast milk, and only 54% knew that HIV is not transmitted by insect vectors. Oermann & Gignac (1991), in a study of 166 Canadian university students and 19 nursing faculty, observed significant HIV-related knowledge deficits in the areas of disease typology and technical practice. To illustrate, only 41% of the sample were aware that AIDS was a syndrome of unusual infections and neoplasms, while 66% reported incorrectly that it was necessary to isolate AIDS patients from other patients. Byrne & Murphy (1993), in a

study of 39 first year and 105 fourth year baccalaureate students, found high levels of incorrect knowledge in areas of HIV transmission, individuals at risk, and early symptoms of HIV infection. Schillo & Reischl (1993), in a survey of over 1500 registered nurses in Michigan, found evidence for lingering misconceptions about HIV transmission. For example, 42% of respondents were uncertain about the role of insect vectors in HIV transmission, 56% believed feeding a patient with HIV infection increased personal infection risk, and 80% believed that HIV infection could be transmitted through coughs and sneezes. In addition, it was reported in this study that nurses exposed to blood and body fluids in their practice were using universal precautions very inconsistently. Inconsistent use of universal precautions among nurses regularly exposed to blood and body fluids has been reported elsewhere in the nursing literature (McNabb & Keller, 1991).

Studies of HIV-related attitudes suggest that significant numbers of nurses and nursing students harbour conservative attitudes toward persons with AIDS, negative attitudes toward homosexuals, and significant fear of contracting AIDS in the clinical setting. Armstrong-Esther & Hewitt (1989), in their survey of Canadian university nursing students, found that 59% of respondents felt persons with AIDS should be prohibited from employment in certain

areas. Further, 46% of respondents felt that persons with AIDS should carry AIDS identification cards, and 15% felt that persons with AIDS should be quarantined. Byrne & Murphy (1993) reported high levels of homophobia and AIDS fear among both first year and fourth year nursing students at the University of Wisconsin. In this study, homophobia and fear of AIDS were lower among students who knew someone with AIDS personally. Eliason (1993) reported that only 30% of US nursing students surveyed believed they could work in an AIDS hospice. Fear of contracting AIDS from patients, discomfort with death and dying, and disapproval of homosexuality were the most common reasons given by students who felt that they would be unable to work in such a setting. Kerr & Horrocks (1990), in a survey of 179 registered nurses in Nova Scotia, found that 34% of respondents felt AIDS had intensified their negative attitudes toward homosexuals. Further, 39% of participants in this survey believed healthcare workers were at high risk of contracting HIV, and 70% felt that AIDS had made nursing a high-risk occupation.

The view that nurses should have the right to refuse to care for persons with AIDS is commonly reported in the nursing literature. Tesch, Simpson & Kirby (1990) reported that 58% of 111 second year nursing students at the University of Wisconsin felt nurses had the right to refuse

to care for patients with AIDS, and 19% indicated that they personally would refuse to do so. Byrne & Murphy (1993) reported that over 70% of baccalaureate students surveyed felt registered nurses should have the right to refuse to care for patients with AIDS, while close to 80% felt student nurses should have the same right. Kerr & Horrocks (1990) found that 27% of practising nurses in Nova Scotia felt they should have the right to refuse to care for patients with AIDS, while an additional 60% were unsure. Lester & Beard (1988), in a survey of 177 US baccalaureate nursing students, found that only 33% would be willing to care for AIDS patients.

It is assumed, though not empirically demonstrated, that the knowledge gaps and attitudes discussed above reduce the likelihood that nurses and nursing students will provide competent and compassionate care for persons infected with HIV (Goldenberg & Laschinger, 1991; Kerr & Horrocks, 1990; Tesch et al., 1990). It is further assumed that educational interventions can beneficially alter HIV-related knowledge, attitudes and beliefs. There is some evidence in support of this second assumption. Brown et al. (1990), using a pretest/posttest design in a study of 319 baccalaureate nursing students attending a one-day AIDS workshop, observed significant improvement in knowledge and attitude scores two and one-half weeks after the workshop. Armstrong-Esther and

Hewitt (1990), in a study of 60 Canadian baccalaureate nursing students, observed that AIDS-related knowledge improved, AIDS-related attitudes became more liberal, and willingness to care for AIDS patients increased following intense classroom instruction on AIDS and AIDS patient care.

Summary

Studies of registered nurses and nursing students suggest that practice-related knowledge, attitudes and behaviours are less than optimal if delivery of competent and compassionate nursing care is the goal. Given that both registered nurses and nursing students are likely to encounter persons with HIV infection in virtually any setting in which they practice, the knowledge gaps and attitudes discussed earlier are of concern. Further, as nursing's role in the healthcare system evolves, nurses may be increasingly involved in disease prevention and health promotion activities, including activities around HIV and AIDS. Nurses employed in such roles will need to be equipped with the appropriate cognitive, attitudinal and behavioural qualities in order to be effective.

CHAPTER 2

Purpose, Research Questions, Rationale,
Objectives and Conceptual FrameworkPurpose

The purpose of the current study was to explore HIV-related knowledge, attitudes, beliefs, behaviours and learning needs of first year nursing students in Calgary. This study viewed nursing students from two distinct perspectives:

1. nursing students as women in society who may be sexually active and at risk of acquiring HIV infection in their personal lives; and
2. nursing students as future caregivers of persons with AIDS.

Study results will be shared with nursing faculty of both the Calgary Conjoint Nursing Program and the Mount Royal College Nursing Program. Faculty in these programs have expressed interest in using the results to develop educational interventions that:

1. reduce students' risk of acquiring HIV infection in their personal lives; and
2. modify HIV-related knowledge, attitudes and beliefs, and facilitate delivery of competent and compassionate nursing care to HIV positive persons.

Research Questions

The study addressed the following research questions:

1. What are the HIV-related knowledge, attitudes, beliefs and behaviours of female first year nursing students which may influence risk of sexually-acquired HIV infection?
2. What are the HIV-related attitudes and beliefs of first year nursing students which may influence their ability to provide competent and compassionate care for HIV positive individuals as students or as graduates?

Rationale

Review of the literature highlighted several reasons for conducting this study. First, there is evidence that the incidence of HIV infection and AIDS among women is rising, and that heterosexual contact is increasingly important as a route of HIV transmission. As a group of predominantly young women who may be sexually active,

student nurses represent a population at risk. Study of the cognitive, attitudinal and behavioural factors predisposing to HIV infection in this population may yield clues as to interventions which would reduce risk.

Second, there is recent evidence from the United States that high risk sexual behaviour remains prevalent, and that some segments of the population are lessening the vigilance with which they practise HIV preventive behaviour. Considerable time has passed since the last major study of HIV-related knowledge, attitudes and behaviours of adolescents and young adults in Canada. Further, published studies to date have not addressed HIV-related knowledge, attitudes, beliefs and behaviours influencing risk of HIV infection for nursing students in their personal lives. While results from such a study would be interesting in and of themselves, female nursing students may be sociodemographically similar to female post-secondary students in other disciplines. As such, cautious generalization of selected study findings to other female post-secondary students may be appropriate.

Third, there is evidence that practice-related knowledge, attitudes and behaviours of nursing students and registered nurses are suboptimal. No recent Canadian studies addressing these issues have been published. Given

that nurse educators in Calgary are currently in the process of curriculum development for the recently launched Calgary Conjoint Nursing Program, exploration of the HIV-related knowledge, attitudes and behaviours of nursing students may be especially timely. Study of first year nursing students in particular may result in improved understanding of the baseline knowledge, attitudes, beliefs and behaviours these students bring to their respective programs.

Study Objectives

Specific study objectives arising out of the study purpose and literature review are:

1. To assess HIV-related knowledge of first year nursing students in the areas of:
 - HIV transmission mechanisms
 - prevention of HIV transmission
 - HIV testing
2. To explore HIV-related attitudes and beliefs of first year nursing students, including:
 - attitudes toward persons with AIDS
 - attitudes toward homosexuals
 - fear of AIDS
 - condom-related attitudes and beliefs
 - attitudes toward prevention of HIV

-practice-related attitudes and beliefs

3. To determine the prevalence of behaviours among first nursing students that increase or decrease risk of acquiring HIV infection.
4. To identify HIV-related learning needs of first year nursing students based on assessment of knowledge, attitudes, beliefs and behaviours.

Conceptual Framework

Exploration of the HIV-related knowledge, attitudes and behaviours of student nurses was guided by the PRECEDE portion of Green & Kreuter's PRECEDE/PROCEED model of health promotion, illustrated in Appendix A (Green & Kreuter, 1991). The PRECEDE portion of the PRECEDE/PROCEED model takes into account multiple factors that shape health status, and assists program planners to identify targets for intervention. The current study explored only select aspects of the PRECEDE model, specifically predisposing factors, reinforcing factors, and enabling factors associated with behaviour related to HIV and AIDS prevention. For purposes of this study, the PRECEDE model was adapted to facilitate understanding of both personal health behaviours related to HIV, and professional

behaviours related to nursing individuals infected with HIV.

This adaptation is shown in Appendix B.

CHAPTER 3

Methods

Design

The study employed a cross-sectional survey design using a self-administered questionnaire.

Study Population

All first year nursing students in the city of Calgary were invited to participate in the study. The sample included first year nursing students in the newly created Calgary Conjoint Nursing Program (n=278) and first year nursing students in the Mount Royal College Nursing Program (n=74). Mount Royal College admitted its final class of first year nursing students in the fall of 1993. Beginning in the fall of 1994, all students entering nursing in Calgary will be enrolled in the Calgary Conjoint Nursing Program (CCNP), a four-year baccalaureate degree program which offers students an option of exiting after three years with a nursing diploma. First year nursing students were selected because the first year curriculum had no formal program content pertaining to HIV and AIDS. Assessment of first year nursing students was expected to yield an

accurate portrayal of the baseline knowledge, attitudes, beliefs and behaviours of this cohort.

Permission to conduct the study was obtained from the administration of Calgary Conjoint Nursing Program and Mount Royal College Nursing Program. Permission from the Calgary Conjoint Nursing Program was conditional upon students being fully informed of the study's purpose, and on students being offered a summary of study results.

The Instrument

A 90 item, self-administered questionnaire was developed for purposes of this study (see Appendix C). . The questionnaire was comprised chiefly of scales and items developed in other studies; however, several original items were included. The questionnaire measured the following: sociodemographics; knowledge of AIDS/HIV; attitudes toward persons with AIDS; attitudes toward homosexuality; fear of AIDS; attitudes and beliefs around condoms; attitudes toward HIV prevention; sexual risk behaviours for HIV infection; practice-related attitudes and beliefs; and perceived HIV-related learning needs. Readability of the questionnaire was assessed using the Grammatik function of Wordperfect 6.0. Flesch Reading Ease Score for the questionnaire was 73, which corresponds roughly to Grade 6 reading level. Gunning's Fog Index Score for the questionnaire was 8,

corresponding to a reading level of Grade 8.

The questionnaire asked for the following demographic data: age, sex, highest level of education, and marital status.

HIV and AIDS-related knowledge were assessed using knowledge items from the Secondary School Student Health Risk Survey (SSSHRS), a survey which is administered yearly to high school students in the United States (Holtzman et al., 1991). The SSSHRS contains 17 items which assess basic knowledge of AIDS/HIV infection. Seven similarly-worded items were added to the SSSHRS, yielding a knowledge scale with 24 items. Content validity of the SSSHRS was established by AIDS experts at Centres for Disease Control, Atlanta. A Cronbach alpha coefficient of 0.62 has been reported for the knowledge subscale of the SSSHRS (Boswell et al., 1992).

Attitudes toward persons with AIDS, attitudes toward homosexuals, and fear of AIDS were measured by scales adapted from instruments summarized in table 3.1.

Table 3.1 AIDS Attitude Scales			
Name/ No. Items	Validity	Reliability	Reference
Attitudes Toward Per- sons With AIDS (10 items)	Construct valid- ity established with factor anal- ysis. Content validity by expert panel.	Cronbach alpha 0.82 with university students.	King et al. (1988)
Attitude Toward Homosexuals (4 items)	As above.	Cronbach alpha 0.79 with university students.	King et al. (1988)
Fear of AIDS Scale (8 items)	As above.	Cronbach alpha 0.80 with university students.	Bouten et al. (1987)

Items in the scales described in table 3.1 were scored using a 5-point Likert scale with response options ranging from strongly agree to strongly disagree.

Attitudes toward condoms were measured using a 10-item scale derived from two existing instruments: the Condom Embarrassment Scale (Vail-Smith, Durham & Howard, 1992), which has established construct and concurrent validity, a Cronbach alpha of 0.92, and test-retest reliability coefficient of 0.78; and the Condom Attitude Scale (Varnhagen et al., 1991), which has established content validity, and split-half reliability coefficient of 0.78 (personal communication, Dr. C. Varnhagen, January 3, 1994). Items in this scale were scored using a 5-point

Likert scale with response options from strongly agree to strongly disagree.

A scale to measure attitudes toward AIDS prevention was developed using 5 items adapted from existing instruments with established content validity (Armstrong-Esther & Hewitt, 1989; Holtzman et al., 1991; Oermann & Gignac, 1991). Items in this scale were scored using a 5-point Likert scale with response options ranging from strongly agree to strongly disagree. Face validity of the scale was established by 10 nursing faculty in the Calgary Conjoint Nursing Program. Inter-item reliability coefficient of 0.70 was calculated for this scale as part of the data analysis.

HIV-related risk behaviours of female respondents were assessed using four items from the behavioural subscale of the SSSHRS (Holtzman et al., 1991). As noted earlier, content validity of the SSSHRS has been established by AIDS experts at Centres for Disease Control. Boswell et al. (1992) reported a Cronbach alpha coefficient of 0.75 for the behavioural subscale of the SSSHRS. Scores for this subscale range from 4 (lowest risk) to 18 (highest risk). In that the behavioural risk score was originally developed for use with individuals not in a long-term, monogamous relationship, behavioural risk scores were calculated only for women not in a steady, sexual relationship of greater

than five years duration.

Two additional items (70 and 71) were added to the behavioural section of the instrument to facilitate classification of risk behaviour using the scheme of Campostrini & McQueen (1993). These items asked respondents to indicate whether they were currently involved with a steady sexual partner, and if so, the duration of such a relationship.

Practice-related attitudes and beliefs were assessed using 5 items adapted from instruments with established content validity (Armstrong-Esther & Hewitt, 1989; Goldenberg & Laschinger, 1991; Oermann & Gignac, 1991). Response options for these items included agree, disagree and not sure.

The instrument concluded with items assessing student awareness of where HIV information and testing could be obtained, whether or not the student had received prior HIV/AIDS education in secondary or post-secondary school, and whether the individual knew a person with AIDS/HIV infection personally. The final item on the questionnaire was a checklist which asked students to indicate perceived learning needs around HIV and AIDS. This checklist was adapted from a study assessing effectiveness of HIV-related

risk reduction messages in Alberta (Alberta Health, 1992).

Pretest

The questionnaire was pretested for clarity and completion time with a group of eight second year nursing students at Foothills Hospital School of Nursing. Completion time for the questionnaire ranged from 10 to 17 minutes. Following completion of the questionnaire, students were asked to identify items or instructions that presented difficulty. Three items were revised based on feedback obtained from the pretest.

Data Collection Procedures

Data collection procedures differed slightly by site. For students in the Calgary Conjoint Nursing Program, the questionnaire was distributed and completed at the beginning of a Medical Science class early in March, 1994. Following a brief verbal introduction to the study, students were asked to read the cover letter accompanying the questionnaire (Appendix D). Students were asked to deposit questionnaires, completed or not, in a sealed box at the front of the classroom. Students who were exempt from the Medical Science course, or absent on the day of questionnaire administration, received the questionnaire from tutorial instructors for a separate course, and were asked to return the questionnaires (completed or not) to a

central location. Two weeks after distribution of questionnaires by tutorial instructors, reminder letters were circulated to those students who had received questionnaires in tutorial sessions.

At Mount Royal College (MRC), class time was not available for completion of the questionnaire; however, sufficient time was allotted for the researcher to distribute questionnaires and explain the purpose of the study in class. Students were asked to complete the questionnaire on their own time after reading the cover letter (Appendix E), and to deposit questionnaires in a sealed, centrally-located box. Students who were absent on the first day of questionnaire distribution received the questionnaire and identical instructions the following week at the conclusion of an examination for a required course. Two weeks later, reminder letters were circulated to all first year MRC students. Thus, data collection was completed within a six week period.

Data Handling and Analysis

Completed questionnaires were coded by the researcher and entered on microcomputer using SPSS Data Entry II Version 5.0 (1992). Data cleaning was carried out during data entry using the valid-entry specification function of the data entry package.

Data analysis was done using SPSS for Windows, Release 6.0 (1993). The study sample was described by gender, age, education and marital status. Frequency distributions were run to describe responses to individual questionnaire items. For knowledge items, the proportion of participants responding correctly was calculated for each item. Correctness of participants' responses to knowledge items was determined using recent publications from the Canadian Medical Association and Centres for Disease Control (Canadian Medical Association, 1993; CDC, 1994). Appendix F lists responses considered correct for each knowledge item based on these publications.

Medians, means, standard deviations and 95% confidence intervals were calculated for the following scales: knowledge; attitudes toward persons with AIDS; attitudes toward homosexuals; fear of AIDS; attitudes toward condoms; attitudes toward AIDS prevention; and behavioural risk. Scale means were analyzed for differences by age, gender, education, marital status, site, previous HIV education, and personal acquaintance with an HIV positive person using independent samples t-tests. Cronbach alpha reliability coefficients were calculated for the scales employed in the study. Correlation coefficients were calculated to assess relationships among knowledge, attitude and behavioural risk scores. Female respondents were categorized by sexual risk

behaviour using the classification systems of Campostrini & McQueen (1993) and Leigh et al. (1993).

Ethical Issues

The study was reviewed and approved by the Conjoint Medical Ethics Committee (CMEC), University of Calgary.

A cover letter accompanying each questionnaire followed guidelines of the CMEC and explained the purpose of the study, how the data was to be used, and the student's role and time commitment. The cover letter emphasized that participation in the study was voluntary, and that all responses were confidential and anonymous. The cover letter further emphasized that non-participation in the study would not jeopardize the student's progress in the nursing program. Completion of the questionnaire constituted informed consent. The questionnaires did not include names or other means of identification and only grouped data was reported. The completed questionnaires were seen only by the principle researcher and will be destroyed after the research is completed. Study results will be summarized and reported to students and nursing faculty.

CHAPTER 4

Results

Response Rate

Questionnaires were distributed to 352 first year nursing students. Completed questionnaires were returned by 283 of the students, for an overall response rate of 80.4%. Two hundred and twenty-seven completed questionnaires were obtained from students in the Calgary Conjoint Nursing Program, resulting in a response rate of 81.7% for that site. Fifty-six of 74 Mount Royal College students completed questionnaires, a response rate of 75.7%.

Description of Participants

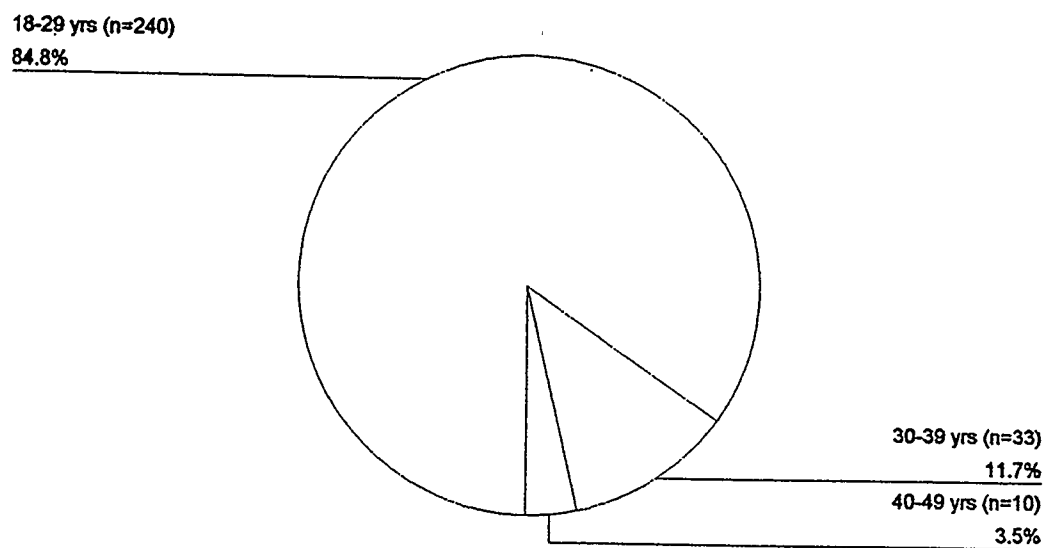
Age

The age distribution of the sample is summarized in figure 4.1. Ages ranged from 18 to 48 years, with a mean of 24.2 years and a median of 22 years. A large majority of the sample was between 18 and 29 years of age. The mean age of Mount Royal College respondents (29.6 years) was significantly greater than those from CCNP (22.8 years, $p < 0.001$).⁵ In subsequent analyses involving age, respondents were categorized as 30 years of age and over, or

⁵SPSS for Windows Release 6.0 does not report exact p-values which are below 0.001.

under 30 years of age.

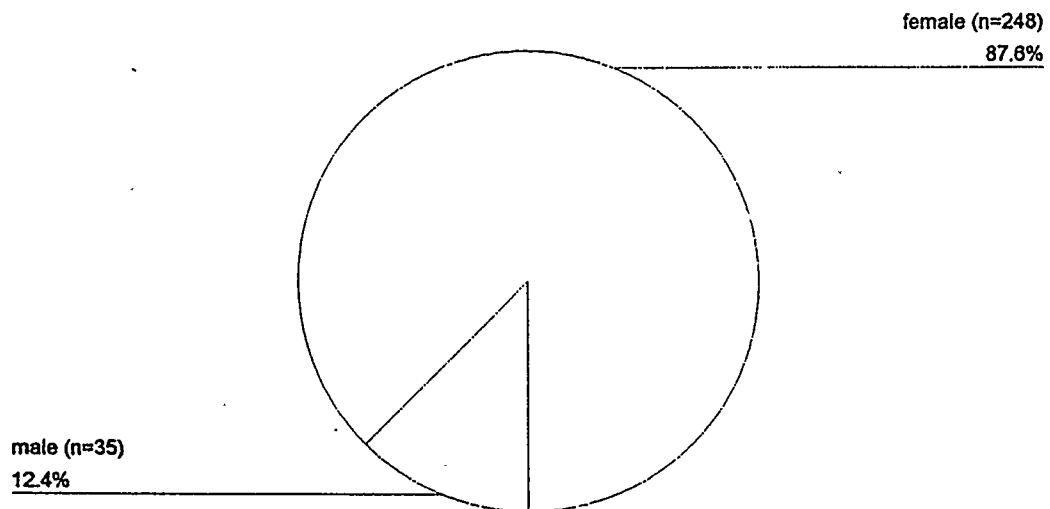
Figure 4.1. Age distribution of study participants.



Gender

The gender distribution of study participants is shown in figure 4.2.

Figure 4.2. Respondents by gender.



The gender distribution of respondents closely reflected that of the first year nursing student population in Calgary (Marion McGuire, personal communication, May, 1994). The mean age of male respondents was significantly greater than that of female respondents (27.54 versus 23.70 years; $t = 3.75$, $p < .001$). Male and female respondents also differed by highest level of education prior to entering the nursing program. Males (45.7%) were more likely than females (16.9%) to enter nursing with a college diploma or university degree. Females were more likely than males to enter nursing from high school (37.1% versus 20%) or with

some postsecondary education (44.8% versus 28.6%).

Marital Status

Table 4.1 summarizes the marital status of study participants. A large majority of the respondents reported being single and never-married.

Table 4.1 Marital Status		
Status	Frequency	Percent
Single/Never-married	220	77.7
Married	43	15.2
Separated	3	1.1
Divorced	4	1.4
Widowed	1	0.4
Other*	12	4.2
Total	283	100.0

*8 of 12 respondents specified that other referred to common-law

Among female respondents, 79% reported being single and never-married, while 17.7% were either married or living in a common-law arrangement. For males, the corresponding percentages were 68.6% and 31.4%. Eight of 248 females (3.2%) were separated, divorced or widowed. In subsequent analyses, respondents who reported other marital status as common-law were added to the married category, and those who reported being separated, divorced or widowed were excluded.

Education

Table 4.2 summarizes respondents' highest level of education prior to entering nursing. Approximately 63% of respondents had attended post-secondary institutions prior to entering nursing, and just over 20% had completed college diplomas or university degrees.

Table 4.2 Highest Level of Education Prior to Nursing		
Level	Frequency	Percent
High school diploma	99	35.0
Some post-secondary	121	42.8
College diploma	27	9.5
University degree	31	11.0
Other	5	1.8
Total	283	100.0

In subsequent analyses involving educational level, respondents indicating college diploma or university degree as highest level of prior education were added to the category some post-secondary, and respondents indicating other were excluded. Respondents with some post-secondary education were significantly older than those whose highest level of prior education was high school (26.0 years vs 20.7 years, $t = -9.44$, $p < .001$).

Previous HIV Education and Acquaintance
with HIV-Positive Persons

Table 4.3 summarizes responses to two survey items (77 and 78) dealing with previous HIV education and personal acquaintance with an HIV positive person.

Table 4.3 Previous HIV Education and Personal Acquaintance with an HIV Positive Person			
	Yes	No	Not Sure
77. Do you know a person with AIDS/HIV infection personally?	14.1	71.4	14.5
78. Have you been taught about AIDS/HIV infection in high school, or in previous college or university programs?	65.4	32.5	2.1

Male respondents (25.7%) were more likely than female (12.5%) to be personally acquainted with an HIV positive person, but this difference was not statistically significant (Fisher's exact test, $p=.073$). Respondents who knew a person with HIV infection were significantly older than those who did not (26.6 years vs. 23.7 years, $t=2.86$, $p=.005$). Respondents under 30 years of age were significantly more likely than respondents 30 years or older to have received prior HIV/AIDS education (Fisher's exact test, $p<.001$).

Scale Reliability

Cronbach alpha inter-item reliability coefficients were calculated for the scales employed in this study. Table 4.4 summarizes these coefficients by scale.

Table 4.4 Reliability Coefficients	
Scale	Alpha Coefficient
Knowledge	0.59
Attitude Toward Persons with AIDS	0.79
Attitude Toward Homosexuals	0.81
Fear of AIDS	0.30
Attitude Toward Condoms	0.70
Attitude Toward HIV Prevention	0.70
Behavioural Risk*	0.81

*calculated only for female respondents not in a relationship with steady sexual partner of greater than 5 years duration

The low reliability coefficient for the Fear of AIDS Scale is in contrast to that reported in the literature (Bouten et al., 1987), and precluded calculation of Fear of AIDS scale scores.

Scale Results

Knowledge

Responses to the 24 knowledge items are summarized for the entire sample and for females only in table 4.5. Levels

of correct knowledge were generally very high. Sixteen of 24 knowledge items were answered correctly by over 90% of respondents. The respondents' levels of correct knowledge were much lower for a small number of items (7, 13, 14, 15, 20, 25, 27).

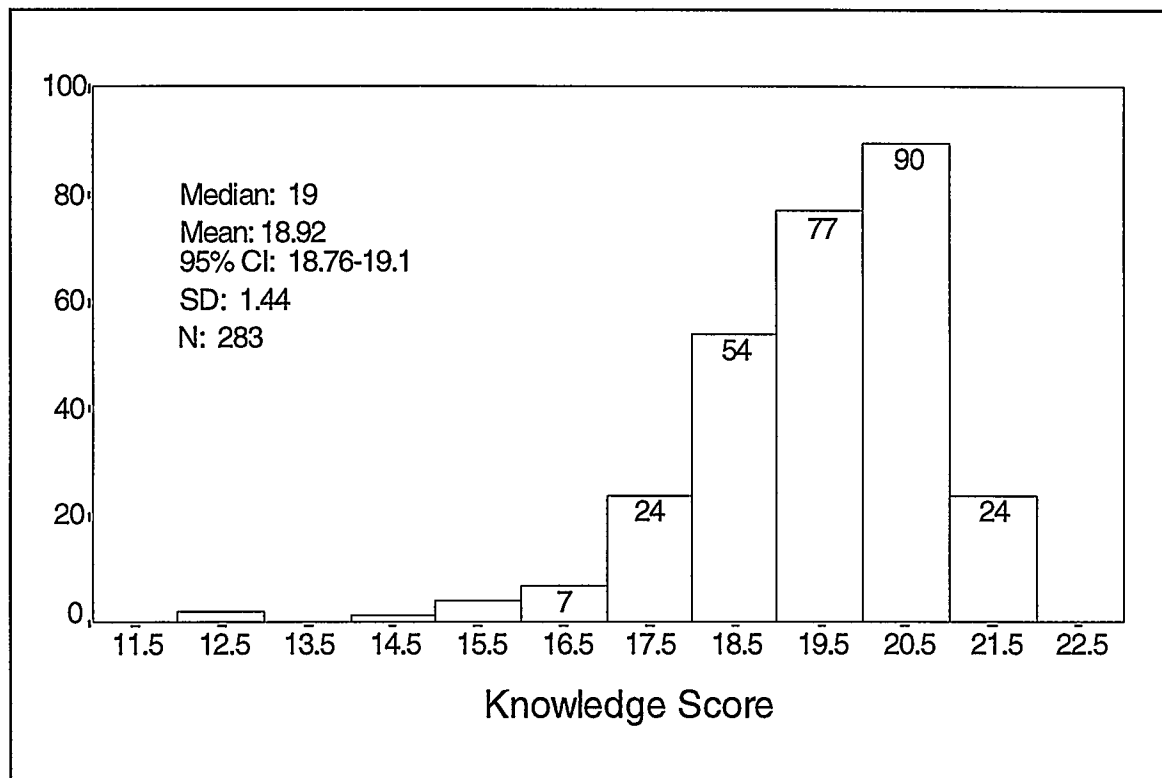
Table 4.5 Knowledge Items, Entire Sample and Females Only			
	Entire Sample (n=283)		Females (n=248)
Questionnaire Item	% Correct	% In- correct /unsure	% Correct
5. HIV from holding hands?	100.0	0	100.0
6. HIV from sharing needles?	99.6	0.4	99.6
7. HIV from insects?	74.6	25.4	73.0
8. HIV from donating blood?	89.0	11.0	89.1
9. HIV from having blood test?	92.6	7.4	92.3
10. HIV from public toilets?	94.7	5.3	94.8
11. HIV from sexual intercourse?	100.0	0	100.0
12. HIV from being in same class?	99.3	0.7	99.2
13. HIV from deep kissing?	50.5	49.5	52.0
14. HIV from oral sex?	72.4	27.6	72.2
15. HIV from blood transfusion in Canada today?	25.8	74.2	24.2

Table 4.5 (continued)	Entire Sample (n=283)		Females (n=248)
Questionnaire Item	% Correct	% In- correct /unsure	% Correct
16. Can tell person is infected by looking at them?	96.1	3.9	96.0
17. HIV transmitted perinatally?	96.8	3.2	96.8
18. HIV transmitted in semen?	95.1	4.9	95.2
19. Reduce risk by being abstinent?	97.2	2.8	96.8
20. HIV transmitted in breastmilk?	31.8	68.2	30.6
21. Reduce risk by using condoms?	97.9	2.1	97.6
22. HIV transmitted in vaginal secretions?	93.6	6.4	94.4
23. Reduce risk by avoiding sex with injection drug users?	94.7	5.3	94.4
24. Reduce risk by using birth control pills?	98.9	1.1	98.8
25. Reduce risk with spermicides?	68.6	31.4	67.3
26. Can person be HIV positive but not have AIDS?	95.8	4.2	95.6
27. Can person be infected but have negative blood test?	78.8	21.2	77.4
28. Is there a cure for AIDS?	97.9	2.1	98.4

A knowledge score was calculated for each respondent based on responses to all knowledge items listed in table 4.5 with the exception of items 13, 14, and 15. A decision to drop items 13 and 14 from the knowledge score calculation

was made on grounds that uncertainty remains in the HIV literature about risks associated with deep kissing and oral sex. Item 15 was dropped from the knowledge score calculation on grounds that more than one answer could be considered correct. While acquiring HIV infection from a blood transfusion in Canada today is highly unlikely, it remains theoretically possible if HIV infected blood is donated in the window period. The maximum possible knowledge score after dropping items 13, 14, and 15 was 21. Figure 4.3 summarizes knowledge scores for the sample.

Figure 4.3. Knowledge scores.



Knowledge scores ranged from 12 to 21. As shown in figure 4.3, high levels of correct knowledge were common, as evidenced by mean and median knowledge scores of 18.9 and 19 respectively. No significant differences in knowledge score by gender, marital status, education level, prior HIV education or personal acquaintance with an HIV positive person were detected using independent samples t-tests. Respondents 30 years and older had slightly higher mean knowledge score (19.3) than those under 30 years of age (18.9; $t=-1.97$; $p=.05$).

Attitude Toward Persons with AIDS

Responses to 10 items comprising the Attitude Toward Persons with AIDS scale are summarized in table 4.6.

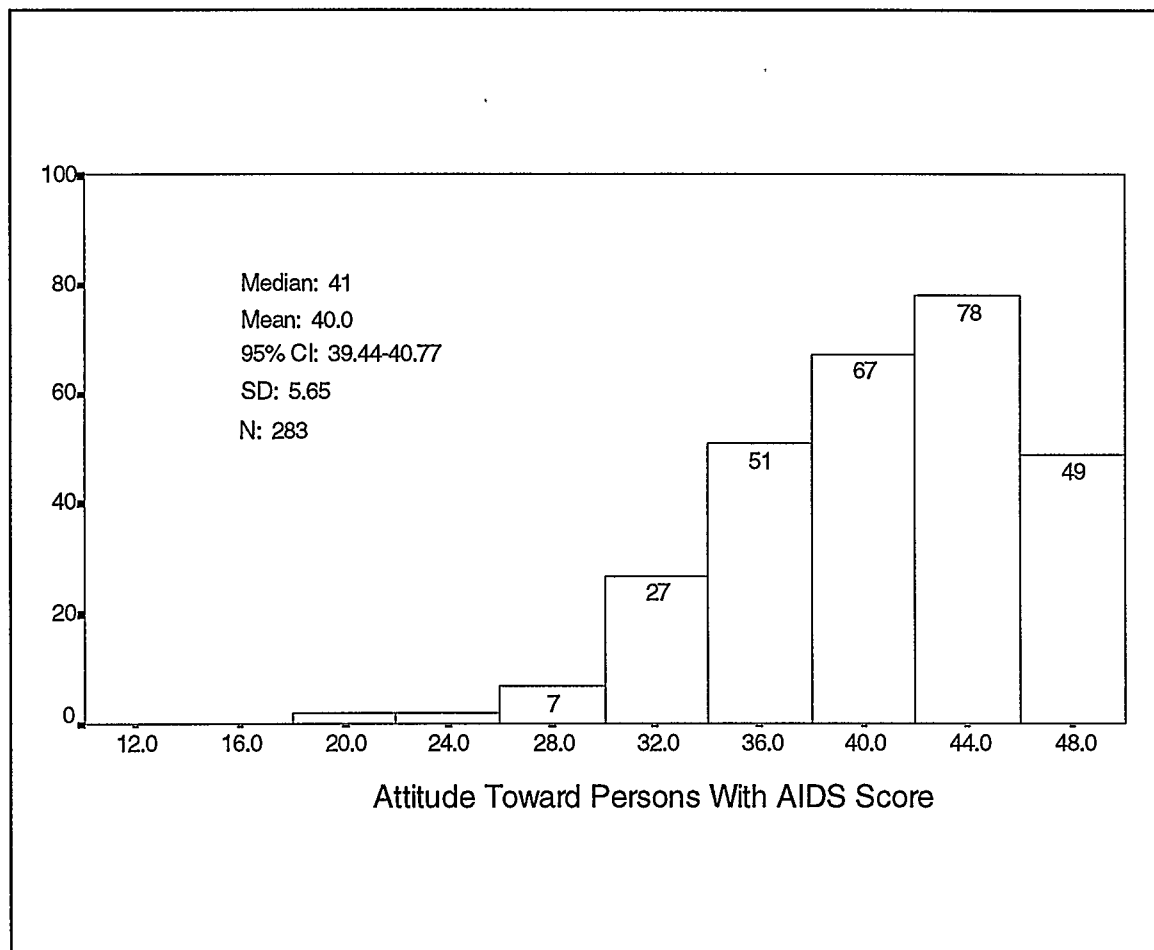
Responses to individual items suggest that a majority of study participants hold positive attitudes toward persons with AIDS. Responses to items 31, 32 and 33 suggest a small number feel that restrictions in the areas of employment and immigration should be applied to persons with AIDS. Approximately 30% of respondents for each of these three items were undecided. Responses to items 34, 35, and 36 suggest that a very small number of respondents hold extremely harsh attitudes toward persons with AIDS; however, no respondent agreed or strongly agreed with all three of these items. Notably, almost 9% of respondents agreed that some people who have AIDS are getting what they deserve, and another 8% were undecided (item 35).

Table 4.6 Attitude Toward Persons with AIDS					
Item	*SA F (%)	*A F (%)	*U F (%)	*D F (%)	*SD F (%)
29. People who have the AIDS virus should be allowed to attend regular school classes.	194 (68.6)	80 (28.3)	7 (2.5)	2 (0.7)	-
30. People who have the AIDS virus should be allowed to be teachers.	185 (65.4)	82 (29)	9 (3.2)	5 (1.8)	2 (0.7)

Table 4.6 Attitude Toward Persons with AIDS (continued)					
Item	*SA F (%)	*A F (%)	*U F (%)	*D F (%)	*SD F (%)
31. People who have the AIDS virus should be allowed to work in restaurants.	65 (23.0)	83 (29.3)	87 (30.7)	35 (12.4)	13 (4.6)
32. People who have the AIDS virus should be allowed to work in hospitals.	41 (14.5)	64 (22.6)	95 (33.6)	53 (18.7)	30 (10.6)
33. People who have the AIDS virus should be allowed to immigrate to Canada.	48 (17.0)	63 (22.3)	78 (27.6)	50 (17.7)	44 (15.5)
34. People who have the AIDS virus should be quarantined.	3 (1.1)	5 (1.8)	13 (4.6)	74 (26.1)	188 (66.4)
35. Some people who have AIDS are getting what they deserve.	6 (2.1)	19 (6.7)	23 (8.1)	58 (20.5)	177 (62.5)
36. I could not be a friend of someone who has AIDS.	4 (1.4)	3 (1.1)	10 (3.5)	58 (20.5)	208 (73.5)
37. Women who have HIV infection and are pregnant should be encouraged to get an abortion.	16 (5.7)	39 (13.8)	119 (42.0)	61 (21.6)	48 (17.0)
38. The government should sponsor hospices for AIDS patients, similar to those for dying cancer patients.	122 (43.1)	118 (41.7)	29 (10.2)	10 (3.5)	4 (1.4)
*SA=strongly agree; A=agree; U=undecided; D=disagree; SD=strongly disagree					

An Attitude Toward Persons with AIDS scale score was calculated based on responses to the 10 items in table 4.6. Possible scores ranged from 10, reflecting negative or conservative attitudes, to 50, reflecting positive or liberal attitudes toward persons with AIDS. Figure 4.4 summarizes distribution of scale scores for the sample.

Figure 4.4. Scale scores: Attitude toward persons with AIDS.



Scale scores ranged from 21 to 50. As shown in figure 4.4, attitude scores tended to the positive or liberal end of the spectrum, as reflected in mean and median scores of 40 and 41 respectively. No differences on mean attitude score by age category (i.e., under 30 vs. 30 and over), gender, marital status, education, site, or previous HIV education were discerned using independent samples t-tests. Respondents who were acquainted with an HIV positive person

had significantly higher scale scores than those who were not ($t=3.98$; $p<.001$).

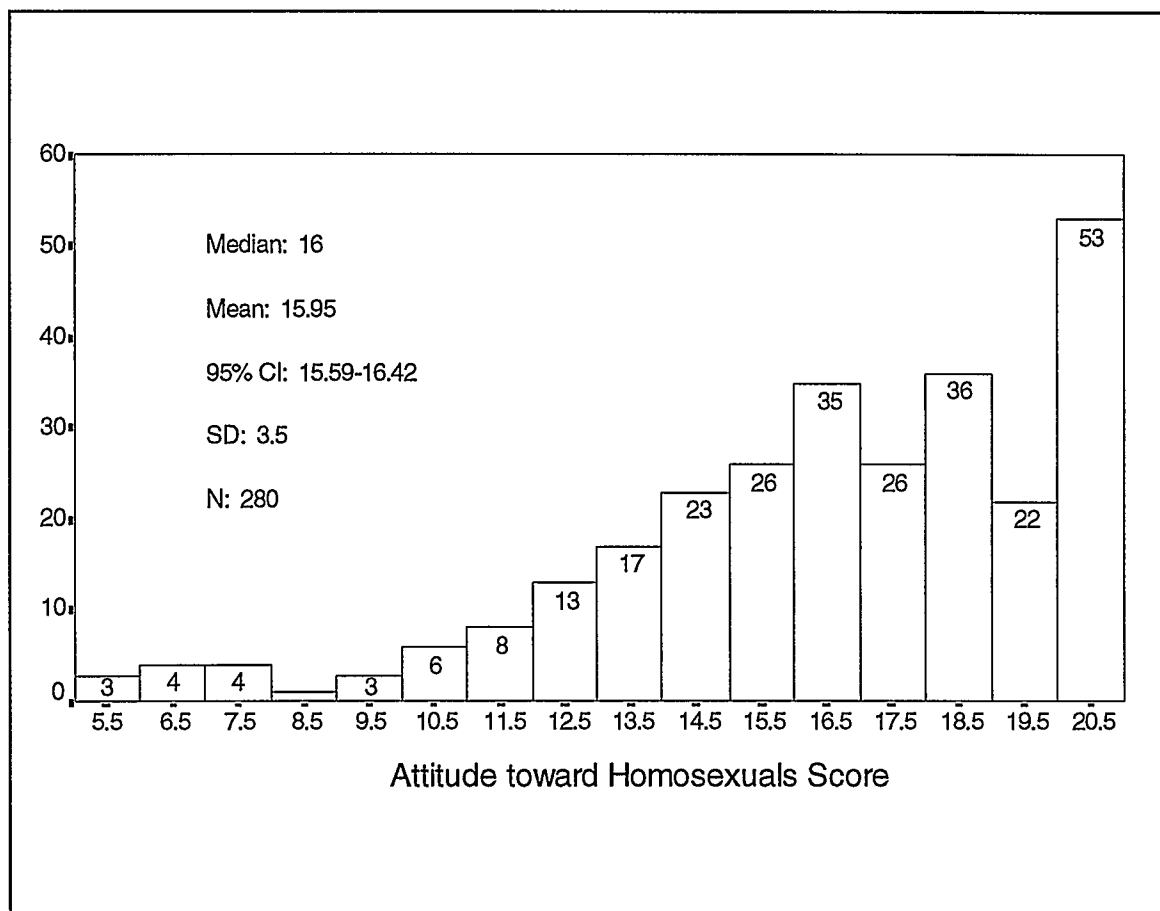
Attitude Toward Homosexuals

Distribution of responses for items constituting the Attitude Toward Homosexuals Scale is shown in table 4.7. Responses to individual items suggest that a majority of the study participants hold positive attitudes toward homosexuals. Notably, however, one third of respondents either agreed that homosexuality is wrong, or were undecided (item 39). Further, over 40% of respondents either disagreed that homosexuals contribute positively to society, or were undecided (item 40).

Table 4.7 Attitude Toward Homosexuals					
Item	SA* No. (%)	A* No. (%)	U* No. (%)	D* No. (%)	SD* No. (%)
39. Homosexuality is wrong.	35 (12.4)	27 (9.5)	33 (11.7)	78 (27.6)	110 (38.9)
40. Homosexuals contribute positively to society.**	72 (25.4)	92 (32.5)	69 (24.4)	28 (9.9)	19 (6.7)
41. Homosexuals should be allowed to be teachers.	136 (48.1)	115 (40.6)	18 (6.4)	8 (2.8)	6 (2.1)
42. I would be comfortable talking with a homosexual person.	142 (50.2)	109 (38.5)	17 (6.0)	10 (3.5)	5 (1.8)
*SA=strongly agree; A=agree; U=undecided; D=disagree; SD=strongly disagree; ** non-respondents=3					

An Attitude Toward Homosexuals scale score was calculated based on responses to the 4 items in table 4.7. Possible scores range from 4 (negative attitude toward homosexuals) to 20 (positive attitude toward homosexuals). Distribution of Attitude Toward Homosexuals scale scores is shown in figure 4.5.

Figure 4.5. Scale scores: Attitude toward homosexuals.



Scale scores ranged from 5 to 20. As shown in figure 4.5, scale scores tended to the positive end of the spectrum, as reflected by mean and median scores of 15.95 and 16 respectively. Independent samples t-tests revealed no significant difference in attitude score by age category, marital status, gender or prior HIV education. Respondents with post-secondary education had significantly higher mean attitude scores than students with high school education ($t=-3.33$; $p=.001$). Students at Mount Royal College had higher scores than CCNP students ($t=-2.00$; $p=.046$).

Students who were acquainted with an HIV positive person had significantly higher attitude scores than those who did not ($t=4.70$; $p<.001$).

Fear of AIDS

Responses to items constituting the Fear of AIDS scale are summarized in table 4.8. Responses to items 43, 44 and 46 suggest generally low levels of fear with respect to contracting AIDS through casual contact. Responses to items 48 and 50 suggest that a large proportion of respondents acknowledge personal vulnerability to HIV infection. Notably, over 60% of respondents acknowledged that they worried (or would worry) about contracting HIV during sexual intercourse. Single/never-married respondents were significantly more likely to worry about contracting HIV infection during sexual intercourse than married respondents (Fisher's exact test, $p<.001$).

Table 4.8 Fear of AIDS					
Item	SA *F (%)	A F (%)	U F (%)	D F (%)	SD F (%)
43. I wouldn't mind being in the same room with a friend who has AIDS.	176 (62.2)	97 (34.3)	9 (3.2)	-	1 (0.4)
44. If I found out a friend had AIDS, I would be afraid to hug him/her.	6 (2.1)	7 (2.5)	10 (3.5)	86 (30.4)	174 (61.5)
45. I would object to sending my non-infected child to a school which has a child who has AIDS.	6 (2.1)	20 (7.1)	49 (17.3)	108 (38.2)	100 (35.3)
46. I believe public officials when they say AIDS cannot be contracted through casual contact.	139 (49.1)	121 (42.8)	14 (4.9)	6 (2.1)	3 (1.1)
47. Compared with other health problems, AIDS is a very minor problem.	-	11 (3.9)	12 (4.2)	81 (28.6)	179 (63.3)
48. I believe I have little or no chance of becoming infected with the AIDS virus.**	43 (15.2)	85 (30)	35 (12.4)	98 (34.6)	21 (7.4)
49. The seriousness of AIDS is greatly overblown by the media.	4 (1.4)	24 (8.5)	16 (5.7)	122 (43.1)	117 (41.3)
50. I worry, or would worry, about getting HIV infection when having intercourse.***	67 (23.7)	105 (37.1)	21 (7.4)	51 (18.0)	36 (12.7)

*F=frequency **non-respondents=1; ***non-respondents=3

Fear of AIDS scale scores are not reported because of the low alpha coefficient calculated for this scale in this study.

Attitude Toward Condoms

Responses to items constituting the Attitude Toward Condoms Scale are summarized in table 4.9. Responses to individual items suggest that attitudes toward condoms are generally positive. Over 92% of respondents agreed that condoms reduce the chance of becoming infected with HIV (item 51). Less than 10% of respondents agreed that communicating and negotiating with sexual partners about condom use presented difficulty (items 57 and 58). Approximately 20% of respondents felt that they would be embarrassed about purchasing condoms (item 52), that condoms interfere with spontaneity (item 54), and that carrying condoms implies promiscuity (item 60). Over 30% of respondents agreed that condoms reduce sensation during sexual intercourse (item 59).

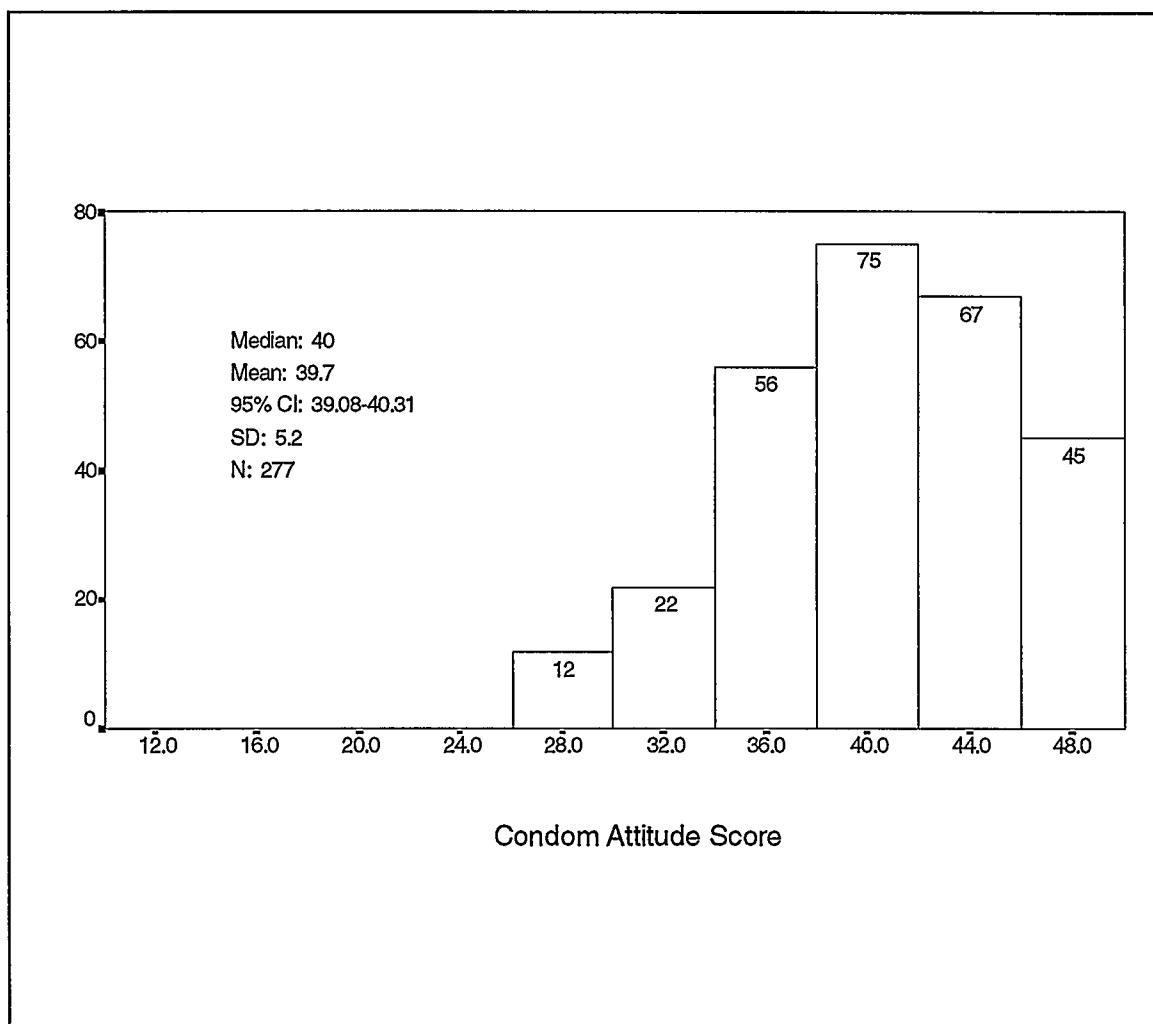
Table 4.9 Attitudes Toward Condoms

Item	SA F (%)	A F (%)	U F (%)	D F (%)	SD F (%)
51.** I believe condoms reduce the chance of becoming infected with HIV.	100 (35.3)	161 (56.9)	10 (3.5)	10 (3.5)	2 (0.7)
52. I am embarrassed or would be embarrassed about buying condoms in a drugstore.*	10 (3.5)	43 (15.2)	17 (6.0)	94 (33.2)	118 (41.7)
53. My friends believe that using condoms with a new partner is a smart thing to do.++	149 (52.7)	101 (35.7)	19 (6.7)	6 (2.1)	3 (1.1)
54. Using condoms can interfere with spontaneity.+	10 (3.5)	51 (18.0)	45 (15.9)	99 (35.0)	74 (26.1)
55.** I am embarrassed or would be embarrassed about carrying a condom.	12 (4.2)	23 (8.1)	29 (10.2)	102 (36.0)	115 (40.6)
56. I am confident that I know how to use a condom correctly.**	112 (39.6)	108 (38.2)	34 (12.0)	17 (6.0)	10 (3.5)
57.*I have difficulty or would have difficulty talking to my partner about using condoms.	-	13 (4.6)	25 (8.8)	93 (32.9)	151 (53.4)
58. I have difficulty or would have difficulty telling my partner that I won't have sexual intercourse unless we use a condom.**	3 (1.1)	17 (6.0)	26 (9.2)	89 (31.4)	146 (51.6)
59. Condoms reduce sensation during intercourse.++	18 (6.4)	69 (24.4)	78 (27.6)	87 (30.7)	26 (9.2)

Table 4.9 Attitudes Toward Condoms (continued)					
Item	SA F (%)	A F (%)	U F (%)	D F (%)	SD F (%)
60. If you carry condoms, people will think you are promiscuous.++	5 (1.8)	53 (18.7)	50 (17.7)	108 (38.2)	65 (23.0)
SA=strongly agree; A=agree; U=undecided; D=disagree; SD=strongly disagree; *non-respondents=1; **non-respondents=2; +non-respondents=4; ++non-respondents=5					

Based on responses to the items in table 4.9, an Attitude Toward Condoms scale score was calculated, with possible scores ranging from 10 (negative attitudes) to 50 (positive attitudes). Distribution of scores on the Attitude Toward Condoms scale are shown for the sample in figure 4.6.

Figure 4.6. Scale scores: Attitude toward condoms.



Scale scores ranged from 27 to 50. Attitude toward condoms scores tended to the positive end of the scale, as reflected by mean and median scores of 39.7 and 40 respectively. Independent samples t-tests revealed that mean scores did not differ by gender, marital status or prior HIV education. Respondents 30 years and older held more positive attitudes toward condoms than respondents under 30 years ($t=-2.63$; $p=.009$). Students with post-

secondary education had higher mean scores than those with high school education ($t=-2.61$; $p=.010$). Mount Royal College students scored higher than CCNP students ($t=-2.83$; $p=.006$). Students acquainted with an HIV positive person had more positive attitudes toward condoms than students who were not ($t=3.12$; $p=.002$).

Condom-related attitudes of women who are sexually active and not involved in a long-term relationship are of particular interest in that these individuals may be at higher risk for sexually-acquired HIV infection. Responses of women who are sexually active and not in a long-term relationship of greater than 5 years duration are shown in table 4.10. In table 4.10, response categories have been collapsed to agree, disagree and undecided.

Table 4.10 Attitudes Toward Condoms: Sexually Active Women Not in a Long-term Relationship (n=160)			
Item	A* F(%)	D F(%)	U F(%)
51. I believe condoms reduce the chance...	150 (94)	5 (3)	5 (3)
52. I am embarrassed about buying...	25 (16)	132 (82)	3 (2)
53. My friends believe that using condoms...is smart...	147 (92)	4 (2)	9 (6)
54. Using condoms can interfere with spontaneity.	42 (26)	102 (64)	16 (10)
55. I am embarrassed about...carrying condoms...	17 (11)	131 (82)	12 (7)
56. I am confident I know how to use a condom correctly.	136 (85)	13 (8)	11 (7)
57. I have difficulty...talking...about using condoms.	8 (5)	146 (91)	6 (4)
58. I have difficulty telling my partner that I won't...	11 (7)	141 (88)	8 (5)
59. Condoms reduce sensation...	57 (35)	70 (44)	33 (21)
60. If you carry condoms, people will think...promiscuous.	31 (19)	106 (66)	23 (15)
*A=agree; D=disagree; U=undecided			

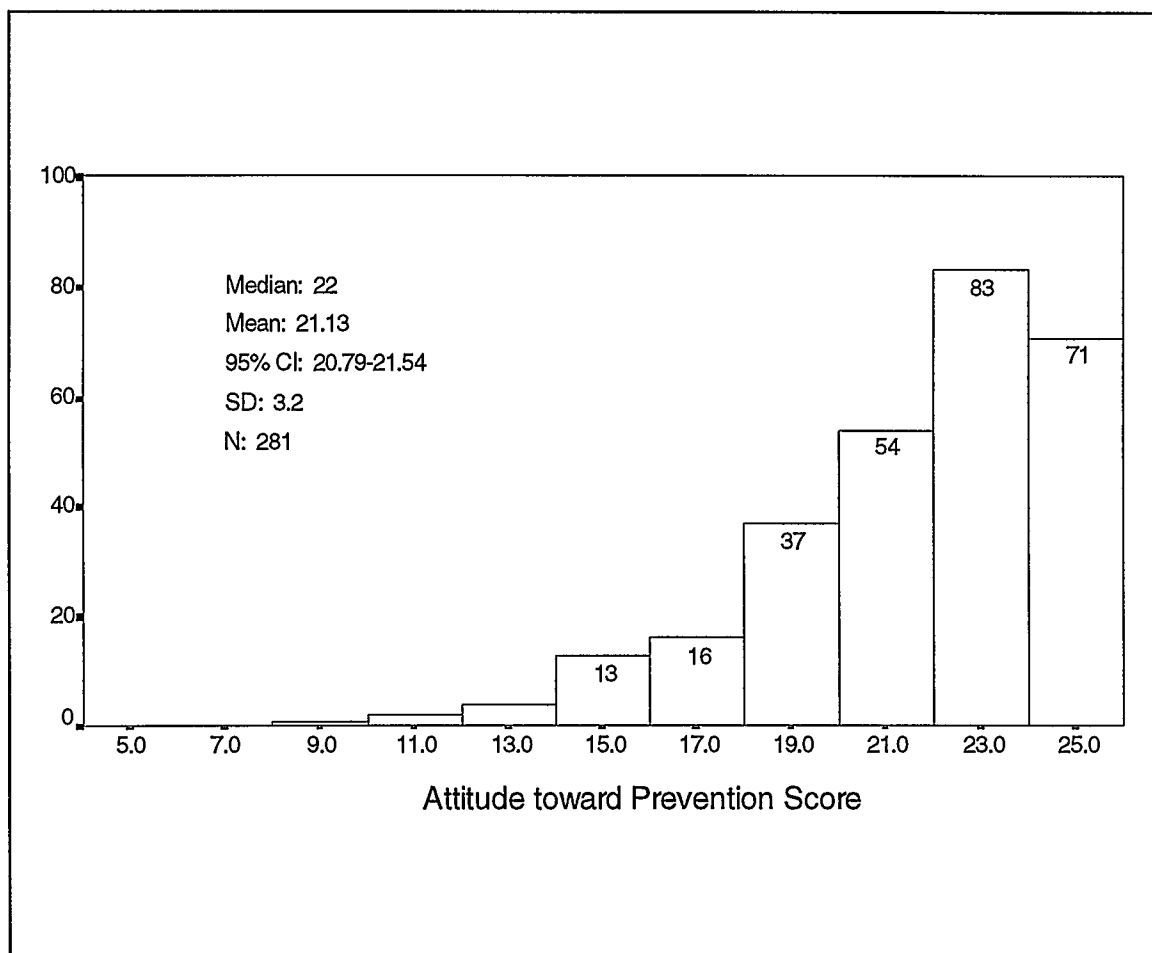
Attitude Toward Prevention of HIV Infection and AIDS

Responses to items constituting the Attitude Toward Prevention of HIV and AIDS scale are summarized in table 4.11. Responses to individual items suggest that most respondents hold liberal attitudes toward prevention of HIV infection and AIDS. More than 90% of respondents favoured "safer sex" education in high schools (item 64) and over 80% supported condom advertising on television (item 62). Approximately 75% felt that condoms should be made more accessible to prevent the spread of HIV (item 61); 10% disagreed with this idea and another 13.8% were undecided. Needle exchange programs were supported by close to 70% of respondents (item 63); a large percentage of respondents (22.3%) were undecided about needle exchange programs.

Table 4.11 Attitudes Toward Prevention of HIV Infection and AIDS					
Item	SA* No. (%)	A* No. (%)	U* No. (%)	D* No. (%)	SD* No. (%)
61. Condoms should be made more accessible to reduce the spread of HIV.++	106 (37.5)	107 (37.8)	39 (13.8)	23 (8.1)	6 (2.1)
62. Condoms should not be advertised on television.	4 (1.4)	15 (5.3)	32 (11.3)	95 (33.6)	137 (48.4)
63. The development of needle exchange programs should be encouraged...+	110 (38.9)	83 (29.3)	63 (22.3)	11 (3.9)	15 (5.3)
64. High school students should not be taught about safer sex.+	5 (1.8)	5 (1.8)	4 (1.4)	53 (18.7)	215 (76.0)
65. Development of a vaccine to prevent HIV infection should be a priority.+	141 (49.8)	93 (32.9)	32 (11.3)	11 (3.9)	5 (1.8)
*SA=strongly agree; A=agree; U=undecided; D=disagree; SD=strongly disagree; +non-respondents=1; ++non-respondents=2					

Scale scores for Attitude Toward Prevention of HIV and AIDS were calculated based on responses to items in table 4.11. Possible scores ranged from 5 (conservative attitude toward prevention) through 25 (liberal attitude toward prevention). Figure 4.7 shows the distribution of these scores for the sample.

Figure 4.7. Scale scores: Attitude toward prevention.



Scale scores ranged from 8 to 25. As shown in figure 4.7, Attitude Toward Prevention scores tended to the liberal end of the scale, as reflected by mean and median of 21.13 and 22 respectively. Independent samples t-tests revealed no difference in mean scale score by age category, gender, marital status, site or prior HIV education. Respondents who knew a person with HIV infection were significantly more liberal in their attitudes toward prevention than those who did not ($t=2.68$; $p=.008$).

Sexual Behaviour of Female Respondents⁶

Six items dealt with sexual behaviour of first year female nursing students. All items pertaining to sexual behaviour were answered by all respondents, with the exception of item 70 which had one non-respondent.

Presence or absence of steady sexual partner and duration of relationship. Table 4.12 summarizes responses of all females, and of females ever sexually active, to item 70, which dealt with whether or not the respondent was currently involved in a sexual relationship with a steady partner. As seen in table 4.12, nearly three-quarters of women ever sexually active reported that they were currently involved in a sexual relationship with a steady partner.

⁶While both male and female students completed sexual behaviour items on the questionnaire, results are reported for females only, in keeping with the first research question stated on page 27.

Table 4.12 Presence or Absence of Steady Sexual Partner				
	All Women (n=248)		Women Ever Sexually Active (n=195)	
Item	Yes No. (%)	No No. (%)	Yes No. (%)	No No. (%)
70. Do you have a steady sexual partner? *	144 (58.1)	103 (41.5)	144 (73.8)	50 (25.6)
* non-respondents=1				

Item 71 asked those respondents who were currently involved in a steady relationship to indicate the duration of that relationship. Of 144 women currently involved in a sexual relationship with a steady partner, 34 (23.6%) reported that the duration of the relationship was five years or greater, while 110 (76.4%) indicated that the duration of the relationship had been less than five years.⁷ Of the 34 women who reported being involved in a steady relationship of five years or greater, 29 were married while four were single/never-married. Of 194 ever sexually active women who responded to items 70 and 71 then, only 34 (17.5%) were currently involved in a sexual relationship of greater than five years duration with a steady partner, while 160 (82.5%) were not. In comparison with other female

⁷Respondents not currently involved in a steady relationship of five years duration or greater are referred to as women not in a long-term relationship throughout this report.

respondents, those involved in a relationship of longer than five years were older (mean age 31.6 years versus 22.5 years) and more likely to be married (85.3% versus 7.0%).

Sexual partners in the past five years. In table 4.13, number of sexual partners in the past 5 years are reported for all women in the sample, for women not in a steady sexual relationship of greater than 5 years duration, and for women under 25 years of age.

Table 4.13 Number of Sexual Partners in Past 5 Years			
	All Women	Women Not In Steady Sexual Relationship of > 5 Years	Women Under 25 Years
Never had intercourse	53 (21.4%)	53 (24.9%)	51 (29%)
1 partner	76 (30.6%)	44 (20.7%)	45 (25.6%)
2 partners	38 (15.3%)	36 (16.9%)	26 (14.8%)
3 partners	23 (9.3%)	23 (10.8%)	16 (9.1%)
4 partners or more	58 (23.4%)	57 (26.8%)	38 (21.6%)
TOTALS	248 (100%)	213 (100%)	176 (100%)

Table 4.13 shows that, among all women surveyed, 21.4% had never had sexual intercourse. One third of respondents reported having one sexual partner in the past five years, while almost half reported two or more partners in the past

five years. Approximately one quarter of respondents reported having four or more sexual partners in the past five years.

Among women not in a steady sexual relationship of greater than five years duration, 45% reported either never having intercourse, or having intercourse with only one person in the past five years. Over 25% of respondents in this category reported having four or more sexual partners in the past five years. Respondents 30 years and older were more likely than those under 30 to have had three or more partners in the past five years, but this difference was not statistically significant (57.1% vs. 36.2%, Fisher's exact test, $p=.1538$). Respondents with post-secondary education were significantly more likely to have reported three or more partners in the past five years (44.0% vs 28.4%, Fisher's exact test, $p=.0222$).

Among women under 25 years of age, close to 30% had never had sexual intercourse, and one quarter reported only one sexual partner in the past five years. Just over 45% reported two or more partners in the past five years. Slightly more than 21% of women under 25 reported 4 or more sexual partners in the past five years.

Among single/never-married women ($n=196$, not shown in

table), 27% had never had intercourse, 21.4% had had one sexual partner in the past five years, 15.8% had had two, 9.7% had had three, and 26% had had four or more.

Of all women ever sexually active (n=195, not shown in table), 39% reported 1 partner in the past five years, 19.5% two partners, and 41.5% three or more partners.

Sexual partners in the past year. In table 4.14, number of sexual partners in the past year are reported for all women in the sample, women not in a steady sexual relationship of greater than 5 years duration, and women under 25 years.

Table 4.14 Sexual Partners in Past Year			
	All Women	Women Not In Steady Sexual Relationship of > 5 Years	Women Under 25 Years
None	69 (27.8%)	69 (32.4%)	63 (35.8%)
1 partner	128 (51.6%)	94 (44.1%)	79 (44.9%)
2 partners	34 (13.7%)	33 (15.5%)	23 (13.1%)
3 partners	11 (4.4%)	11 (5.2%)	5 (2.8%)
4 partners or more	6 (2.4%)	6 (2.8%)	6 (3.4%)
TOTALS	248 (100%)	213 (100%)	176 (100%)

In each of the categories shown in table 4.14, close to 80% of women reported being sexually inactive or having one sexual partner in the past year. Roughly 20% of women in each category reported two or more sexual partners in the past year. Less than 10% of women in each category reported having had three or more sexual partners in the past year.

Among single/never married women (n=196), 34.2% reported no partners in the past year, 41.3% had had one, 15.8% had had two, 5.6% had had three, and 3.1% had had four or more.

Among all women ever sexually active (n=195), 16 (8.2%) reported having no sexual partners in the past year, while 51 (26.2%) reported having 2 or more.

Among sexually active women not in a long-term relationship, those who reported two or more sexual partners in the past year were more likely than women with less than two partners in the past year to have had four or more partners in the past five years (70% vs. 13.5%, Fisher's exact test, $p < .001$).

Alcohol and/or drug use prior to last sexual intercourse. Table 4.15 summarizes responses of sexually active women to a survey item pertaining to alcohol and/or drug use prior to most recent sexual intercourse.

Table 4.15 Alcohol and/or Drug Use Prior to Last Intercourse, Sexually Active Women			
	All Women	Women Not In Steady Sexual Relationship of > 5 Years	Women Under 25 Years
No	171 (87.7)	137 (85.6%)	111 (88.8%)
Yes	24 (12.3)	23 (14.4%)	14 (11.2%)
TOTALS	195 (100%)	160 (100%)	125 (100%)

As shown in table 4.15, ingestion of alcohol or drugs prior to most recent sexual intercourse was uncommon, being reported by less than 15% of respondents in each category.

Among sexually active single/never married respondents (n=143), 15.4% acknowledged alcohol or drug use prior to last sexual intercourse.

For sexually active women not in a long-term relationship, respondents who reported alcohol use prior to last sexual intercourse were more likely to have had three or more sexual partners in the past five years (Fisher's exact test, $p=.0059$). Women who reported alcohol or drug

ingestion prior to last intercourse were also more likely to report two or more sexual partners in the past year than women who did not ingest alcohol or drugs prior to last intercourse (47.8% vs. 28.5%); however, this difference did not achieve statistical significance (Fisher's exact test, $p=.0875$). No association was observed between ingesting alcohol or drugs prior to last intercourse and always using condoms (Fisher's exact test, $p=1.0$).

Condom utilization. Rates of condom utilization by all women in the sample, women not in a long-term sexual relationship, and women under 25 years are shown in table 4.16.

Table 4.16 Condom Utilization, Sexually Active Women			
	All Sexually Active Women	Sexually Active Women Not In Steady Sexual Relationships of > 5 Years	Sexually Active Women Under 25 Years
Always	50 (25.6%)	47 (29.4%)	38 (30.4%)
Sometimes	44 (22.6%)	41 (25.6%)	31 (24.8%)
Rarely	36 (18.5%)	30 (18.8%)	25 (20%)
Never	65 (33.3%)	42 (26.3%)	31 (17.6%)
TOTALS	195 (100%)	160 (100%)	125 (100%)

As shown in table 4.16, a minority of sexually active women in each category always use condoms during sexual

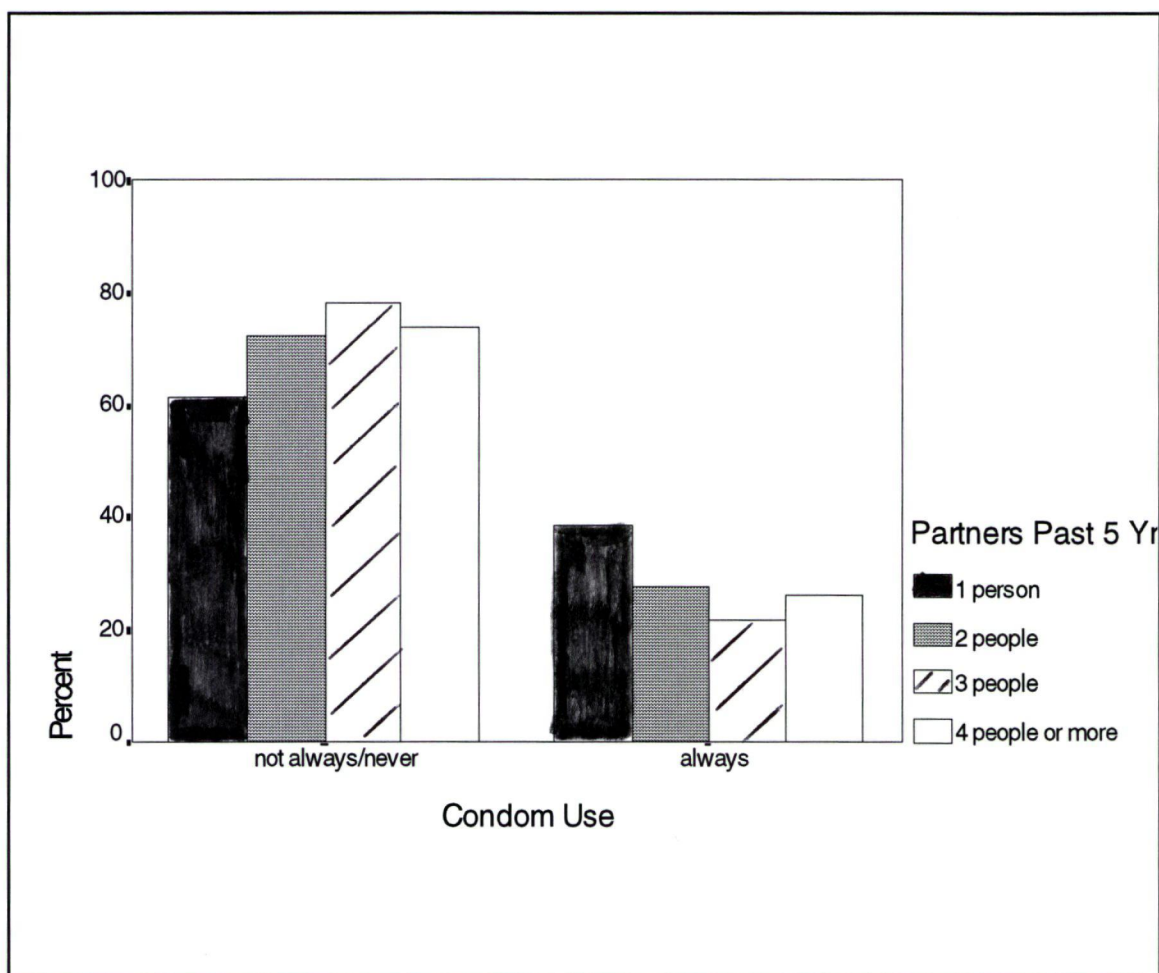
intercourse. Under 30% of sexually active women not in a long-term relationship, and just over 30% of women under 25 years, reported consistent condom utilization. Among sexually active single/never-married women (n=143), 31.5% reported always using condoms, while 21% reported they never used condoms.

Age category (Fisher's exact test, $p=.2362$), marital status (Fisher's exact test, $p=.3971$), education level (Fisher's exact test, $p=.4135$), knowledge score ($t=-1.44$, $p=.659$), knowing a person with HIV infection (Fisher's exact test, $p=.3059$), and prior HIV education (Fisher's exact test, $p=.4642$) failed to differentiate women who always used condoms from those who did not, among sexually active women not in a long-term relationship. Further, there was no association between consistent condom use and number of sexual partners in the past year. Thirty percent of women with two or more sexual partners in the past year reported always using condoms, while 29.1% of women with less than two partners in the past year did so (Fisher's exact test, $p=1.0$).

Nor was an association observed between consistent condom use and number of sexual partners in the past 5 years for sexually active women not in a long-term relationship (Pearson chi square 2.77, $p=.429$). Figure 4.8 depicts rates

of consistent condom utilization by number of sexual partners in the past 5 years. As seen in figure 4.8, under 30% of respondents with three or more sexual partners in the past five years reported consistent condom use.

Figure 4.8. Condom utilization by number of sexual partners in past 5 years, sexually active women not in long-term relationship.



Sexually active women not in a long-term relationship who reported consistent condom use had significantly more positive scores on the attitude toward condoms scale ($t=2.49$; $p=0.014$). Among these women, however, only one of 10 items on the condom attitude scale differentiated those who always used condoms from those who did not. Specifically, women who agreed with item 59 ("Condoms reduce sensation during sexual intercourse") were significantly less likely to always use condoms than women who disagreed with this item (Fisher's exact test, $p<.001$)

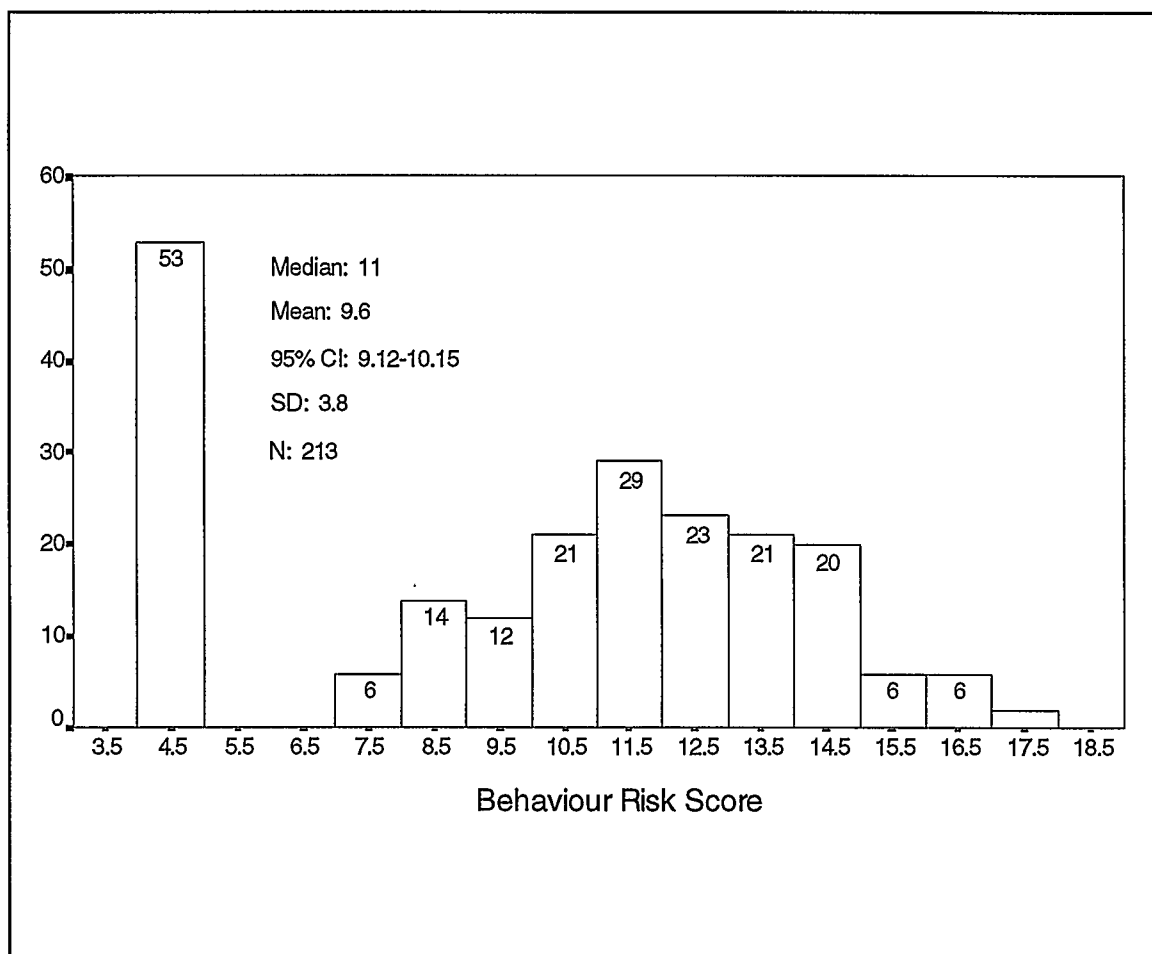
Paradoxically, sexually active women not in a long-term relationship who always used condoms were somewhat more likely to worry about contracting HIV infection during sexual intercourse (item 50) than women who did not always use condoms, though this difference was not statistically significant (80.0% versus 63.2%; Fisher's exact test $p=.056$).

Behavioural risk scale score. A behavioural risk score was calculated for female respondents not in a steady sexual relationship of greater than five years duration. The behavioural risk score was based on responses to items pertaining to number of sexual partners in the past five years, number of sexual partners in the past year, condom utilization, and use of alcohol or drugs prior to last

sexual intercourse. Possible scores on the behavioural risk scale ranged from 4 (lowest risk) to 18 (highest risk).

Distribution of scores for respondents not in a long-term sexual relationship is shown in figure 4.9.

Figure 4.9. Behavioural risk scores, female respondents not in sexual relationships of greater than 5 years duration.



Behavioural risk scores among female respondents not in a long-term relationship ranged from 4 through 17. Nearly one quarter (24.8%) of these women had the minimum behavioural risk score of 4.0. Independent samples t-tests revealed that respondents 30 years of age and older had higher behavioural risk scores than those under 30 ($t=-3.80$; $p=.001$), and respondents with post-secondary education had higher scores than those out of high school ($t=-3.04$; $p=.003$). When stratified on age, behavioural risk score differences by prior education remained significant for respondents under 30 years of age ($t=-2.69$, $p=.008$); however, it should be noted that respondents under 30 years of age with post-secondary education were significantly older than respondents with high school education (20.2 years vs. 22.8 years, $t= -9.10$, $p<.001$). Mount Royal College students had significantly higher behavioural risk scores than CCNP students ($t=-5.41$; $p<.001$). When stratified on age, behavioural risk score differences by site remained significant for respondents under 30 years of age ($t=-4.62$; $p<.001$). Again, it should be noted that Mount Royal College respondents under 30 years were significantly older than those from CCNP (24.0 years vs. 21.4 years, $t=-4.99$, $p<.001$).

Women who acknowledged that they worried about HIV infection during sexual intercourse had significantly lower

behavioural risk scores than those who did not worry ($t=-2.07$, $p=.041$).

Behavioural risk classification. In order to approximate risk levels for sexual acquisition of HIV infection for all women in the sample, respondents were categorized using two recently published risk classification systems. In table 4.17, respondents are categorized according to risk of sexually acquired HIV infection using the system of Campostrini & McQueen (1993). In this system, level of risk is determined by number of sexual partners in the past five years, condom utilization patterns, presence or absence of a steady sexual partner, and duration of relationship with such a partner. The highest risk category is reserved for men who have sex with men, making medium risk the highest risk category for women.

Table 4.17 Risk Classification as per Campostrini & McQueen, All Women		
Risk Level	Number	(%)
High	--	--
Medium	58	(23.4)
Low	80	(32.3)
Very Low	55	(22.2)
No Risk	55	(22.2)
TOTALS	248	(100)

As shown in table 4.17, 23.4% of female respondents fell into the highest risk category for women.

In table 4.18, female respondents are classified on level of risk for sexually-acquired HIV infection using the system developed by Leigh, Temple & Trocki (1993). In this system, level of risk is determined by number of sexual partners in the past year, and patterns of condom utilization. This classification system is intended for use with heterosexuals only.

Table 4.18 Risk Classification as per Leigh et al. (1993)		
Category	Criteria	Number (%)
5 (highest)	>1 partner in past year, inconsistent or no condom use	36 (14.5)
4	>1 partner in past year, always use condoms	15 (6.0)
3	1 partner in past year, inconsistent or no condom use	104 (42.0)
2	1 partner in past year, always use condoms	24 (9.7)
1 (lowest)	Sexually inactive in past year	69 (28.0)
TOTALS		248 (100.0)

Using the risk classification system of Leigh et al. (1993), 14.5% of female respondents fell into the highest risk category and 28% into the lowest. Among female respondents who were sexually active in the past year (n=179), 20.1% fell into the highest risk category.

Correlations Between Scale Scores

Pearson correlation coefficients were calculated for the various scales used in this study to investigate relationships between constructs.

Knowledge score was positively correlated with attitude toward persons with AIDS ($r=0.196$; $p=.001$), attitude toward homosexuals ($r=.272$; $p<.001$), attitude toward condoms ($r=.235$; $p<.001$) and attitude toward prevention ($r=.137$;

$p=.022$).

Attitude toward persons with AIDS was positively correlated with attitude toward homosexuals ($r=.641$; $p<.001$) and attitude toward prevention ($r=.435$; $p<.001$).

Attitude toward homosexuals was positively correlated with attitude toward prevention ($r=.625$; $p<.001$).

Attitude toward condoms was positively correlated with attitude toward prevention ($r=.474$; $p<.001$).

Correlations between behavioural risk score and other scale scores were calculated for female respondents not in a steady sexual relationship of greater than five years duration. No correlation between knowledge score and behavioural risk score was observed ($r=.113$; $p=.099$). Unexpected positive correlations were observed between behavioural risk score and attitude toward condoms ($r=.34$; $p<.001$), and between behavioural risk score and attitude toward prevention ($r=.344$; $p<.001$).

Practice-Related Items

Table 4.19 summarizes responses to five practice-related items on the survey.

Table 4.19 Practice-Related Items			
Item	Yes No. (%)	No No. (%)	Unsure No. (%)
72. Hospitalized patients with AIDS/HIV infection should be identified with a sign on the door of their hospital room that says "HIV Precautions."	114 (40.3)	113 (39.9)	56 (19.8)
73. All patients should be tested for AIDS/HIV infection when they are first admitted to hospital.*	149 (52.7)	75 (26.5)	58 (20.5)
74. A nurse should have the right to refuse to care for a person with AIDS/HIV infection.	107 (37.8)	117 (41.3)	59 (20.8)
75. I would refuse to nurse a person who had AIDS/HIV infection.	3 (1.1)	243 (85.9)	37 (13.1)
76. I am afraid that I could become infected with the AIDS virus in my work as a nurse.	128 (45.2)	103 (36.4)	52 (18.4)
*non-respondents=1			

With the exception of item 75, there appears to be considerable divergence of opinion concerning the practice-related issues addressed in the survey. A very small number of students indicated that they personally would refuse to care for a patient with AIDS/HIV infection (item 75). A large proportion of respondents acknowledged fear of

contracting HIV in their work as a nurse (item 76). Students who acknowledged this fear held more negative attitudes toward persons with AIDS ($t=-4.87$, $p<0.001$) and homosexuals ($t=-2.56$, $p=0.011$) than those who did not acknowledge this fear. Knowledge scores did not differ between those who acknowledged fear of infection as a nurse, and those who did not ($t=-.92$; $p=.359$).

Awareness of HIV Information and Testing Resources

Two items (79 and 80) assessed respondents' awareness of where HIV testing and information about AIDS could be accessed. Almost 80% of respondents indicated they knew where to access AIDS-related information, and 71.4% reported that they knew where one could be tested for HIV.

Learning Needs Checklist

At the conclusion of the survey, students were presented with a list of topics and asked how useful more information on these topics would be to them personally. Students were also given the opportunity to specify personal learning needs not presented in the list of topics. Tables 4.20 and 4.21 summarize responses from this section of the questionnaire.

Table 4.20 Perceived Usefulness of Additional Information On Selected Topics			
Topic	Very Useful No. (%)	Somewhat Useful No. (%)	Not Useful No. (%)
1. Sexual activities that are risky for getting or spreading the AIDS virus.	113 (39.9)	125 (44.2)	45 (15.9)
2. How to use condoms correctly.	74 (26.1)	122 (43.1)	87 (30.7)
3. How to convince your partner to use condoms.	68 (24.0)	107 (37.8)	108 (38.2)
4. Different ways of having sex that are safer.	102 (36.0)	106 (37.5)	75 (26.5)
5. Ways to make safer sexual activities more erotic.*	96 (33.9)	112 (39.6)	74 (26.1)
6. Testing for the AIDS virus, and what it means...*	173 (61.1)	77 (27.2)	32 (11.3)
7. How the AIDS virus is spread.	171 (60.4)	88 (31.1)	24 (8.5)
8. AIDS/HIV infection and pregnancy.	182 (64.3)	84 (29.7)	17 (6.0)
9. How to talk to your partner about his/her sexual history.**	142 (50.2)	88 (31.1)	50 (17.7)
*non-respondents=1; **non-respondents=3			

Table 4.21 Additional Learning Needs as Perceived by Respondents	
Topic	Number
1. Nursing the patient with HIV/AIDS: communication issues, precautions needed for self-protection.	7
2. HIV testing issues: should testing of patients be mandatory; should testing of health professionals be mandatory; what are the legal implications of testing HIV positive; how long after infection until one tests positive	4
3. Clear up ambiguities around HIV transmission.	2
4. Discussing HIV and AIDS with children and adolescents; dealing with sense of invulnerability.	2
5. Promoting abstinence.	2
6. Testing and treatment of donated blood.	1
7. Hospice care.	1
8. Characteristics of the disease AIDS.	1

As seen in table 4.20, more than 60% of respondents indicated that information relating to HIV transmission, HIV testing, and HIV in pregnancy would be very useful to them. Slightly over half of the respondents indicated that information on how to talk to their partner about his/her sexual history would be very useful. This proportion increased to 56.8% among single, never-married respondents. A considerably smaller proportion of the sample felt that

information about safer sexual practices (items 2 through 5 in table 4.20) would be very useful.

As seen in table 4.21, respondents expressed interest in learning more about a wide array of HIV and AIDS-related topics. Most commonly-mentioned was the need for information on working with patients who are HIV positive.

CHAPTER 5

Discussion

The discussion which follows is organized around the research questions stated in Chapter 2.

Factors Influencing Risk of Sexually-Acquired HIV Infection for Female, First Year Nursing Students

Knowledge

Female first year nursing students were generally very knowledgeable with respect to basic facts pertaining to HIV transmission and its prevention. Specifically, more than 95% of female respondents were aware that HIV could be transmitted through unprotected sexual intercourse, that HIV was transmitted in semen, that one cannot tell a person is infected with HIV by looking at them, and that risk of sexually-acquired HIV infection could be reduced through abstinence, use of condoms, and avoidance of sexual intercourse with anyone who has injected drugs. Further, it is notable that nearly 99% of females were aware that birth control pills do not confer protection against HIV infection. Previous studies of Canadian and American youth have shown that as many as 13% of respondents believed that oral contraceptives reduced risk of HIV infection (Kann et

al., 1991; MacDonald et al., 1990).

It appears then, that female, first year nursing students are equipped with the minimal knowledge necessary to protect themselves against sexually-acquired HIV infection. This finding is consistent with other reports of high knowledge levels of HIV transmission and its prevention among adolescents and young adults (Boswell et al., 1992; Kann et al., 1991; King et al., 1988; McCaig et al., 1991; Ramsun et al., 1993; Varnhagen et al., 1991). A weak and non-significant correlation was detected between knowledge score and behavioural risk score for female respondents not in a steady sexual relationship of greater than five years duration. This finding is also consistent with previous research (MacDonald et al., 1990; Ramsun et al., 1993), and suggests that knowledge about HIV infection and AIDS may be a necessary but insufficient motivator of safer sexual behaviour.

While basic knowledge of HIV transmission and its prevention seems very strong, responses to items pertaining to deep kissing, oral sex and spermicides suggest that confusion remains in these areas. In part, this confusion might be attributed to conflicting messages in the professional literature and lay media. To illustrate, an HIV-related pamphlet currently distributed by Alberta Health

suggests that spermicides should be used in conjunction with condoms to reduce risk of HIV transmission (Alberta Health, 1992b). However, a recent publication by Centres for Disease Control (CDC, 1993b) states that the effectiveness of spermicides in preventing HIV infection is unknown. Other publications suggest that the use of spermicides may increase risk of HIV infection among women who use them (Bartlett & Finkbeiner, 1993; Kreiss et al., 1992). A similar lack of consensus exists with respect to risks associated with deep kissing and oral sex (Bartlett & Finkbeiner, 1993).

That respondents with or without prior HIV education did not differ on knowledge score is not surprising. Knowledge items employed in this study assessed, for the most part, basic concepts of HIV transmission and its prevention. These concepts have been the focus of media campaigns for many years now, and appear to have been retained by the vast majority of respondents in this study. In no way should the lack of difference on knowledge score in this study be seen as justification for discontinuation of school-based HIV education programs. In addition to addressing basic facts about HIV infection and AIDS, quality programs encourage exploration of HIV-related values, attitudes, and beliefs, as well as broader issues relating to sexuality (Canadian Public Health Association, 1991).

Further, quality programs assist participants to develop skills that facilitate safer sexual behaviour.

Attitudes and Beliefs

Associations between attitudes and beliefs and sexual risk-taking behaviour are reported in the literature. Previous investigations have explored the relationship between sexual risk-taking and constructs such as perceived vulnerability to HIV infection, perceived severity of AIDS, fear of AIDS, peer pressure, and condom-related attitudes and beliefs. However, none of these factors has proven to be consistently associated with sexual risk-taking behaviour in studies of adolescents and young adults (Catania et al., 1989; King et al., 1988; MacDonald et al., 1990; Montgomery et al., 1989; Myers & Clement, 1994). The association between sexual behaviour and a number of these factors was explored in the current study.

Fear of AIDS and sense of personal vulnerability. In previous studies of Canadian college and university students, no association has been demonstrated between global measures of AIDS fear and sexual risk-taking behaviour (King et al., 1988; Ramsun et al., 1993). Pregnancy, not AIDS, was reported by two-thirds of female post-secondary students participating in the Canada Youth and AIDS Study as the most feared outcome of sexual

intercourse (King et al., 1988).

In the current study, a composite fear of AIDS score could not be calculated because of poor reliability; however, analysis of responses to individual items was illuminating. While very few respondents acknowledged fear of infection through casual contact, a significant proportion acknowledged that they felt personally vulnerable to HIV infection. Over 60% of respondents reported that they worried, or would worry, about contracting HIV infection during sexual intercourse. This finding conflicts with suggestions that heterosexual men and women often lack a sense of personal vulnerability to HIV infection because of the lingering perception of AIDS as a disease of gay men and injection drug users (Clark et al., 1993; Johnson, 1994; Walker, 1992). The association between worrying about HIV infection during intercourse and always using condoms failed to achieve statistical significance in the current study ($p=.056$). This finding is consistent with previous studies which failed to detect an association between sense of personal vulnerability to HIV infection and consistent condom use (Catania et al., 1989; Montgomery et al., 1989).

Attitudes and beliefs about condoms. Previous studies suggest that attitudes and beliefs about condoms influence whether or not an individual uses them (Catania et al.,

1989; Kegles, Adler & Irwin, 1989; MacDonald et al., 1990; Myers & Clement, 1994; Orr & Langefield, 1993; Orr et al., 1992). In the current study, condom-related attitudes of sexually active women not in a long-term relationship were generally positive. Close to 95% of these women perceived condoms to be an effective barrier against HIV infection, almost 90% felt that negotiating condom use with their partner was not problematic, and over 80% denied that purchasing or carrying condoms was embarrassing. While study respondents were generally positive in their views about condoms, negative attitudes persist in some areas. Over one-third of sexually active women not in a long-term relationship felt that condoms reduced sensation during sexual intercourse; more than one quarter agreed that condoms interfere with spontaneity; and almost 20% associated carrying condoms with promiscuity. Women who always used condoms had significantly more positive condom attitude scores than those who used condoms inconsistently or never. These findings support the commonly-held view that efforts to increase rates of condom use among sexually active women must address condom-related attitudes and beliefs (Alberta Health, 1992a; Kegles et al., 1989), but that certain attitudes and beliefs should be targeted by AIDS educators. The need to improve the image of the condom, and to improve women's access to condoms, has been noted by many (Alberta Health, 1992a; Kegles et al., 1989;

King et al., 1988; Ramsun et al., 1993). Efforts to improve the image of the condom might include aggressive marketing campaigns which depict condoms as fun, clean, convenient, erotic, and as the choice of intelligent and assertive women. Efforts to increase condom access for women might include installation of condom machines in women's washrooms; distribution of condoms through women's health centres, fitness clubs, and shelters; and marketing condoms through infomercials or the home shopping network (Alberta Health, 1992a).

Only one of the 10 items comprising the condom attitude scale differentiated women who always used condoms from those who did not. Women who agreed that condoms reduce sensation were significantly less likely to use condoms consistently than women who did not. Whether individual respondents interpreted this item to mean that condoms reduced sensation for themselves, or for their partner, is unclear. Nevertheless, this observation supports previous research (Kegles et al., 1989; MacDonald et al., 1990).

Why nine of ten items on the condom attitude scale failed to differentiate users from non-users is unclear. Clearly factors other than those addressed on the condom attitude scale influence condom use in this population. Such factors might include issues of trust in individual

relationships, racial and ethnic background, socioeconomic status, and religion. It is also possible that sample size was too small to capture differences in attitudes between condom users and non-users, or that socially desired responses obscured real differences.

In the current study, condom attitude scale scores did not differ by gender. In contrast, Myers & Clement (1994), in a survey of Canadian college students, found that females had significantly more positive attitudes toward condoms than males, but that males were significantly more likely to have used condoms in the preceding three months. According to Myers & Clement (1994), the discrepancy in condom utilization rates may be due in part to an inability of many women to negotiate condom use with their partners in the context of traditional gender power relations. In the present study, less than 10% of sexually active women not in a long-term relationship acknowledged difficulty communicating about condom use. Further, difficulty in communicating did not differentiate condom users from non-users. Whether respondents based their assessments on actual personal experience with condom-related communication is unknown. The women under study were generally young and well-educated and the extent to which traditional gender power relations influence this group was not assessed.

Behaviours

Sexual partners in the past five years. Most commonly, number of sexual partners reported in the past five years was either zero or one. This pattern characterized 52% of all female respondents, 45% of women not in a steady sexual relationship of greater than five years duration, 45% of women under 25 years, and 48% of single/never-married women. In terms of preventing sexually-acquired HIV infection, this finding is encouraging. At the same time, however, a rather large proportion of female respondents reported multiple sexual partners in the past five years. Roughly one quarter of all female respondents, of women not in a long-term relationship, of women under 25 years, and of single/never-married women reported four or more partners in the past five years. Given that increased number of sexual partners may increase risk for sexually-acquired HIV infection, as well as other sexually transmitted diseases (Campostrini & McQueen, 1993), this finding is of concern.

In that sexual behaviour of nurses and nursing students has not, to our knowledge, been previously explored, findings in the current study must be compared with findings from other populations. Such comparisons are made difficult by population and measurement differences.

King et al. (1988) reported that 27% of post-secondary

females participating in the Canada Youth and AIDS Study had never had sexual intercourse. Similarly, whether one chooses single/never-married women, women under 25 years, or women not in a long-term relationship as the appropriate comparison group, between 25 and 30% of respondents in the current study had never had intercourse.

Again, when the prevalence of multiple sexual partners over the long-term is considered, little difference is observed between findings of the current study and those of the Canada Youth and AIDS Study. Among ever sexually active women in the Canada Youth and AIDS Study, 36% reported one lifetime sexual partner, 17% reported two, and 47% reported three or more (King et al., 1988). Among ever sexually active single/never married women in the current study, 29% reported one partner in the past five years, 22% reported two, and 49% reported three or more. Among post-secondary women under 25 years of age in the Canada Youth and AIDS Study, 31.1% had never had sexual intercourse, while 25.2% had had five or more lifetime partners (MacDonald et al., 1990). In the current study, 29% of women under 25 years had never had sexual intercourse, and 22% reported four or more partners in the past five years.

That the prevalence of abstinence and of multiple sexual partners over the past five years is so similar to

that observed in the Canada Youth and AIDS Study is discouraging. Given that Canada Youth and AIDS Study respondents were surveyed in 1988, and that efforts to promote safer sex have been prominent in the years since, it was expected that the prevalence of abstinence may have been higher and that the prevalence of multiple sexual partners may have been lower. If findings in this population are generalizable to other female post-secondary students, it would appear that little change has occurred in this population of women since 1988 in terms of number of sexual partners over the longer term.

Sexual partners in the past year. Between 75 and 80% of women in the current study reported having less than two sexual partners in the past year. Number of sexual partners in the past year reported by women in the current study are similar to those reported in other recent studies of post-secondary students in Canada. Myers and Clement (1994), in a survey of ever-sexually active community college students in Ontario, reported that 64.9% of women had had one sexual partner in the past year. Similarly, 65.6% of ever sexually active women in the current study reported one sexual partner in the past year. Ramsun et al. (1993), in a survey of University of British Columbia students, found that 24% of ever sexually active men and women reported two or more sexual partners in the past six months. In the current

study, 26.2% of ever sexually active women reported two or more sexual partners in the past year. Historical comparison of current study findings with those of the Canada Youth and AIDS study was not feasible in that the Canada Youth and AIDS Study considered only lifetime sexual partners.

Condom use among sexually active women. Approximately 30% of sexually active women participating in the current study reported that they always used condoms during sexual intercourse. Among sexually active women not in a long-term relationship, a group which might be expected to have higher rates of condom use, 29.4% always used condoms, while 26.3% never did.

While condom utilization rates among sexually active women in this study are less than ideal, they are substantially higher than rates reported in previous Canadian studies of post-secondary students. MacDonald et al. (1990) reported that only 15.8% of sexually active women under 25 years participating in the Canada Youth and AIDS Study always used condoms, while 30.4% never did. In the current study, 30.4% of sexually active women under 25 reported always using condoms, while 17.6% never did. Ramsun et al. (1993), in a survey of students at the University of British Columbia, reported that 25% of single,

sexually active men and women always used condoms, while 40% never did. Among single, sexually active women in the current study, 31.5% always used condoms, while 21% never did. Whether higher rates of condom utilization are unique to first year nursing students, or are part of a recent trend among post-secondary students generally, is unclear.

Women who reported multiple sexual partners in the past year, or in the past five years, were no more likely than other women to use condoms consistently. The lack of association between number of sexual partners and consistent condom use is in keeping with previous findings (King et al., 1988; MacDonald et al., 1990; Ramsun et al., 1993). Orr & Langefield (1993) suggest that individuals who engage in one form of sexual risk-taking (e.g., non-use of condoms) are more likely to engage in other sexually-risky behaviours (e.g., multiple partners). Further, Orr & Langefield suggest that non-use of condoms by sexually active individuals may be part of a larger behavioural domain that includes other risk behaviours such as substance abuse and smoking. While the association between sexual risk-taking behaviour and other risk behaviours was not fully explored in the current study, a relationship was observed between alcohol or drug ingestion prior to intercourse and number of sexual partners over the past five years. Additional exploration of this association may be warranted.

In the current study, it was established that approximately 30% of women reported always using condoms; however, the study did not assess the extent to which those using condoms were doing so correctly. Myers & Clement (1994) reported that incorrect condom use was common among Ontario post-secondary students. In the current study, over 80% of women reported they were confident they knew how to use a condom correctly, but 24.1% felt that additional information would be very useful. Given that some of the 80% may be overconfident and that correct condom use is essential if protection against sexually transmitted disease is to be maximized (CDC, 1993b), education on more technical aspects of condom use should be undertaken.

Alcohol or drug use prior to sexual intercourse.

Ingestion of alcohol or drugs prior to sexual intercourse may increase risk of infection with HIV and other sexually transmitted pathogens by impairing ability to make responsible decisions about sexual behaviour (King et al., 1988). In the current study, it was observed that alcohol or drug ingestion prior to sexual intercourse was unusual, reported by only 10 to 15% of sexually active women.

A number of studies have reported an association between alcohol ingestion and increased number of sexual partners, and between alcohol ingestion and failure to use

condoms consistently (Anderson & Dahlberg, 1992; King et al., 1988; Ku et al., 1993; MacDonald et al., 1990). In the current study, alcohol or drug ingestion prior to sexual intercourse was associated with significantly greater number of sexual partners in the past five years. No association was noted in the current study between alcohol or drug ingestion prior to intercourse and number of sexual partners in the past year or consistency of condom use. These findings lend only partial support to Orr & Langefield's notion that sexual risk-taking may be part of a larger behavioural domain that includes other risk behaviours (Orr & Langefield, 1993).

Behavioural risk scale scores. One quarter of women not in a long-term relationship had the minimum behavioural risk score of 4. One third of women not in a long-term relationship had scores which fell into the lower third of the behavioural risk scale (i.e. 4 through 8), while 16% had scores which fell into the upper third of the behavioural risk scale (i.e. 14 through 18). In that the behavioural risk scale score has not been previously employed with nursing or other post-secondary students, comparison with previous findings is not possible. Future studies employing the behavioural risk scale may be able to establish trends in risk behaviour scores in this population.

Behavioural risk scale scores were higher among women 30 years of age and older, women with some post-secondary education and women at Mount Royal College, and were lower among women with previous HIV education. Higher behavioural risk scores among women 30 years of age and older were primarily attributable to greater number of sexual partners in the past five years. Higher behavioural risk scores among women with some post-secondary education, and among Mount Royal College respondents, may have been attributable to higher mean age in these groups. Lower behavioural risk scores among respondents with prior HIV education may have been partially attributable to lower mean age of women in this subgroup. However, an independent effect of education level, site and prior HIV education on behavioural risk score cannot be ruled out, and should be explored in multivariate analysis.

Risk classification. Application of the risk classification system of Campostrini & McQueen (1993) placed 23.4% of female respondents in the highest risk category for women (i.e., medium risk). Application of the risk classification system of Leigh et al. (1993) placed 14.5% of women in the highest risk category for heterosexuals. The differing proportions arrived at with each system are not surprising in that Campostrini and McQueen's system is

weighted largely on behaviour over the past five years, while that of Leigh et al. is based strictly on behaviour in the past year.

In that both systems were only recently developed, little data exists with which to compare findings from the current study. Campostrini & McQueen (1993), in a population-based survey of British adults aged 18 through 50, reported that 12.4% of women in Glasgow, 16.5% of women in Edinburgh, and 19.5% of women in London fell into the highest risk category for women (i.e., medium risk). The fact that these figures are lower than those reported in the current study is at least partially attributable to the differences in age distribution of the two samples.

Leigh et al. (1993), in a nationally representative survey of US adults 18 years and older, reported that 15.1% of women who were sexually active in the past year fell into the highest risk category. In the current study, 20.1% of women who were sexually active in the past year fell into this category. Again, this difference is at least partially attributable to differences in age distribution between the two samples.

While classification systems are useful in terms of categorizing levels of behavioural risk, it is important to

recognize that a woman's risk of sexually-acquired HIV infection is also a function of HIV prevalence in the partner pool (Bowie & Ford, 1989). As such, women from Calgary in the highest risk category of a given classification system may not be at the same risk as women in other centres whose behaviour also places them in that category. Despite this weakness, risk classification systems can be useful in summarizing behaviours at a given point in time, and in illustrating trends in risk behaviour over time.

Conclusions and Recommendations: Factors Influencing Risk of Sexually-Acquired HIV Infection

Female, first year nursing students in Calgary are very well-informed about HIV transmission and its prevention, and are equipped with levels of knowledge necessary to protect themselves against sexually-acquired HIV infection. This suggests that AIDS education campaigns have been successful with this population in raising levels of awareness around AIDS and HIV infection. Because a minimum knowledge base is necessary to facilitate safer sexual behaviour, current public education campaigns around HIV and AIDS, including school-based programs, must be continued. These campaigns must emphasize the trend to increasing heterosexual transmission of HIV among both women and men.

Attitudes toward condoms are generally positive among female, first year nursing students. Despite sound knowledge of prevention of HIV transmission, and generally positive attitudes about condoms, consistent use of condoms among sexually active respondents was far from widespread. Few factors in the current study differentiated consistent users from non-users. Clearly, there is a need for more thorough investigation of factors associated with condom use and non-use in this population. Efforts to encourage consistent condom use among sexually active women must centre on factors found to be associated with condom use. In addition to encouraging consistent condom use, educators must ensure that those using condoms possess the requisite knowledge and skills to do so correctly.

Depending on the classification system employed, between 15 and 25% of respondents reported engaging in behaviour that would increase risk of sexually-acquired HIV infection and other sexually transmitted diseases. This finding suggests that targeted efforts to promote safer sexual behaviour among nursing students would not be out of place. Such efforts could include distribution of HIV prevention pamphlets and posters produced specifically for women, placement of condom machines in women's washrooms, presentations either in-class or out-of-class by experts on the subject of women and HIV, and participation in events

such as AIDS Awareness Week.

Strictly speaking, findings of the current study which pertain to risk of sexually-acquired HIV infection are generalizable only to the population of female, first year nursing students in Calgary. Whether the findings of this study generalize to other female post-secondary students is unclear. To our knowledge, female, first year nursing students do not differ in any systematic way from other female post-secondary students in terms of their likelihood to engage in risky behaviour. It has recently been established that smoking prevalence among female nursing students is similar to that of other female post-secondary students (O'Connor & Harrison, 1992). Assuming that nursing students do not differ from other post-secondary students in their propensity to engage in risk behaviour, findings of the current study suggest that HIV prevention efforts in post-secondary institutions should be maintained, if not intensified.

A number of areas worthy of additional research were identified in the current study, and include:

- study of factors associated with condom use and non-use among sexually active nursing students;

- comparison of condom-related communication/negotiation skills among women of varying educational and socioeconomic backgrounds;
- study of correctness of condom use among nursing students; and
- study of the association between sexual risk-taking and other risk behaviour (e.g., smoking, use of alcohol) among nursing students.

Practice-Related Knowledge, Attitudes and Beliefs
of First Year Nursing Students

Knowledge

HIV-related knowledge levels of the sample as a whole were very high. However, several knowledge gaps were identified that should be addressed in curriculum around HIV infection and AIDS. Items to which more than 10% of respondents were either incorrect or unsure related to the following topics: risk of HIV infection from insect vectors; risk of HIV infection associated with donating blood; risk of HIV infection associated with blood transfusion; risk associated with deep kissing and oral sex; risk of perinatal HIV infection associated with breastfeeding; protective efficacy of spermicides against HIV; and interpretation of HIV tests.

Previous studies of registered nurses and nursing students have also found that knowledge of established transmission mechanisms was high, but that misconceptions were prevalent. Armstrong-Esther & Hewitt (1989), for example, reported that 54% of Canadian university students surveyed believed that HIV infection could be acquired through insect vectors. Schillo & Reischl (1993), in a survey of registered nurses practising in Michigan, observed that 42% of respondents either believed that HIV was transmitted through insect vectors or were unsure. Further, Schillo & Reischl (1993) reported that more than half of the nurses participating in this study believed that HIV was transmitted through coughs and sneezes, and that feeding HIV positive patients was a risky activity.

Weak but significant correlations were observed between knowledge score and attitude toward persons with AIDS, attitude toward homosexuals, attitude toward condoms, and attitude toward prevention. Previous studies of nurses and nursing students have also reported correlations between knowledge and various HIV-related attitudes (Armstrong-Esther & Hewitt, 1989; Kerr & Horrocks, 1990; Lawrence & Lawrence, 1989). These findings suggest that accurate HIV-related knowledge may be one factor which underlies the development of positive HIV-related attitudes and beliefs.

Attitudes Toward Persons with AIDS and Homosexuals

Attitudes toward persons with AIDS were generally positive for the sample as a whole, as suggested by high mean and median scale scores. However, item-by-item analysis revealed that attitudes were not universally positive, and that there was considerable divergence of opinion and much uncertainty among respondents. Notably, close to 10% of respondents felt that persons with AIDS were getting what they deserved, and another 8% were undecided. These findings suggest that despite generally positive scale scores, educators should not assume that attitudes of first year nursing students toward persons with AIDS are homogeneous, nor that they are uniformly positive.

In comparison with previous studies, the attitudes of first year nursing students toward persons with AIDS were generally more positive. For example, in comparison with post-secondary respondents to the Canada Youth and AIDS Study (King et al., 1988), participants in the current study were far less likely to agree with restrictions on school attendance, employment and immigration. Further, participants in the current study were far less likely to agree that persons with AIDS should be quarantined. Whether these differences reflect a societal trend toward softening of attitudes toward persons with AIDS, or a genuine difference between nursing students and others, cannot be

determined from the current study. In addition, the possibility of socially desirable responses has not been ruled out.

The observation that a small proportion of respondents felt that some persons with AIDS are getting what they deserve is consistent with previous research. King et al. (1988) found that seven percent of post-secondary students participating in the Canada Youth and AIDS Study shared this view. Kerr & Horrocks (1990) found that just under 10% of practising nurses in Nova Scotia believed that AIDS is God's punishment for immorality, while an additional 16% were undecided. While the view of AIDS as punishment for past behaviour appears to be shared by a minority of respondents in the current study, its presence among students who may one day be asked to care for persons infected with HIV is a concern.

Participants in the current study expressed generally positive attitudes toward homosexuals; however negative attitudes were not uncommon, and many respondents expressed uncertainty with respect to certain issues. Consistent with previous research (King et al., 1988; Lester & Beard, 1988), attitude toward homosexuals correlated significantly with attitude toward persons with AIDS, suggesting that respondents' views about homosexuality may influence their

views about persons with AIDS or vice-versa.

The observation that more than 20% of respondents viewed homosexuality as wrong is consistent with previous research demonstrating that a small but significant proportion of nurses hold negative attitudes toward homosexuals. Kerr & Horrocks (1990) reported that 17% of Nova Scotia nurses viewed homosexuality as a pathological state, while another 28% were uncertain. Scherer, Wu & Haughey (1991) found that 55% of nurses surveyed felt they would have difficulty establishing a relationship with a homosexual patient. Alexander & Fitzpatrick (1990) reported that nurses were more likely to feel sympathy for AIDS patients who contracted the disease through blood transfusion than for AIDS patients who contracted the disease through homosexual contact.

In contrast to previous studies which reported more negative attitudes toward homosexuals among males (Eliason, 1993; Goodwin & Roscoe, 1988; King et al., 1988), no gender differences were observed in the current study. More positive attitudes toward homosexuals were noted among respondents with prior post-secondary education, those at Mount Royal College, and those who knew a person with HIV infection. In that respondents in each of these categories were older, more positive attitudes toward homosexuals may

have been a function of greater life experience and increased opportunity for contact with homosexuals; however, an independent effect of these variables cannot be ruled out.

If one assumes that HIV-related attitudes and beliefs influence the nurse's ability to deliver competent and compassionate care to individuals who are HIV positive, it follows that nurse educators must give attention to attitudes and beliefs in development of curriculum around HIV and AIDS. Previous studies have demonstrated that a curriculum which allows for exploration and discussion of issues around AIDS can foster more positive HIV-related attitudes among nursing students (Armstrong-Esther & Hewitt, 1990; Bower, Webb & Stevens, 1994; Brown et al., 1990). In that attitudes toward persons with AIDS and homosexuals tended to be more positive among respondents who knew someone infected with HIV, educators should make efforts to increase students' contact with such individuals. To do so, faculty could invite speakers who are HIV positive, arrange panel discussions with persons who are HIV positive, and, for clinical experiences, make greater use of community agencies which serve individuals who are HIV positive or have AIDS. With respect to homosexuality specifically, Eliason (1993) noted that discussions of culturally relevant health care in nursing education rarely address the

subcultures of gay men or injection drug users. In that gay men and injection drug users currently constitute the majority of individuals infected with HIV, nurse educators should give consideration to broadening discussions of culturally relevant care to include these subcultures.

Fear of AIDS

Few respondents expressed concern about contracting HIV infection through casual contact; however, 42% of respondents acknowledged personal vulnerability to HIV infection, and 45% stated that they were afraid of becoming infected with HIV in their work as a nurse. These findings support those of previous studies which suggest that many nurses and nursing students are highly fearful of occupationally-acquired HIV infection (Armstrong-Esther & Hewitt, 1990; Kerr & Horrocks, 1990).

Unfortunately, a composite fear of AIDS score could not be calculated for each respondent because of poor reliability of the fear of AIDS scale in this study. Inability to calculate a fear of AIDS score prevented calculation of correlation coefficients between the fear of AIDS scale and other scales used in the study. Previous studies have reported a significant association between fear of AIDS and attitude toward homosexuals, and have found reduced fear of AIDS among nurses who knew or had cared for

a person with AIDS (Byrne et al., 1993; Goodwin & Roscoe, 1988; Kerr & Horrocks, 1990; Lester & Beard, 1988).

According to Oermann & Gignac (1991) and others (Armstrong-Esther & Hewitt, 1990; Lester & Beard, 1988), nursing curriculum around HIV and AIDS should give high priority to addressing the AIDS-related fears held by many students. Educators should acknowledge these fears, and facilitate discussion around them. Students should be encouraged to explore on an individual basis what underlies their fear of AIDS. Discussions around fear of AIDS must include epidemiologic data concerning risk of occupationally acquired HIV infection. In that several studies have reported reduced fear of AIDS among nursing students who have had contact with HIV positive persons, educators should consider strategies which increase contact with such individuals in both classroom and clinical settings.

What accounted for the low reliability of the fear of AIDS scale in the current study is unclear. Examination of intercorrelations among items comprising the fear of AIDS scale revealed extremely poor correlation of items 48 and 50 with other items. Items 48 and 50 ask respondents to appraise their personal vulnerability to HIV infection considering behaviours which may increase or decrease their risk. A large proportion of the sample gave responses to

items 48 and 50 which suggested high levels of fear. At the same time, responses to items such as those assessing fear of AIDS through casual contact suggested low fear. This inconsistency, though it may accurately reflect respondents' beliefs, could partially explain the low reliability of the Fear of AIDS scale in the current study. As noted earlier, Bouten et al. (1987) reported an alpha coefficient of 0.80 for the fear of AIDS scale, based on research conducted in 1985. It is conceivable that fear of AIDS through casual contact may have been higher in 1985 than in the current study. If so, there may have been greater consistency between responses to items appraising fear of AIDS through casual contact and responses to other items on the scale. Future use of the fear of AIDS scale among nursing students is not recommended.

Attitudes Toward Condoms

Attitudes toward condoms for the group as a whole were very positive, as reflected in high mean and median scores on the attitude toward condoms scale. Similar to what was observed among sexually active women not in a long-term relationship, negative attitudes do persist in some areas. Over 30% of respondents agreed that condoms reduce sensation during intercourse, over 20% agreed that condoms reduce spontaneity, and over 20% associated carrying condoms with promiscuity. Close to 80% of participants in the current

study felt confident they knew how to use a condom correctly, and fewer than 30% felt that they needed additional information on correct condom usage.

In that nurses may be involved in counselling on sexual issues, nursing education programs must ensure that students are well-informed about condoms and are familiar with technical aspects of condom use. Despite the fact that most respondents expressed confidence in their ability to use condoms correctly, recent studies documenting high levels of incorrect condom use (King et al., 1988; Myers & Clement, 1994) should prompt nurse educators to ensure that students are knowledgeable with respect to technical aspects of condom use. Further, if one assumes that attitudes about a given behaviour influence one's ability to counsel effectively about that behaviour, as has been suggested by Becker et al. (1986), then nurse educators should attempt to foster positive attitudes about condoms among nursing students. Whether such efforts would meet with success is unclear. Becker et al. (1986) noted that nurses' attitudes about smoking are most strongly determined by current smoking status. If such a relationship generalizes to other health behaviours, it may be that the most effective way to foster positive condom-related attitudes among nursing students is to increase the number of sexually active nursing students using them.

Attitudes Toward HIV Prevention

Attitudes toward prevention of HIV infection and AIDS were generally very positive. Most respondents were in favour of increasing condom access, advertising condoms on television, developing needle exchange programs, and developing a vaccine to prevent HIV infection; however, between 10 and 20% of respondents were undecided on each of these issues. Close to 95% of respondents supported continuation of safer sex education in high schools, a finding which is encouraging and somewhat surprising given the current political climate in Alberta, and the recent emergence of abstinence movements such as Teen-Ed. Armstrong-Esther and Hewitt (1989) reported similar levels of support among baccalaureate nursing students for safer sex education in schools and the development of a vaccine, but less support for needle exchange programs.

In the current study, attitude toward prevention scale scores correlated significantly with scale scores for attitude toward persons with AIDS and attitude toward homosexuals. Not surprisingly, this finding suggests that attitudes of nursing students toward HIV prevention may be influenced by their attitudes toward homosexuals and their attitudes toward persons with AIDS.

The involvement of nurses in health promotion and

disease prevention activities is increasing in importance and acceptance (Canadian Nurses Association, 1992). Nurses involved in such activities will need to be equipped with the appropriate cognitive and attitudinal qualities in order to be effective. While most respondents in the current study agreed that various HIV prevention efforts should be promoted, upwards of 10% disagreed and many were undecided. Exploration of issues pertaining to the prevention of HIV infection and AIDS should be considered for inclusion in nursing education programs.

Other Practice-Related Issues

Responses of first year nursing students to a group of miscellaneous practice-related items suggest that many students support efforts to identify hospitalized patients who are HIV positive and that many believe nurses have the right to refuse to care for individuals who are infected with HIV. Over 50% of respondents believed that all patients admitted to hospital should be tested for HIV; further, over 40% felt that hospitalized patients who are HIV positive should be clearly identified with a sign on their door. In terms of curriculum around HIV and AIDS, these findings suggest that:

1. students should explore advantages and disadvantages of practice based on results of HIV testing, and contrast these with advantages and disadvantages of practice based on a system of universal precautions; and
2. students should reflect on ethical issues surrounding measures such as HIV testing of hospitalized patients and the posting of signs on hospital doors.

Opinion was evenly split in the current study over whether or not a nurse should have the right to refuse to care for a person with AIDS or HIV infection. Approximately 40% of respondents agreed that nurses should have this right, 40% disagreed, and 20% were undecided. Others have reported even higher levels of support for this view (Byrne & Murphy, 1993; Tesch et al., 1990). Unsolicited comments written by several respondents in the current study conveyed the view that individuals who are unwilling to nurse patients with AIDS would likely provide poor care and therefore should not be assigned such patients. Kerr & Horrocks (1990) suggested that policies should be developed which allow nurses to "opt out" of caring for patients with AIDS, and that specialized hospital units be developed which are staffed by nurses willing to provide care to these

patients. These suggestions appear inconsistent with the position of the Canadian Nurses Association (1992), which is that persons with AIDS are entitled to high quality health care, and that nurses have an obligation to provide such care safely, competently and humanely.

Encouragingly, only one percent of respondents in the current study predicted that they would refuse to nurse a patient with HIV infection or AIDS. The low rate of predicted refusal observed in the current study is in contrast to rates reported in the literature. Previous studies of baccalaureate nursing students have reported rates of predicted refusal ranging from 19 to 66% (Lester & Beard, 1988; Tesch et al., 1990; Wiley et al., 1988). Why the rate of predicted refusal was lower in the current study is unclear. Lower levels of fear among current respondents, and more positive attitudes toward homosexuals and persons with AIDS, may have been contributing factors; however, inter-study comparison on these constructs is difficult because of widely varying measurement tools. The level of student surveyed may also have contributed to observed differences in rates of predicted refusal. While only first year students participated in the current study, Lester & Beard (1988) surveyed second through fourth year students, Tesch et al. (1990) surveyed second year students, and Wiley et al. (1988) surveyed second through fourth year

undergraduate students, as well as graduate students. Brown et al. (1990) noted that first year students tend to be more idealistic than others, and are further removed from the possibility of actually nursing a patient with AIDS; as such, first year students may be more likely than others to express positive HIV-related attitudes, and less likely to acknowledge fear. Whether current respondents will become increasingly unwilling to nurse patients with AIDS as they move through their nursing program is unclear. The pattern of change in HIV-related attitudes and beliefs as a student moves through a nursing program has not been reported. Longitudinal analysis of such change would be enlightening.

Conclusions and Recommendations: Practice-Related Knowledge, Attitudes and Beliefs

More than any other group of health care professionals, nurses are on the front line of AIDS patient care. As the incidence of HIV infection and AIDS rises, and as survival time of those who are infected grows, more and more nurses can be expected to encounter individuals who are HIV positive in their practice. Nurses must be educationally prepared to give safe, competent and compassionate care to these persons.

Traditionally, nursing education programs have focused

on the knowledge and skills needed to nurse patients with particular problems. There is little question that specialized knowledge and skills are needed to nurse individuals infected with HIV, and that knowledge and skills should remain a focus of curriculum around HIV and AIDS. The association in this study and others between knowledge and various HIV-related attitudes lends further support to this notion. However, this study has demonstrated that first year nursing students are not exempt from the HIV-related fears, prejudices, stereotypes and negative attitudes found in the general population. As such, affective learning must also be given considerable attention in curriculum around HIV and AIDS. As noted by Byrne & Murphy (1993), acquisition of AIDS-related knowledge must be accompanied by recognition, examination and clarification of AIDS-related beliefs, attitudes and values if students are to develop into nurses willing and able to deliver quality nursing care to HIV positive persons.

How to develop attitudes and values that are supportive of HIV positive persons and their families is a difficult question. Clearly, a learner-centred approach that encourages critical reflection is preferable to a traditional didactic approach. A number of specific strategies intended to promote development of positive HIV-related attitudes and beliefs are suggested in the

literature. These include panel discussion, guest speakers, real or simulated case studies, role playing, debate, and values clarification exercises. Several excellent resources outlining learning activities which address AIDS-related attitudes and beliefs are available to nurse educators (Canadian Nurses Association, 1992; Canadian Public Health Association, 1991). Increasing students' contact in the classroom and clinical setting with individuals who are HIV positive is also recommended as a strategy which may effectively foster positive HIV-related attitudes and beliefs. Finally, the important role that nurse educators play in modelling positive HIV-related attitudes, beliefs and behaviours cannot be over-emphasized.

The rapidity with which new knowledge and technology emerges in the health field forces nurse educators involved in curriculum development to make difficult decisions about which topics to address, when to address them, and how much emphasis to give them. With respect to HIV infection and AIDS, some have advocated that these topics be de-emphasized and treated like any other terminal or infectious diseases in the curriculum (McGriff & Hurley, 1990, cited in Bower et al., 1994). Those in favour of such an approach argue that HIV infection and AIDS, in comparison with leading causes of morbidity and mortality, affect relatively few, and that giving special emphasis to these illnesses serves only to

heighten anxiety around them. Most, however, agree that AIDS is unique among illnesses in terms of the fears, anxieties, prejudices and stereotypes associated with it (Armstrong-Esther & Hewitt, 1990; Bower et al., 1994; Brown et al., 1990; Byrne & Murphy, 1993; Eliason, 1993). For this reason, there is general agreement in the nursing literature that HIV infection and AIDS should receive considerable attention in the nursing curriculum.

Increasing the presence of HIV infection and AIDS within the nursing curriculum, without simultaneously detracting from the attention given to other topics, is difficult. Day-long workshops outside of regular school hours are a possible solution and have been previously employed (Brown et al., 1990); however, other commitments may prevent many students from attending. Further, the advisability of limiting discussion of issues around HIV infection and AIDS to a one-day workshop is questionable. In fact, many have suggested that it is preferable to integrate discussion of AIDS-related issues at several points throughout the curriculum beginning in the first year of the program (Brown et al., 1990; Mueller et al., 1992; Oermann & Gignac, 1991). Courses dealing with pathophysiology and nursing of the adult patient are obvious choices for inclusion of HIV-related material; however, educators can increase the presence of AIDS-related content

in the curriculum by illustrating concepts discussed in other courses with HIV-related examples. Such integration could occur in discussions of epidemiology, microbiology, ethics, culturally-relevant care, sexuality, health promotion, and disease prevention. In addition, making greater use of agencies which serve the HIV positive community for clinical placements would increase the presence of AIDS-related content in the curriculum without increasing demand for classroom hours.

Several areas for additional research pertaining to the HIV-related knowledge, attitudes and beliefs of nursing students are listed below, and include:

- longitudinal analysis of changes in HIV-related knowledge, attitudes and beliefs over the course of a nursing program;
- development of an instrument measuring fear of AIDS among nursing students;
- exploration of factors associated with fear of AIDS among nursing students; and
- study of the short-term and long-term effectiveness of various educational approaches at modifying HIV-related knowledge, attitudes and beliefs;
- study of reasons underlying students' refusal to care for HIV positive patients; and

- study of students' attitudes toward patients with other behaviourally-induced illnesses (e.g., alcoholic liver disease).

Study Limitations

Findings of the current study should be interpreted with the following limitations in mind. First, the cross-sectional design of the study precluded causal inference. Second, measures of knowledge, attitudes and behaviour employed in this study differed from those used in previous studies, making inter-study comparisons difficult. Finally, the relatively small sample size limited statistical power and may have prevented certain associations from achieving statistical significance.

Three limitations pertain specifically to that portion of the study dealing with risk behaviours for sexually-acquired HIV infection. First, reliability of the self-report measures of sexual behaviour used in this study is difficult to substantiate. According to Anderson and Dahlberg (1992), there may be a tendency among females to underreport risk behaviour, and a tendency among males to overreport. If this is the case, the observed prevalence of risk behaviour among women in this study may be an underestimate. The retrospective nature of the behavioural items used on the survey may have compounded measurement

error by introducing recall bias. Second, the relatively small number of behavioural items on the survey limited the researcher's ability to make a true determination of risk. Data pertaining to characteristics of sexual partners, specific sexual practices, correctness of condom use, and history of sexually transmitted disease would have clarified levels of risk for sexually-acquired HIV infection. Third, female respondents were not asked to reveal sexual orientation, and it was assumed that partners were of the opposite sex. The extent to which this assumption biased results and conclusions is unclear.

Two limitations apply specifically to that portion of the study which dealt with the practice-related knowledge, attitudes and beliefs of first year nursing students. First, socially desirable responses may have contributed to the generally positive HIV-related attitudes observed in the current study. The fact that students had discussed extensively such core nursing concepts as empathy and unconditional caring prior to participation in the study may have increased the likelihood that socially desirable response influenced the results. Second, poor reliability of the fear of AIDS scale precluded a number of analyses which may have been illuminating.

Summary

In this study, HIV-related knowledge, attitudes, beliefs and behaviours of first year nursing students in Calgary were explored. Study results suggested that students are highly knowledgeable about mechanisms of HIV transmission and its prevention, and are generally positive in terms of HIV-related attitudes and beliefs. Study findings also suggested that a small proportion of students were engaging in behaviours placing them at increased risk of sexually-acquired HIV infection. Implications of the study were discussed, and areas for additional research were identified.

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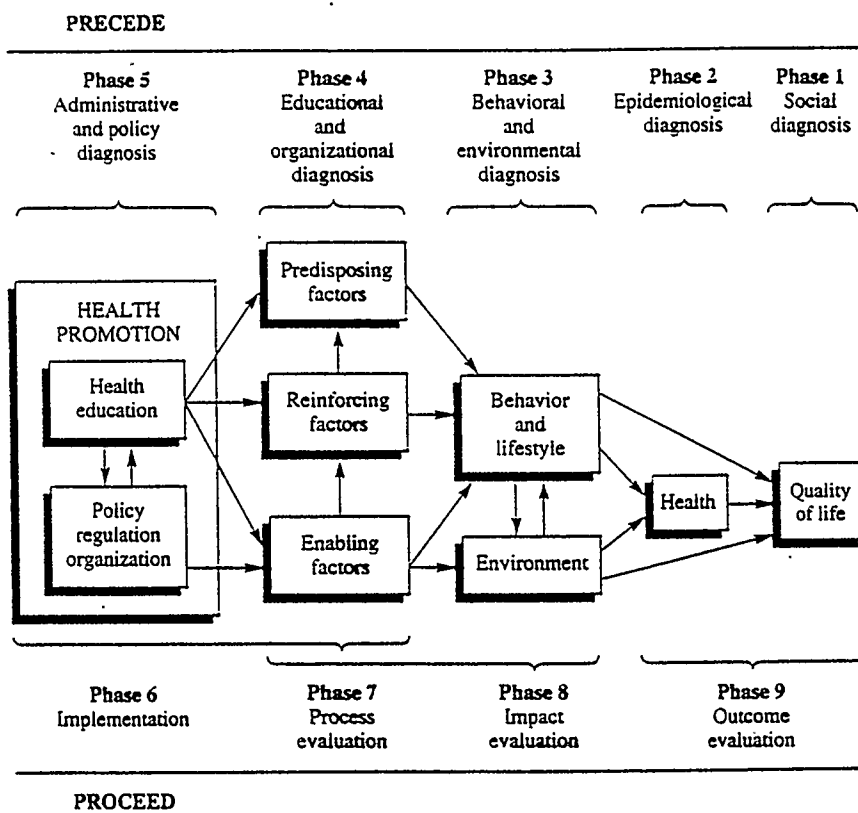
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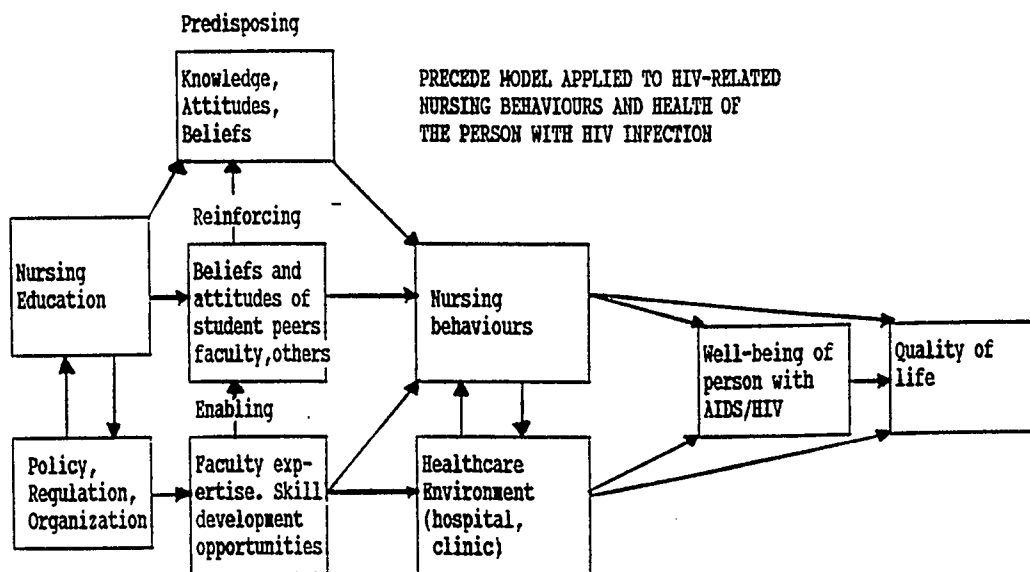
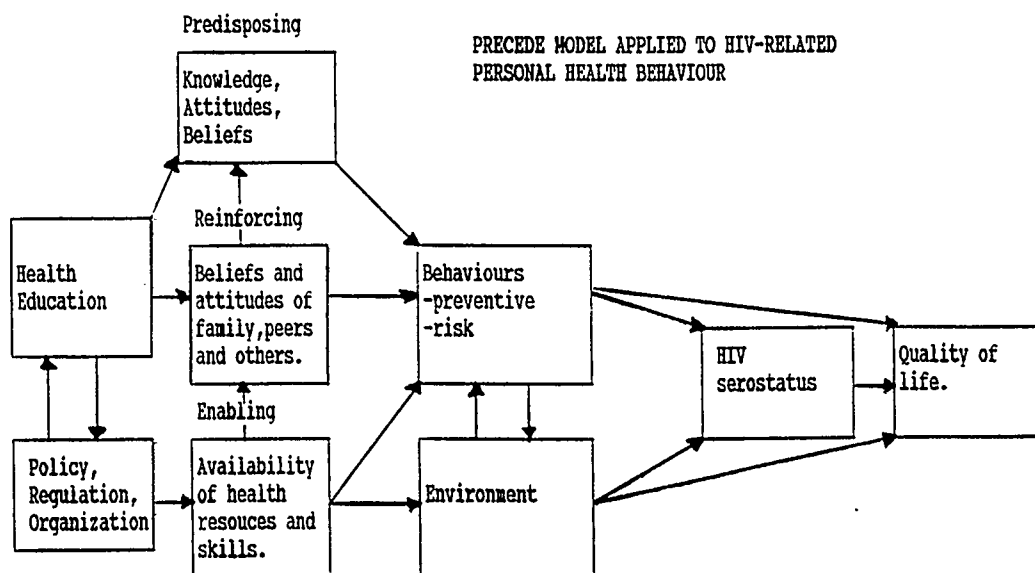
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Appendix A

PRECEDE/PROCEED Model (Green & Kreuter, 1991)

Appendix B

Adaptations of PRECEDE Model

Appendix C
Questionnaire

TO BEGIN, WE WOULD LIKE TO ASK YOU A FEW QUESTIONS ABOUT YOURSELF. YOUR RESPONSES ARE ANONYMOUS. ALL INFORMATION WILL BE TREATED CONFIDENTIALLY.

1. In what year were you born?

19 ____

2. What is your sex?

Male ____

Female ____

3. What is the highest level of education you have obtained prior to entering the nursing program?

High school diploma ____

Some post-secondary ____

College diploma ____

University degree ____

Other ____

4. What is your marital status?

Single ____

Married ____

Separated ____

Divorced ____

Widowed ____

Other ____

NOW WE WOULD LIKE TO ASK SOME QUESTIONS ABOUT AIDS/HIV INFECTION.
CIRCLE ONE ANSWER FOR EACH QUESTION.

	YES	NO	NOT SURE
5. Can a person get AIDS/HIV infection from holding hands with someone who is infected with the AIDS virus (HIV)?	1	2	3
6. Can a person get AIDS/HIV infection from sharing needles used to inject drugs?	1	2	3
7. Can a person get AIDS/HIV infection from being bitten by mosquitoes or other insects?	1	2	3
8. Can a person get AIDS/HIV infection from donating blood?	1	2	3
9. Can a person get AIDS/HIV infection from having a blood test?	1	2	3
10. Can a person get AIDS/HIV infection from using public toilets?	1	2	3
11. Can a person get AIDS/HIV infection from having sexual intercourse?	1	2	3
12. Can a person get AIDS/HIV infection from being in the same class with a person who has AIDS/HIV infection?	1	2	3
13. Can a person get AIDS/HIV infection from deep kissing with someone who has AIDS/HIV infection?	1	2	3

	YES	NO	NOT SURE
14. Can a person get AIDS/HIV infection by performing oral sex (fellatio) on a man?	1	2	3
15. Can a person get AIDS/HIV infection from a blood transfusion in Canada today?	1	2	3
16. Can you tell if people have AIDS/HIV infection by looking at them?	1	2	3
17. Can a pregnant woman who has the AIDS virus (HIV) infect her unborn baby with the virus?	1	2	3
18. Can a man who has the AIDS virus (HIV) infect a woman with his semen (sperm) during sexual intercourse?	1	2	3
19. Can people <u>reduce</u> their chances of being infected with the AIDS virus (HIV) by not having any kind of sexual intercourse (being abstinent)?	1	2	3
20. Can a woman with AIDS/HIV infection pass the AIDS virus (HIV) to her newborn baby through breastfeeding?	1	2	3
21. Can people reduce their chances of becoming infected with the AIDS virus (HIV) by using condoms during sexual intercourse?	1	2	3
22. Can a woman who has the AIDS virus (HIV) infect a man with her vaginal secretions during sexual intercourse?	1	2	3

	YES	NO	NOT SURE
23. Can people reduce their chances of becoming infected with the AIDS virus (HIV) by <u>not</u> having any kind of sexual intercourse with a person who has injected drugs?	1	2	3
24. Can people reduce their chances of becoming infected with the AIDS virus (HIV) by using birth control pills?	1	2	3
25. Can people reduce their chances of becoming infected with the AIDS virus (HIV) by using spermicides?	1	2	3
26. Can a person be infected with the AIDS virus (HIV) but not have AIDS?	1	2	3
27. Can a person have a negative blood test for AIDS and still be infected with the AIDS virus (HIV)?	1	2	3
28. Is there a cure for AIDS/HIV infection?	1	2	3

NOW WE WOULD LIKE YOU TO INDICATE THE EXTENT TO WHICH YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS (CIRCLE YOUR RESPONSE)

	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
29. People who have the AIDS virus (HIV) should be allowed to attend regular school classes.	1	2	3	4	5
30. People who have the AIDS virus (HIV) should be allowed to be teachers.	1	2	3	4	5
31. People who have the AIDS virus (HIV) should be allowed to work in restaurants.	1	2	3	4	5
32. People who have the AIDS virus (HIV) should be allowed to work in hospitals.	1	2	3	4	5
33. People who have the AIDS virus (HIV) should be allowed to immigrate to (enter) Canada.	1	2	3	4	5
34. People who have the AIDS virus (HIV) should be quarantined from other people (required to live away from other people).	1	2	3	4	5
35. Some people who have AIDS are getting what they deserve.	1	2	3	4	5
36. I could not be a friend of someone who has AIDS.	1	2	3	4	5

	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
37. Women who have AIDS/HIV infection and are pregnant should be encouraged to terminate their pregnancy (get an abortion).	1	2	3	4	5
38. The government should sponsor hospices for AIDS patients, similar to those for dying cancer patients.	1	2	3	4	5
39. Homosexuality is wrong.	1	2	3	4	5
40. Homosexuals contribute positively to society.	1	2	3	4	5
41. Homosexuals should be allowed to be teachers.	1	2	3	4	5
42. I would be comfortable talking with a homosexual person.	1	2	3	4	5
43. I wouldn't mind being in the same room with a friend who has AIDS.	1	2	3	4	5
44. If I found out a friend had AIDS, I would be afraid to hug him/her.	1	2	3	4	5
45. I would object to sending my non-infected child to a school which had a child who has AIDS.	1	2	3	4	5

	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
46. I believe public officials when they say AIDS cannot be transmitted through casual contact.	1	2	3	4	5
47. Compared with other health problems, AIDS is a very minor problem.	1	2	3	4	5
48. I believe I have little or no chance of becoming infected with the AIDS virus (HIV).	1	2	3	4	5
49. The seriousness of AIDS is greatly overblown by the media.	1	2	3	4	5
50. I worry, or would worry, about getting AIDS/HIV infection when having sexual intercourse.	1	2	3	4	5
51. I believe condoms reduce the chance of becoming infected with the AIDS virus (HIV).	1	2	3	4	5
52. I am embarrassed or would be embarrassed about buying condoms in a drug store.	1	2	3	4	5
53. My friends believe that using condoms during sexual intercourse with a new partner is a smart thing to do.	1	2	3	4	5
54. Using condoms can interfere with spontaneity (ruin the moment).	1	2	3	4	5

	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
55. I am embarrassed or would be embarrassed about carrying a condom in my purse or wallet.	1	2	3	4	5
56. I am confident that I know how to use a condom correctly.	1	2	3	4	5
57. I have difficulty or would have difficulty talking to my partner about using condoms.	1	2	3	4	5
58. I have difficulty or would have difficulty telling my partner that I won't have sexual intercourse unless we use a condom.	1	2	3	4	5
59. Condoms reduce sensation during sexual intercourse.	1	2	3	4	5
60. If you carry condoms, people will think you are promiscuous (sleep around a lot).	1	2	3	4	5
61. Condoms should be made more accessible (easier to get) to reduce the spread of AIDS/HIV infection.	1	2	3	4	5
62. Condoms <u>should not</u> be advertised on television.	1	2	3	4	5

	STRONGLY AGREE	AGREE	UNSURE	DISAGREE	STRONGLY DISAGREE
63. The development of needle exchange programs for people addicted to injection drugs should be encouraged in order to reduce the spread of AIDS/HIV infection.	1	2	3	4	5
64. High school students <u>should not</u> be taught about "safer sex" in school.	1	2	3	4	5
65. Development of a vaccine to prevent AIDS/HIV infection should be a priority.	1	2	3	4	5

THE NEXT FEW QUESTIONS ARE VERY PERSONAL. YOUR CANDID ANSWERS ARE NEEDED SO THAT WE CAN BETTER UNDERSTAND THE LEVEL OF RISK STUDENTS ARE TAKING WITH RESPECT TO HIV INFECTION AND AIDS. PLEASE BE ASSURED THE INFORMATION YOU PROVIDE WILL BE KEPT STRICTLY CONFIDENTIAL.

66. During the past 5 years, with how many people have you had sexual intercourse?
- a. I have never had sexual intercourse.
 - b. 1 person
 - c. 2 people
 - d. 3 people
 - e. 4 people or more
67. During the past year, with how many people did you have sexual intercourse?
- a. None
 - b. 1 person
 - c. 2 people
 - d. 3 people
 - e. 4 people or more
68. Did you drink alcohol or use drugs before you had sexual intercourse last time?
- a. I have never had sexual intercourse
 - b. No
 - c. Yes
69. When you have sexual intercourse, how often do you or your partner use a condom?
- a. I have never had sexual intercourse.
 - b. Always
 - c. Sometimes
 - d. Rarely
 - e. Never

70. Do you have a steady sexual partner at the moment?

- a. No
- b. Yes

If yes: 71. How long have you been together?

- a. 5 years or longer
- b. Less than 5 years

YOU'RE ALMOST FINISHED. FOR THE FOLLOWING, PLEASE INDICATE WHETHER YOU AGREE WITH THE STATEMENT, DISAGREE WITH THE STATEMENT, OR ARE NOT SURE (CIRCLE YOUR RESPONSE).

	AGREE	DISAGREE	NOT SURE
72. Hospitalized patients with AIDS/HIV infection should be identified with a sign on the door of their hospital room that says "HIV Precautions."	1	2	3
73. All patients should be tested for AIDS/HIV infection when they are first admitted to hospital.	1	2	3
74. A nurse should have the right to refuse to care for a person with AIDS/HIV infection.	1	2	3
75. I would refuse to nurse a person who had AIDS/HIV infection.	1	2	3
76. I am afraid that I could become infected with the AIDS virus (HIV) in my work as a nurse.	1	2	3

LAST SET OF QUESTIONS! FOR THE REMAINING ITEMS, PLEASE CIRCLE THE ANSWER OF YOUR CHOICE.

77. Do you know a person with AIDS/HIV infection personally?

YES NO NOT SURE

78. Have you been taught about AIDS/HIV infection in high school, or in previous college or university programs?

YES NO NOT SURE

79. Do you know where to get good information about AIDS/HIV infection?

YES NO NOT SURE

80. Do you know where to get tested to see if you are infected with the AIDS virus (HIV)?

YES NO NOT SURE

LAST ITEM! PLEASE INDICATE HOW USEFUL MORE INFORMATION ABOUT THE FOLLOWING WOULD BE TO YOU PERSONALLY (CIRCLE YOUR ANSWER).

	VERY USEFUL	SOMEWHAT USEFUL	NOT AT ALL USEFUL
1. Sexual activities that are risky for getting or spreading the AIDS virus (HIV).	1	2	3
2. How to use condoms correctly.	1	2	3

	VERY USEFUL	SOMEWHAT USEFUL	NOT AT ALL USEFUL
3. How to convince your partner to use condoms.	1	2	3
4. Different ways of having sex that are safer.	1	2	3
5. Ways to make safer sexual activities more erotic.	1	2	3
6. Testing for the AIDS virus (HIV), and what it means if you test positive or negative.	1	2	3
7. How the AIDS virus is spread.	1	2	3
8. AIDS/HIV infection and pregnancy.	1	2	3
9. How to talk to your partner about his/her sexual history.	1	2	3
10. OTHER (please specify)			

YOU'RE FINISHED!

THANK YOU VERY MUCH FOR
YOUR PARTICIPATION

Appendix D

Cover Letter (Calgary Conjoint Nursing Program)**SURVEY: HIV-RELATED KNOWLEDGE, ATTITUDES AND BEHAVIOURS**

HIV infection and AIDS affect increasing numbers of Canadians daily and are illnesses no longer restricted to high-risk groups. This survey has been developed so that we can better understand the knowledge, attitudes and behaviours of first year nursing students in relation to HIV infection and AIDS. The information you give will be used to identify HIV-related learning needs, plan HIV-related learning activities, and develop HIV-related program curriculum. Your input is highly valued.

Completing this survey is voluntary. Whether or not you participate in the survey will not affect your progress in the nursing program.

Do not write your name on the survey. The answers you give will be kept private. No one will know what your answers are, and no individual data will be reported.

The survey will take approximately 15 minutes to complete.

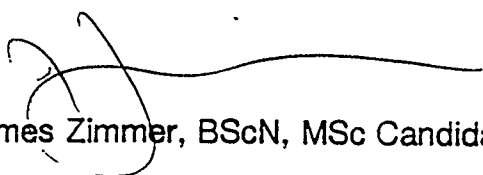
You will receive a written summary of the survey results as soon as they are available. This summary will be distributed through nursing faculty, no later than September, 1994. Survey results will also be shared with curriculum planners and interested nursing faculty of the Calgary Conjoint Nursing Program.

If you have questions or concerns about this survey, you may contact any of the following:

James Zimmer (MSc Candidate)	220-7368
Dr. W. Thurston (Supervisor)	220-4286
Office of Medical Bioethics, University of Calgary	220-7990

Thank you for your assistance.

Sincerely,



James Zimmer, BScN, MSc Candidate

Appendix E

Cover Letter (Mount Royal College Nursing Program)**SURVEY: HIV-RELATED KNOWLEDGE, ATTITUDES AND BEHAVIOURS**

HIV infection and AIDS affect increasing numbers of Canadians daily and are illnesses no longer restricted to high-risk groups. This survey has been developed so that we can better understand the knowledge, attitudes and behaviours of first year nursing students in relation to HIV infection and AIDS. The information you give will be used to identify HIV-related learning needs, plan HIV-related learning activities, and develop HIV-related program curriculum. Your input is highly valued.

Completing this survey is voluntary. Whether or not you participate in the survey will not affect your progress in the nursing program.

Do not write your name on the survey. The answers you give will be kept private. No one will know what your answers are, and no individual data will be reported.

The survey will take approximately 15 minutes to complete.

You will receive a written summary of the survey results as soon as they are available. This summary will be distributed through nursing faculty, no later than September, 1994. Survey results will also be shared with curriculum planners and interested nursing faculty at Mount Royal College.

If you have questions or concerns about this survey, you may contact any of the following:

James Zimmer (MSc Candidate)	220-7368
Dr. W. Thurston (Supervisor)	220-4286
Office of Medical Bioethics, University of Calgary	220-7990

Thank you for your assistance.

Sincerely,



James Zimmer, BScN, MSc Candidate

Appendix F

Knowledge Item Responses Considered Correct

- 5. no
- 6. yes
- 7. no
- 8. no
- 9. no
- 10. no
- 11. yes
- 12. no
- 13. no
- 14. yes
- 15. yes
- 16. no
- 17. yes
- 18. yes
- 19. yes
- 20. yes
- 21. yes
- 22. yes
- 23. yes
- 24. no
- 25. no
- 26. yes
- 27. yes
- 28. no