

THE IMPACT OF AIDS EDUCATION ON SEVENTH AND
EIGHTH GRADE ADOLESCENTS' KNOWLEDGE,
ATTITUDES AND BELIEFS ABOUT AIDS

CENTRE FOR NEWFOUNDLAND STUDIES

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**The Impact of AIDS Education on Seventh and
Eighth Grade Adolescents' Knowledge, Attitudes
and Beliefs about AIDS.**

by

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Abstract

Adolescents are the fastest growing at-risk group for contracting AIDS because of their developmental characteristics, lifestyle practices, and their youthful sense of invulnerability. In the absence of a cure, prevention has been recognized as the only defense against the disease and education is seen as the key to prevention. Using a questionnaire based on the PRECEDE model and developed by Altonender et al. (1992) a pretest-posttest quasi-experimental design was employed to assess the impact of an AIDS educational program on junior high school students in central St. John's, Newfoundland. One hundred and ninety-four students completed the pretest. The students were then randomized into either the intervention group (N=82) or the control group (N=98). The experimental and control group were not significantly different on any of the characteristics related to demographics or previous knowledge related to AIDS. The results were analyzed using means, standard deviations and a repeated measures analysis of variance. Findings indicate that there was a significant change in AIDS knowledge in the intervention group ($p < .001$). However, there was no

significant change in attitudes toward people with AIDS, beliefs about AIDS, values, perceptions, enabling and reinforcing factors after the intervention. A one hour intervention is effective in changing adolescents' knowledge of AIDS but does not affect the other concepts associated with the PRECEDE framework. Further assessment of types of interventions, refinement of the PRECEDE questionnaire and research into and prevention of adolescents' risk taking behaviour is recommended.

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Chapter 1

Adolescents may be at risk for contracting the acquired immune deficiency syndrome (AIDS) because of their developmental stage, sexual activity, substance abuse and misconceptions about transmission of the human immunodeficiency virus (HIV) (Alteneder, Price, Telljohann, Didion, & Locher, 1992; King et al., 1989). In the absence of a cure, prevention has been recognized as the only defense against AIDS and the HIV (Ross, Caudle, & Taylor, 1989). Numerous research studies have identified education as the key to prevention (Alteneder et al., 1992; Ballard, White, & Glascoff, 1990; Brown, Fritz, & Barone, 1989; King et al., 1989; Siegal, Grodsky, & Herman, 1986; Walsh & Bibace, 1990). The purpose of the present research is to determine the impact of an AIDS education session on grades seven and eight students' knowledge, attitudes and beliefs about AIDS, which may in turn affect their risk of acquiring AIDS/HIV.

AIDS is considered a major health problem in Canada (Health & Welfare Canada, 1994). Since 1979 AIDS has claimed the lives of 8,274 Canadians. In July, 1995 Health and Welfare Canada estimated that

over 11,644 Canadians had contracted AIDS; the number has increased by 1,068 in the last six months. Less than 1% of people with AIDS (n=38) have been between the ages of 15-19, and 20% of the cases (n=2,068) occurred in individuals ages 20-29 (Health & Welfare Canada, 1995). Although the numbers may be small compared with other age groups, it is important to remember that the incubation period for AIDS is measured in years, and many of the 20-29 age group may have been infected during adolescence (Alteneder et al., 1992; Brown, Nassau, & Barone, 1990; Scott, Chambers, Underwood, Walter, & Pickard, 1990; Walker, 1992).

To understand the complexity and extent of AIDS in Newfoundland it is necessary to examine the incidence and prevalence of the HIV. There are 158 individuals in Newfoundland who tested positive for the HIV (Newfoundland Department of Health, 1995). Twelve cases appeared in the age group 0-19. Of those that tested positive in Newfoundland the main causes were bisexual and homosexual activities.

Canadian statistics on the HIV are no longer available. The Federal Department of Health does not

register the HIV statistics because they found it impossible to maintain accurate records of the rapidly growing rate of infection. Another problem with assessing the rate of the virus in Canada is that most studies on people who are HIV positive have investigated intravenous drug users, homosexual men, immigrants from Haiti or patients attending sexually transmitted disease (STD) clinics rather than the general population (Remis & Sutherland, 1993). Since adolescents would probably not be identified in these statistics the actual number of the HIV positive teenagers is difficult to assess.

A study of 14,000 pregnant women in Canada (ages 15-44) in 1992 found 13 cases of the HIV in Newfoundland, the highest rate for any province in the country (Remis & Sutherland, 1993). While this statistic does not tell us about the target group, adolescents, it does give an indication that AIDS is moving into the heterosexual population. From this study it is estimated that there could be as many as 140 women infected with the HIV in the province.

The Canada Youth and AIDS Survey reported that Canadian adolescents, including Newfoundlanders, had

not internalized the risk that the HIV infection and AIDS pose to their future well being (King et al., 1989). The report further established that sexual activity among Newfoundland teens occurred at a higher than average rate for Canadian adolescents and that protected sex was not the norm. These high risk life style practices place adolescents at risk for the HIV, the virus that causes AIDS.

Another statistic that influences the scope of the AIDS/HIV problem is the number of adolescent cases of STDs. Adebayo (1989) and Jessamine and McHale (1989) found that the highest rates of STDs were in young people of high school age. The most recent statistics on rates of STDs in Newfoundland were compiled in March, 1995 by the Provincial Department of Health. Since January, 1995 there have been 92 cases of chlamydia and two cases of gonorrhoea reported in the age group 0-19. The practices that expose teenagers to STDs also place them at risk for the HIV.

The present research study replicates an investigation conducted by Alteneider et al. (1992). They developed and used a questionnaire based on the predisposing, reinforcing and enabling causes in the

educational diagnosis and evaluation (PRECEDE) model to determine junior high school students' knowledge, attitudes and beliefs about AIDS. Possible benefits of the proposed research are: (1) supporting and increasing the generalizability of Alteneider et al.'s study; (2) assessing the impact of an AIDS education program on seventh and eighth grade students' knowledge, attitudes and beliefs about AIDS.

Statement of the Problem

Adolescence is a time of profound physiological and psychosocial change. It is a time of discovery, full of risk and adventure, when teenagers must confront a wide range of challenges and problems (Tucker & Cho, 1991). Teenagers experiment with a variety of behaviours and lifestyles that place them at risk for contracting AIDS. One of those problems is the risk of the HIV infection and the development of AIDS. Several risk factors have been identified in the literature for this group: the developmental aspects of adolescence; sexual activity; and substance abuse (Alteneider et al., 1992; Ballard et al., 1990; Brown et al., 1989; King et al., 1989; Siegal et al., 1986;

Walsh & Bibace, 1990). Thus, the developmental aspects of adolescence associated with risk taking behaviour place the young person at increased risk.

Some of the developmental demands that place an adolescent at risk for contracting the HIV are: developing sexual maturity and sexual identity, becoming more independent from their parents and other adults, and developing independent thought and action (Friedman & Goodman, 1992). In meeting these developmental demands they begin to form new and mature relationships with peers of both sexes and reevaluate their parents' beliefs, values and attitudes. They may also experiment with high risk activities in an attempt to establish their own identity. It is these activities which may place them at risk for AIDS and the HIV.

Concurrent with the development of sexual maturity is the beginning of sexual activity among adolescents. The main mode of transmission of the HIV is sexual activity (Newfoundland Department of Health, 1995). Adolescents are at risk for contracting AIDS because of their sexual behaviour, variety of sexual activities (intercourse, anal sex and oral sex) and their lack of

contraceptive protection (Alteneder et al., 1992; Tucker & Cho, 1991). King et al. (1988) found that 29% of grade nine students had engaged in intercourse at least once. Beazley, King and Warren (1989) noted that 37% of Newfoundland adolescents were sexually active and that protected sex was not the norm.

A second risk factor among some adolescents is substance abuse. As part of their seeking independence and exposure to peer pressure they may begin experimenting with drugs. Substance abuse is connected to transmission of AIDS in two ways. First, the HIV is transmitted by contact with infected needles and secondly, substance abuse increases adolescents' vulnerability and decreases their inhibitions (Millstein, Moscicki, & Broering, 1994; Santelli & Beilenson, 1992).

The developmental characteristics of adolescence, amount of sexual activity and substance abuse may contribute to the transmission of AIDS/HIV within the teenage population. In Newfoundland, adolescents are becoming the fastest growing at risk group (Curran, 1995). This makes the investigation of AIDS/HIV prevention an important issue for nursing research. It

has been suggested in the literature that the appropriate defense against AIDS/HIV and the means of preventing transmission of the virus is educating adolescents about their high risk lifestyle.

Rationale and Purpose

Without a cure, education is society's main defense against AIDS (Ross et al., 1989). Statistics on AIDS/HIV indicate that most cases of the disease are the result of behaviour that can be modified (Newfoundland Department of Health, 1995). Authors describing the transmission of the disease, suggest that education is the key to controlling and preventing the HIV infection (Tucker & Cho, 1991). Friedman and Goodman (1992) state for a behavioural change to occur, adolescents must have accurate information on which to base their decisions. Education does not guarantee a behavioural change but it is a necessary first step (Walker, 1992). With the high rate of sexual activity and substance abuse among Newfoundland teenagers and other attributes associated with their developmental stage, there is an urgent need to implement and assess

relevant and effective AIDS education for adolescents (Beazley et al., 1989; King et al., 1989).

The purpose of the present study is to evaluate the effects of an AIDS educational session on adolescents' knowledge, attitudes and beliefs about AIDS. Findings from this research may be important for future AIDS education, health promotion, education research, nursing practice and nursing research. The research may also have theoretical significance in that it provides an opportunity to examine relationships between factors within the PRECEDE framework.

Research Questions

1. What effect does AIDS education have on adolescents' predisposing (knowledge, attitudes, beliefs, values and perceptions), enabling and reinforcing factors that place people at risk for AIDS?
2. What effect do key variables (grade and gender) have on the effectiveness of an AIDS intervention and the predisposing, enabling and reinforcing factors, that place people at risk for AIDS, among an adolescent population?

Hypotheses

Three hypotheses were tested in this study. It was hypothesized that after completion of the intervention:

1. There will be a difference between the pretest and posttest mean scores for the predisposing (knowledge, attitudes, beliefs, values and perceptions), enabling and reinforcing factors, that place people at risk for AIDS, between students who received school-based AIDS education and those who did not.
2. There will be a difference between pretest and posttest mean scores for the predisposing (knowledge, attitudes, beliefs, values and perceptions), enabling and reinforcing factors, that place people at risk for AIDS, between seventh and eighth grade students who received school-based AIDS education and those who did not.
3. There will be a difference between pretest and posttest mean scores for the predisposing (knowledge, attitudes, beliefs, values and perceptions), enabling and reinforcing factors, that place people at risk for AIDS, between male and female students who received school-based AIDS education and those who did not.

Theoretical Framework

The PRECEDE model was chosen as the framework for this study because of its focus on health education diagnosis. As well, the model provides structure and organization for planning and evaluating health education (see Figure 1).

The PRECEDE framework is a health education planning model based on theoretical and applied principles from epidemiology, social and behavioural sciences, administration, and education (Green, Kreuter, Deeds, & Partridge, 1980; Redman, 1988). The applicability of the model to the present program and its seven phases will be discussed briefly in the following section.

Phases 1 and 2 of the PRECEDE framework involve assessing the quality of life of the population and identifying health problems. This includes assessing rates of AIDS in the population. The literature substantiates that AIDS is a major health problem in Canada today and that the disease exerts an effect on the quality of life of adolescents (Adebayo, 1989; Alteneider et al., 1992; Health and Welfare Canada, 1994).

Phase 3, behavioural diagnosis, involves identification of behaviours that contribute to the identified health problem (Green et al., 1980). Non behavioural factors are age (adolescence) and gender. Behavioural factors that place people at risk for AIDS are unprotected sex and sharing needles. King et al. (1989) and Tucker and Cho (1991) state that teenagers experiment with these high risk behaviours, therefore, preventive education should be targeted at the adolescent population.

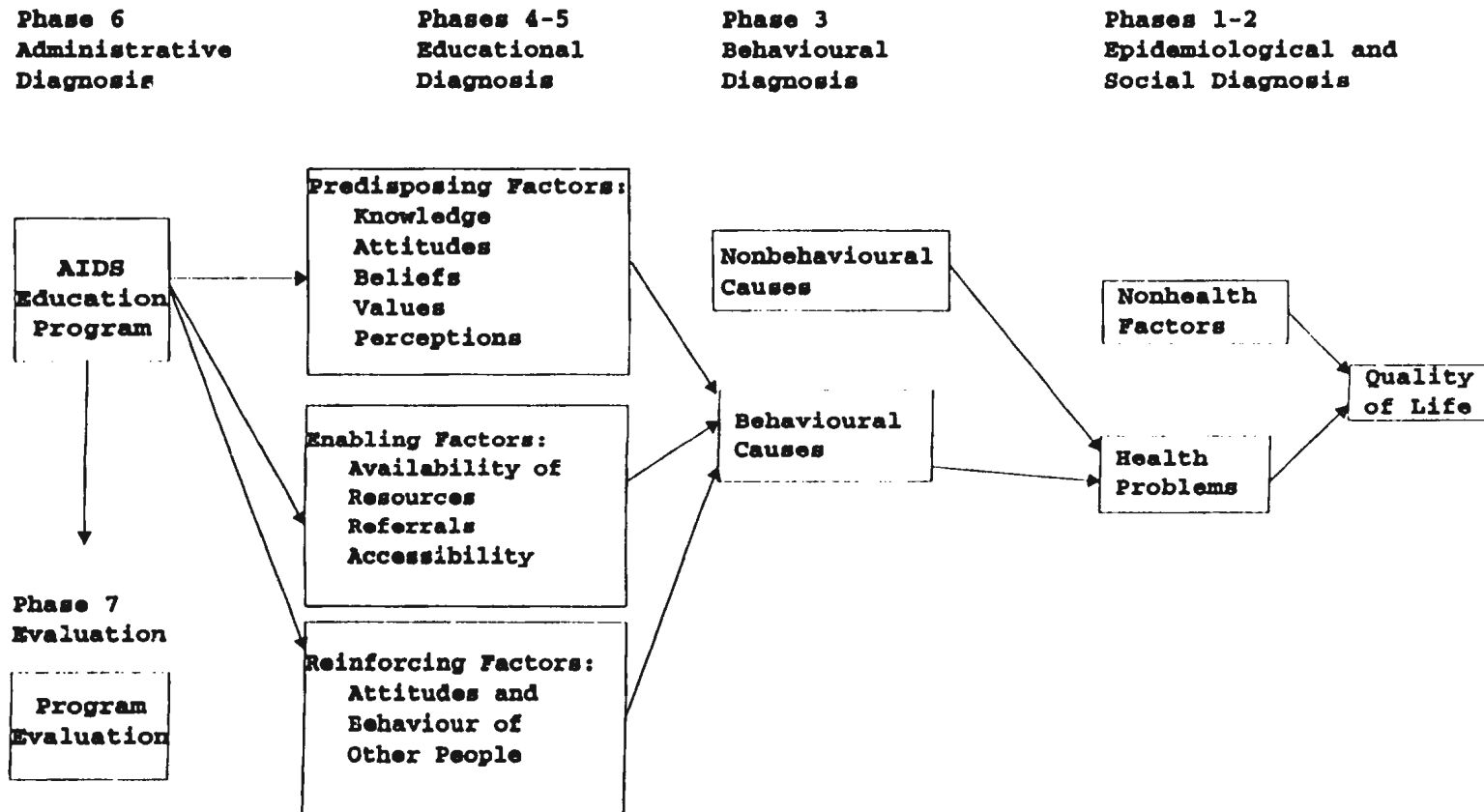
Phases 4 and 5 involve identifying the predisposing, enabling, and reinforcing factors that affect health behaviours (Green et al., 1980). Predisposing factors include knowledge, attitudes, beliefs, perceptions and values of adolescents toward AIDS. Knowledge may influence other predisposing factors, such as misconceptions regarding AIDS/HIV transmission (Rubinson & Baille, 1981). Enabling factors include availability of resources, accessibility to the resources, and skills. Positive attitudes of parents, teachers and peers are types of reinforcing factors. Assessment of adolescents' predisposing, enabling and reinforcing factors in the

present research will be measured using the PRECEDE questionnaire designed by Alteneider et al. (1992) (see Appendix A).

Phase 6 of the PRECEDE model, administrative diagnosis, includes the actual development and implementation of an AIDS education program for adolescents. Phase 7 is evaluation of the program. Evaluation will consist of a comparison between adolescents' pretest and posttest scores on the predisposing, enabling and reinforcing components of the PRECEDE model.

Figure 1

The PRECEDE Model



Note: Adapted from Health Education Planning, Green et al. (1980, p.14).

Definitions

Seventh and eighth grade students: Any person who attends grade seven and grade eight in I. J. Samson Junior High School. Age of students range from 11-15.

Acquired Immune Deficiency Syndrome (AIDS): AIDS is caused by the human immunodeficiency virus (HIV) that weakens the body's immune system, thus making the individual susceptible to a variety of diseases. The virus is spread via blood, breast milk, semen and vaginal fluids. The most common means of transmission are sexual intercourse and intravenous drug use.

AIDS Education: An educationally oriented process with intellectual, psychological and social dimensions focusing on activities that increase the abilities of people to make informed decisions about high risk behaviours (Ross & Mico, 1980).

Predisposing Factors: The concept refers to knowledge, attitudes, beliefs, values and perceptions that may facilitate or hinder a person's motivation for change.

Knowledge: The concept refers to knowledge about AIDS, the transmission of the HIV and methods of prevention as measured by the PRECEDE instrument (Alteneder et al., 1992).

Attitudes: The concept refers to lasting general evaluations of people with AIDS, or AIDS issues as measured by the PRECEDE instrument (Alteneder et al., 1992; Baron & Byrne, 1987).

Beliefs about AIDS: Beliefs about AIDS refers to misconceptions about the disease, its transmission, and its prevention as measured by the PRECEDE instrument (Alteneder et al., 1992).

Values: This concept describes the worth or desirability of a belief or behaviour as measured by the PRECEDE instrument (Allen, 1990; Alteneder et al., 1992).

Perceptions: Perceptions refer to the ideas or thoughts people have toward AIDS, people with AIDS and other people's preventive and risk behaviours as

measured by the PRECEDE instrument (Alteneder et al., 1992).

Enabling Factors: Enabling factors are the availability and accessibility of referrals for information, blood tests for the HIV and medical treatment, as well as resources for condoms and methods of preventing the spread of the HIV as measured by the PRECEDE instrument (Alteneder et al., 1992; Green et al., 1980).

Reinforcing Factors: Reinforcing factors are the attitudes and behaviour of peers, parents and health personnel toward people with AIDS as measured by the PRECEDE instrument (Alteneder et al., 1992; Green et al., 1980).

Chapter Two

Literature Review

Throughout the literature on AIDS a number of risk factors are consistently addressed. They are sexual activity, substance abuse and adolescents' knowledge, attitudes and beliefs about AIDS. Therefore, the purpose of this chapter is threefold: (1) to examine risk factors associated with AIDS and transmission of the HIV virus during adolescence, (2) to explore teenagers' knowledge, attitudes and beliefs about AIDS, and (3) to assess the effectiveness of interventions aimed at increasing knowledge and changing attitudes and beliefs about AIDS.

Surveys on Risk Factors for AIDS

A number of surveys have been conducted with adolescents to examine their sexual activity and substance abuse, the actions associated with these high risk activities, and the factors influencing frequency of such practices. These surveys identify areas for interventions in educating adolescents about risk factors associated with AIDS.

Sexual Activity

The HIV is transmitted to a large extent by sexual activities that may be modified through educational programs (Chandarana, Conlon, Noh, & Field, 1990). The following surveys examined sexual activity among adolescents.

Hingson, Strunin, Berlin and Heeren (1990) explored sexual activity among 1,773 randomly selected 16-19 year olds in Massachusetts. Sixty-one percent of the respondents were sexually active and 37% reported that they never used condoms. Walker (1992) surveyed a group of 154 adolescents, ages 13-18, from suburban New Jersey. Findings indicate that 60% of those who were sexually active stated that they used condoms. Forty-five percent of the subjects reported that they were sexually active and 23% of the males maintained that they had more than one partner.

Kasen, Vaughan and Walter (1992) examined participation in behaviours such as sexual intercourse and condom use among 181 grade eight students in urban New York City. Thirty-three percent of the respondents said they had engaged in intercourse, however, in this population only 34% used condoms.

In 1994, Leigh, Morrison, Trocki and Temple interviewed adolescents from a probability sample of 48 different states. Teenagers, ages 12-17, were questioned about sexual activity and contraceptive use. Of the 598 teenagers surveyed 25% of white respondents and 40% of black adolescents had had intercourse. Over 50% of the subjects reported using condoms.

In a Canadian survey of 38,000 adolescents King et al. (1989) found that 26% of grade nine students, 50% of grade 11 students, 85% of high school dropouts and 75% of street youth had had sexual intercourse. An addendum to that study was completed by Beazley et al. (1989), which focused on 3,115 Newfoundland teenagers. Thirty-seven percent of grade nine students had experimented with sexual intercourse. They also established that sexual activity among Newfoundland teens occurred at a higher than average rate for Canada and that protected sex was not the norm. The report also stated that Canadian adolescents, including Newfoundlanders, had not internalized the risk that the HIV infection and AIDS pose to their future well being.

Westera and Bennett (1991) examined attitudes, beliefs and behaviours of 2,600 randomly selected

Newfoundland adolescents ages 15-19. They noted that 46% of the high school students and 44% of high school dropouts believed that it was appropriate to have sexual intercourse after a few dates.

Findings from the literature review imply that sexual activity among adolescents is occurring and protected sex is not the standard. Anywhere from 20%-60% of the students examined had engaged in intercourse and approximately 30-60% reported using condoms. If students are having sexual intercourse and not using condoms then they may be exposing themselves to AIDS/HIV.

Substance Abuse

Drug and alcohol abuse affects teenagers' risk for contracting the HIV in two ways. The first is transmission as a result of intravenous drug use. Second, substance abuse, because of its intoxicating effects, increases adolescents' risk for contracting the HIV by interfering with rational decision-making.

The HIV is transmitted directly from person to person via the sharing of infected needles. Because there are no Canadian studies or available statistics

on intravenous (IV) drug use (King et al., 1989), all of the surveys cited in this portion of the review took place in the United States.

In 1987, Strunin and Hingson surveyed 963 teenagers about their drug use. One percent reported using injectable drugs and 13% used psychoactive drugs other than alcohol and marijuana. Likewise, Friedman and Goodman (1992) surveyed drug use among adolescents in the United States and found that teenagers were using injectable drugs, including stimulants, opiates and anabolic steroids.

The second reason why substance abuse is considered a risk factor in contracting AIDS is that drug and alcohol abuse impair the adolescents' judgement and ability to make decisions at a time when they are beginning to be sexually active. Surveys in this area (Millstein et al., 1994; Santelli & Beilenson, 1992) found that substance abuse increased adolescent sexual activity and that those who had sex while under the influence of alcohol or drugs were less likely to use condoms.

Many researchers in the United States found that substance abuse may lead to early sexual activity in

adolescents. Santelli and Beilenson (1992) stated that drugs and alcohol were frequently used before intercourse and decreased inhibitions. Millstein et al. (1994) found that 50-90% of the respondents felt that it was easier to have sex when using alcohol or illicit substances. Another finding from their survey, that was supported by other research, was that adolescents who abused alcohol or drugs before sex were less likely to use condoms (Friedman & Goodman, 1992; Hingson, Strunin, & Berlin, 1990; Hingson, Strunin, Berlin, & Heeren, 1990; Kasen et al., 1992).

There are no Canadian or Newfoundland studies on substance abuse and its relationship to sexual intercourse or condom use. However, King et al. (1989) found that 1% of grade seven and 4% of grade nine students in Canada used marijuana at least once a month and 1-2% used it 2-3 times a week. They also noted that 7% of grade seven and 24% of grade nine teenagers used alcohol weekly and 20% of grade nine students drank five or more drinks at one time.

Newfoundland students drank more often and consumed more alcohol than their Canadian counterparts. As well, they felt more pressure from their friends to

drink alcohol (King et al., 1989). Beazley et al. (1989) found that 20% of grade seven students and 25% of grade nine students are being pressured to drink by their friends. Westera and Bennett (1991) noted that approximately 30% of the teenagers, ages 15-19, surveyed drank at least once a week and 12% used drugs.

The studies reviewed in this section indicate that adolescents abuse alcohol and drugs. Frequent substance abuse by adolescents, and the relationship between substance abuse and condom use, place teenagers at risk for contracting AIDS/HIV.

The generalizability of the findings on substance abuse and sexual activity to all adolescents is not possible because they vary greatly in survey methods and in the ages and size of sample. Another limitation that may affect the validity of research on substance abuse and sexual involvement is the veracity of self reported responses. Teenagers may under or over report in either category.

Knowledge, Attitudes and Beliefs about AIDS

The core of the present research is on adolescents' knowledge, attitudes and beliefs about

AIDS and how they are affected by AIDS education. A review of the literature indicates that certain myths prevail among the teenage population. This review will examine survey data on adolescents' knowledge, attitudes and beliefs about AIDS and then assess the quasi-experimental and experimental research on the effectiveness of interventions in the United States, Canada and Newfoundland.

Surveys on Knowledge, Attitudes and Beliefs about AIDS

Adolescents must have knowledge about the HIV and its transmission before making an informed decision about appropriate behaviours. Several studies have shown that students have some knowledge about the HIV and AIDS (Beazley et al., 1989; DuRant, Seymore Ashworth, Newman, & Gaillard, 1992; Hingson, Strunin, Berlin, & Heeren, 1990; Holtzman, Lowery, Kann, Collins, & Kolbe, 1994; King et al., 1992). Despite these reports, knowledge levels vary and adolescents maintain certain misconceptions about the HIV and AIDS.

Early surveys on adolescents' knowledge and beliefs about AIDS revealed numerous fallacies about

the virus, its transmission and prevention of the HIV infection. Price, Desmond and Kukulka (1985) surveyed 250 students ages 16-19 years old. They found that only 47% answered knowledge based questions correctly. In contrast DiClemente, Zorn and Temoshok (1986) reported that 92% knew that AIDS was transmitted by sexual intercourse; however, approximately 40% believed that one could contract AIDS through casual contact and were not aware that condoms could decrease the risk. Helgerson and Peterson (1988) found that of the 657 junior and senior high school students in the study, 39% did not think that AIDS could be transmitted by vaginal fluid, only 37% thought that the HIV could be contracted by having sex with an intravenous drug user and 56% believed that one could get AIDS by donating blood.

As AIDS and the HIV became more widespread, and the media focused more attention on the disease, adolescents' knowledge of the infection seemed to improve. In 1987 Strunin and Hingson surveyed 860 adolescents ages 16-19. They found that knowledge among teenagers was increasing. The main misconception was that 50% believed that one could contract AIDS by

giving blood. Goodman and Cohall's (1989) findings concurred with those of Strunin and Hingson. One hundred and ninety-six teenagers answered most of the knowledge questions correctly. Again, donating blood was the question incorrectly answered by 68%. In 1990, Hingson, Strunin and Berlin analyzed the changes in AIDS/HIV knowledge among teenagers in Massachusetts. They compared responses to identical questionnaires in two different groups of randomly selected teenagers two years apart. There was a significant increase in students' knowledge; however, 50% still believed that someone could get AIDS by giving blood.

Despite the efforts that have gone into educating adolescents about AIDS and the HIV, more recent surveys indicate that myths regarding the disease prevail. Walker (1992) examined AIDS knowledge among 152 high school students. In this study many students knew the four main modes of the HIV transmission (96%), but others thought that AIDS was caused by the same organism as other STDs (48%).

As public knowledge of AIDS/HIV progressed, people developed new misconceptions about the disease. DuRant et al. (1992) surveyed 2,483 high school students.

Forty-seven percent assumed that one could contract AIDS from insect bites and 60% from a blood test. Later that year the same researchers tested rural adolescents' knowledge about AIDS. Most students knew the modes of transmission (97%), but were not aware that AIDS was not transmitted by insect bites (45%), donating blood (50%) or using public washrooms (56%).

The myth that continues to predominate adolescents' misconceptions about AIDS is donating blood. Holtzman et al. (1994) examined changes in the HIV-related information sources, instruction, knowledge, and behaviours among high school students in 1989 and 1990. Despite the high levels of knowledge, 54% believed that one could contract the HIV from giving blood. Another finding from the study was a significant increase in students who had received AIDS education, and evidence that those with higher AIDS knowledge were less likely to have had multiple sexual partners.

The surveys seem to indicate that adolescents have misconceptions about the transmission of the HIV that may lead to irrational fear of AIDS, especially giving blood. The surveys imply that adolescents' knowledge

of AIDS is increasing. However, due to lack of standardised instruments, nonrepresentativeness and differences in sample size and age of the respondents, direct comparisons of surveys of AIDS/HIV related information is difficult and one cannot make generalizations about adolescents' knowledge.

Effectiveness of Interventions Aimed at

Knowledge, Attitudes and Beliefs about AIDS

A number of quasi-experimental and experimental research studies on the effects of AIDS education on adolescents' knowledge, attitudes and beliefs about AIDS have been conducted. These investigations vary in design, specific populations and scientific rigor; therefore, it is impossible to draw generalizations from the data. Friedman and Goodman (1992) believe that reviewing the literature is informative in that it documents the adolescents' ability, or lack of ability, to affect change as a result of educational interventions.

The majority of research on public and school based AIDS education have reported a significant increase in students' knowledge of AIDS (Alteneider et

al., 1992; Brown et al., 1989; Gill & Beazley, 1993; Huszti, Clopton, & Mason, 1989; MacDonald, 1993; Miller & Downer, 1988). However, not all interventions affected adolescents' attitudes or beliefs about the disease. The following section will include a brief discussion on studies that addressed the issue of AIDS education and its impact on adolescents' knowledge, attitudes and beliefs.

There is a paucity of research on the effects of an AIDS educational session on adolescents' knowledge before 1990. In 1988, Miller and Downer used a pretest-posttest design to evaluate the impact of an educational intervention on 114 students' knowledge and attitudes about AIDS. Results showed that there was a significant change in the adolescents' knowledge and attitudes about AIDS one week after the educational session. Fifty-three of the students were tested again after eight weeks and their learning outcomes remained significant.

Other research from that time reported a significant change in knowledge and attitudes after an intervention. Huszti et al. (1989) measured adolescents' knowledge and attitudes after an AIDS

education session. They evaluated the effects of an intervention on 448 teenagers ages 14-17. There was a significant increase in students' knowledge at the posttest. As well, subjects in the experimental group had more positive attitudes toward AIDS patients. Brown et al. (1989) investigated the impact of AIDS education on knowledge, attitudes and coping skills. They reported an increase in knowledge, more positive attitudes toward people with AIDS and more hesitancy toward high risk behaviour following an AIDS educational session.

Some weaknesses noted in these three studies are the use of nonrandomized samples and the use of some scales which had questionable reliability and validity. Huszti et al.'s (1989) research was the only study to include a control group.

Between 1990 and 1992 there were four studies that assessed adolescents' knowledge before and after an educational session. Rickert, Gottlieb and Jay (1990) evaluated 77 adolescents' AIDS knowledge and attitudes and condom use. They found that there was a significant increase in the students' knowledge but no significant change in attitudes or condom use. The

Failure to include a control group limits the conclusions that can be drawn from this study. Seymore Ashworth et al. (1992) measured knowledge and attitudes after a one hour class on AIDS. Posttest measurements indicated the intervention group had significantly higher knowledge scores than the control group. There was not a significant change in attitudes after the intervention.

Alteneder et al. (1992) utilized a pretest-posttest quasi-experimental design to study the effects of a one hour AIDS education program on 585 adolescents' knowledge, attitudes toward people with AIDS and beliefs about AIDS. All students in the intervention group experienced an increase in knowledge and the grade eight adolescents showed more positive attitudes. Beliefs about AIDS were only significantly changed for females in the education group.

Jemmott, Jemmott and Fong (1992) looked at knowledge, attitudes and risk behaviours among 157 black male adolescents following an AIDS educational session. They found that the subjects had a significant increase in knowledge, less favourable attitudes toward high risk behaviours and lower

intention to engage in those behaviours.

Generalizations from these studies are limited because Rickert et al. (1990), and Jemmott et al. (1992) used small samples. As well, the psychometrics for some of these studies were low or not reported.

In 1993 two studies were published that found similar changes in adolescents' intent to engage in high risk behaviours after a class on AIDS. The first was by Walter and Vaughan (1993) who investigated AIDS knowledge, beliefs about AIDS, self-efficacy, and risk behaviours among 1,316 high school students. They found a significant change in all variables. A limitation in Walter and Vaughan's study was the failure to report the reliability and validity of the measurement tool.

The second study by Kipke, Boyer and Hein (1993) used a pretest-posttest design to evaluate the effects of an AIDS intervention on teenagers' AIDS knowledge, attitudes toward AIDS/HIV, perception of risk and risk reduction. Eighty-seven adolescents, ages 12-16, were recruited to participate in the research. Analysis of the data indicated a significant increase in knowledge, negative attitudes toward the disease AIDS, perception

of risk and ability to negotiate risk reduction. Results from this study indicate that an educational intervention may influence behaviour.

Two recent American research studies also reported that risk behaviours decreased after an AIDS education session, and knowledge levels increased significantly. Remafedi (1994) investigated AIDS knowledge and risk behaviours among 139 adolescents. However, he did not have a control group, therefore comparison of effects of the intervention must be cautiously avoided.

Main et al. (1994) used a quasi-experimental design to study the impact of an AIDS intervention on 2,844 adolescents' knowledge, attitudes and behaviour related to AIDS and the HIV infection. Like Remafedi (1994) they also found a significant increase in knowledge and greater intent to engage in safer behaviours. Subjects who participated in the intervention were less likely to have sex and more likely to use a condom.

Canadian research on the impact of AIDS education on adolescents' knowledge, attitudes and/or beliefs about AIDS is scarce. Only three studies were found during the literature search. The first, was a quasi-

experimental design on the impact of an educational session on knowledge and beliefs about the transmission of AIDS. Chandarana et al. (1990) examined 1,825 grade eight students in Ontario. They concluded that the intervention significantly improved the students' knowledge about AIDS and their beliefs about its transmission.

Gill and Beazley (1993) assessed the impact of an AIDS education session on 265 grade six students' knowledge and attitudes toward people with AIDS. Following the intervention they found that students' knowledge had improved and their attitudes toward people with AIDS were more positive. At a six month follow up the results remained significant.

MacDonald (1993) measured the effects of AIDS education on knowledge and attitudes in Newfoundland teenagers. Ninety-three junior high school students were randomly assigned to either an intervention group (n=39) or a control group (n=44). She found that the intervention group scored significantly higher on the pretest knowledge scale. MacDonald addressed this violation of homogeneity by using a one way analysis of variance on the score differences. Posttest results

indicated a significant increase in knowledge and more positive general attitudes.

Summary of Literature Review

As the surveys have demonstrated adolescents' are engaged in a number of behaviours which place them at risk for AIDS. Surveys also show that teenagers have basic AIDS knowledge. However, many myths prevail that may cause irrational fear of the disease. Experimental and quasi-experimental evaluation of the impact of AIDS education have indicated that even brief interventions have an impact on adolescents' knowledge and may have an effect on attitudes and beliefs about AIDS.

Chapter 3

Methodology

This chapter outlines the methodology of the research study. The section includes why the research was conducted and information about procedures for increasing the reliability and validity of the results. Also included in this chapter are details on the research design, sample, sampling design, the questionnaire, the procedure for carrying out the research design, threats to internal and external validity and data analysis. The final section addresses ethical considerations which deal with strategies for ensuring the rights of the subjects.

Research Design

A quasi-experimental design was used to evaluate the impact of an AIDS educational session on adolescents' knowledge, attitudes and beliefs about AIDS. Scores of the two groups were determined by pretest and posttest measurements. This quasi-experimental pretest-posttest research design is depicted in Figure 2.

Figure 2

	R	O(1)	X	O(2)
	R	O(1)		O(2)

In this study, data were collected using a closed-ended PRECEDE instrument (see Appendix A) developed by Alteneider et al. (1992). Permission to use the instrument was obtained (see Appendix B). This research is an approximate replication of Alteneider et al.'s study. An approximate replication consists of repeating the original study under similar, but not identical conditions (Burns & Grove, 1993). The primary differences between this research and the original study are the sampling procedure and the statistical test used for data analysis.

Sample and Sampling Plan

There were 282 students in grades seven and eight at I.J. Samson Junior High School. Students who had given their consent and who had consent from their parents were randomly divided into either the education group or the control group using the toss of a coin. One hundred and ninety-four students completed the

pretest. Of the 97 students assigned to the intervention group only 88 adolescents attended the intervention and 185 students completed the posttest. Attrition at the intervention and the posttest was attributed to absenteeism. Only data from students who completed both tests were used in the analysis. Five questionnaires were spoiled either by incomplete answers or students writing comments that implied that their responses could not be trusted. Final data analysis included 82 students in the intervention group and 98 adolescents in the control group. No students were excluded from the study.

Procedure

In November 1993, a teacher at I.J. Samson Junior High School asked the researcher if she would conduct her AIDS research in the school. The school requested the research because they wanted quantified support for including AIDS information in their health education curriculum. The researcher agreed and in January 1994, she approached the Avalon Consolidated School board for permission to conduct research in the junior high school. After receiving consent from both the Avalon

Consolidated School Board (see Appendix C) and the principal of the school, a letter and consent form were sent home with each student (see Appendix D). The letter explained the purpose of the study and involvement of their child. Parents were informed that their son or daughter would not be included in the study unless the form was signed by parents and returned to the school.

The pretest was administered by classroom teachers to all students on the same day at the same time in March, 1994. Teachers received a standardized set of instruction for administering the pretest and the researcher was available to answer questions (see Appendix E). Students were informed that they had the option to decline participation in the study at this or subsequent sessions. To ensure anonymity the pretest and posttest answer sheets were numbered and distributed during the time allotted for the pretest. After completion of the pretest, students placed the unused posttest answer sheet in an envelope and wrote their names on the front.

Two days later the experimental group received the AIDS educational session. The intervention took place

in the cafeteria of the school. The group was divided into three smaller units and they received the AIDS educational session in one morning. The one hour class was presented by the public health nurse for that school. This intervention followed a structured curriculum on AIDS developed by Alteneider et al. (1992) (see Appendix A). The researcher audited each of the three sessions to ensure that the groups received identical information.

One week after the educational session students in both the experimental group and the control group completed the posttest. The individualized envelope with the student's name and numbered posttest answer sheet were returned to the students on the day of the posttest. The students then disposed of the envelope, thus destroying any connection between their names and the numbered answer sheets. Students in the control group were offered the AIDS educational session in May, 1994.

The PRECEDE Instrument

The PRECEDE instrument was developed by Alteneider et al. (1992) (see Appendix A). It was chosen as the questionnaire for the present study because of its focus on adolescent health and AIDS education which were of interest to the researcher. As well, the tool was developed for adolescents which made it developmentally appropriate for the population to be investigated.

Alteneider et al.'s (1992) original scale was based on a qualitative study that consisted of 35 open-ended questions on adolescents' beliefs about AIDS. Their final tool was based on responses from the original questionnaire and supplemented with items incorporated from AIDS literature. They reported that a pilot test was performed on 67 seventh and eighth grade students, with similar characteristics to the sample, and no problems were noted.

The final PRECEDE questionnaire, which is the tool used in the present study, consists of four sections. Sections I and II are composed of 20 knowledge questions about AIDS which are rated agree, disagree or not sure. The third part measures the remaining

components of the PRECEDE model. It consists of a five point Likert scale, rated from strongly agree to strongly disagree, measuring: attitudes (ten items); perceptions (eight items); values (seven items); beliefs (nine items); enabling factors (seven items); and reinforcing factors (twelve items). The last section of the PRECEDE instrument consists of questions on characteristics of the sample and questions about behavioural intention.

Internal reliabilities of the PRECEDE subscales were calculated in a previous study, by Altendeder et al. (1992), using Cronbach's alpha. Subscale reliabilities ranged from 0.19 to 0.73 and stability coefficients varied from 0.44 to 0.66 (see Table 1).

For the present study, the PRECEDE questionnaire was reviewed by two health care professionals and five experts involved in adolescent education and/or AIDS education. Reviewers were instructed to assess the questionnaire for content validity, clarity and readability.

Table 1: Reliability Analysis of the PRECEDE Model Components (Alteneder et al., 1992)

	Items	Alpha Coefficients
Total Scale	73	0.51
Predisposing Factors		
Knowledge	20	0.73
Attitudes	10	0.61
Beliefs	9	0.49
Values	7	0.59
Perceptions	8	0.52
Enabling Factors	12	0.60
Reinforcing Factors	7	0.19

As a result of the review the answer to one question in the knowledge section was changed from the original questionnaire. It was agreed that AIDS could be transmitted through a blood transfusion. Otherwise, the reviewers felt the tool was appropriate for this population.

Since reliability is specific to the sample being studied (Burns & Grove, 1993), the reliability (internal consistency) of the subscales in the current research was evaluated using the Statistical Package

for Social Sciences (SPSS) program. Results indicated that with these subjects the subscales rated from alpha .05 to .57 (see Table 2). Inter-item correlations were very low, .004 to .046, and only three items correlated above .30.

Table 2: Reliability Analysis of the PRECEDE Model Components

	Items	Alpha Coefficients
Total Scale	73	0.55
Predisposing Factors		
Knowledge	20	0.57
Attitudes	10	0.05
Beliefs	9	0.26
Values	7	0.19
Perceptions	8	0.26
Enabling Factors	12	0.12
Reinforcing Factors	7	0.34

Data Analysis

The PRECEDE questionnaire was coded using a system developed by Alteneider et al. (1992). The first 20 questions were coded 1-3 and the correct answer was

assigned one point. The remaining items were coded 1-5 with reverse scoring for items as specified by the the authors. Items scoring five were considered more positive or more accurate.

Data analysis was conducted using SPSS. Each component of the PRECEDE model (predisposing, enabling and reinforcing factors) was tested using the sum of items designed to test each component. The process also included hypothesis testing of subcomponents of the predisposing factors (knowledge, attitudes, beliefs, values and perceptions), enabling and reinforcing factors.

Means and standard deviations were used to describe characteristics of the sample, behavioural intention, and the predisposing, enabling and reinforcing factors. A chi-square was performed on sample characteristics and behavioural intention. Altener et al. (1992) used a three way analysis of variance (ANOVA) in their data analysis. In the present data analysis a repeated measures ANOVA was used because it is a more sensitive statistical test and it allows for comparisons of means between samples that are not independent (Shotts, 1990). Munro and

Page (1993) state that measurements that are not mutually exclusive are not independent; that is, no more than one measurement can be taken per subject as with the pretest and posttest measurements in the present study. Repeated measures ANOVA was used to test the effects of group membership and time (pretest-posttest) with select characteristics of the sample. Comparisons of the results from Alteneider et al.'s (1992) study and the current research are possible because both the three way ANOVA and repeated measures ANOVA test differences among group means (Munro & Page).

Internal and External Validity

Internal Validity

Evaluating threats to internal and external validity is one method of assessing the adequacy of a research design (Polit & Hungler, 1991). Internal validity refers to degree of confidence that the findings are a result of the independent variable. External validity is realised when the results can be generalized to populations and settings other than those involved in the research.

Polit and Hungler (1991) outline five threats to internal validity. Those threats which may have been a factor in the study will be addressed. The first is history, which refers to events outside of the research that may affect the dependent variable. At the time of the study, March 1994, the Canadian government was investigating the safety of the blood system through the Kreever inquiry. This put the topic of AIDS/HIV transmission in the news and adolescents may have heard that people were questioning whether one could contract AIDS from blood transfusions. The other factor that may have threatened the internal validity of the present research study is cross contamination. Students from the intervention group may have discussed what they learned about AIDS and its transmission with the control group before the posttest.

Mortality is the second possible threat to the validity of the current research design. Mortality is defined as the loss of subjects from a study (Polit & Hungler, 1991). Fourteen subjects were lost during the research as a result of absenteeism. The intervention group lost more subjects than the control because if students missed the intervention they were counted as a

member of the control group. Mortality may have been a threat to the validity of the present study.

External Validity

Polit and Hungler (1991) describe threats to external validity. External validity is how generalizable the research findings may be to other settings or samples. Characteristics of the sample or the environment or research situation may affect how representative the results may be.

The Hawthorne effect is a possible threat to any experimental study. It refers to the effect on the dependent variable caused by an awareness of the participants that they are being studied. The adolescents in the present study were cognizant that they were being studied, and in turn may have given the more socially acceptable responses, which may have had an impact on the results.

Another possible threat to the external validity of the present investigation is the interaction of history and treatment effect (Polit & Hungler, 1991). As mentioned, the main media event on AIDS at the time of the research was the inquiry into the safety of the

blood supply. As well the issue of cross contamination between the groups may have affected the control groups' responses. These threats may have had an effect on the subjects in that AIDS is constantly in the news and may have heightened both groups' awareness of AIDS.

History and mortality are the main threats to the internal validity of the present study. The interaction of history and treatment effect is the primary threat to the generalizability of the results. Overall these threats should not have had a major effect on the present study because both the intervention and control groups were exposed to the same extraneous variables and only 14 students were lost from the research.

Ethical Considerations

The major ethical issues to be considered in the present study are informed consent, confidentiality and freedom from physical or psychological distress or discomfort. There were no foreseeable risks in having the adolescents participate in the study.

Consent for participation in the study was first obtained from the parents, who received a letter outlining the research (see Appendix D). Information in the letter included the purpose of the study, procedures, time involvement, possible risks and benefits, and alternative procedures for those students who did not want to participate.

Student's consent was also required for inclusion in the study. The researcher went into each classroom and explained the purpose of the research and what involvement in the study required from them. It was explained that these tests would not influence their marks and that if they chose to stay out of the study they would not be penalized in any way. The students were also told that they could withdraw from the research at any time. Adolescents were informed that all responses were confidential and that teachers and parents would never have access to their answer sheets.

Confidentiality of the students' responses was insured in the following manner. The pretest and posttest questionnaires were numbered and distributed during the pretest. After the students completed the pretest, the posttest was sealed in an envelope and the

students wrote their names on the front of the envelope. The envelope was returned to the adolescents at the posttest and they were responsible for destroying the envelope, thus eliminating any connection between them and their answer sheets.

The last ethical issue was whether participation in the research could cause any psychological distress or discomfort. During the explanation of the research and its procedures, students were informed that if they found the topic upsetting they were free to exclude themselves from the research by not signing the consent form. As well, the teenagers were told that they could withdraw from the study at any point.

The thesis proposal for the present research project was reviewed by the Human Investigation Committee. The research was granted ethical approval.

Chapter Four

Results

This chapter presents information regarding characteristics of the sample, and the differences between the treatment and control groups in the following areas: (a) predisposing factors consisting of knowledge, attitudes, beliefs, values and perceptions, (b) enabling factors, and (c) reinforcing factors that place people at risk for AIDS. The first section addresses characteristics of the sample. The following section deals with relationships between the groups and their behavioural intentions. The final section includes results of the repeated measures ANOVA between the groups according to test, grade and gender of the intervention and control groups.

Characteristics of the Sample

The control and intervention groups were similar in terms of age, race, grade and previous AIDS education. However, the intervention group contained a higher percentage of females, students who knew someone with AIDS and students from grade eight. There were more subjects in the control group because if students

in the experimental group were absent the day of the intervention they were treated as a member of the control group in the posttest measurements (see Table 3).

Students in the sample ranged in age from 11 to 15 and the mean age for the total sample ($N=180$) was 12.81 with a $SD=.860$ years. Students in the intervention group ($n=82$) had a mean age of 12.902 with a $SD=.840$, and students in the control group ($n=98$) had a mean age of 12.735 with a $SD=.868$.

Two questions on characteristics of the sample that may affect group scores are previous AIDS education and knowing someone with AIDS. Both groups had a comparable percentage of students who had exposure to AIDS education (70%). A high percentage of students from both groups did not know someone with AIDS (80-90%). Thirteen students in the intervention group and eight students from the control group knew someone with AIDS.

Table 3: Select Characteristics of the Sample

Group	Intervention n=82		Control n=98	
	n	%	n	%
Age				
11	1	1	4	4
12	26	32	38	39
13	39	48	39	40
14	12	15	14	14
15	4	5	3	3
Grade				
7	36	44	50	51
8	46	56	48	49
Gender				
Male	36	44	56	57
Female	46	56	42	43
Previous AIDS Education				
Yes	47	57	58	59
No	33	40	40	41
Missing	2	2		
Students who know someone with AIDS				
Yes	13	16	8	8
No	68	83	30	30
Missing	1	1		

The last characteristics of the sample to be measured were sources of AIDS information (see Table 4). Students were asked the source of AIDS information and to indicate from which source they learned the most. The responses to these two questions produced very similar results. At the pretest approximately 42% of both groups indicated that most learning about AIDS occurred in school. Media was in second place for the intervention group while home was rated number two with the control group. On the posttest, the number of students who chose school as the place where they learned the most about AIDS increased for both groups.

In summary, the groups were homogenous in terms of characteristics of the sample. A chi-square was performed on all the characteristics of the sample to test for association. At alpha .05 there were no significant differences between the groups.

Table 4: Sources of AIDS Information

Setting	Intervention		Control	
	Pre ‡	Post ‡	Pre ‡	Post ‡
School	39	40	45	51
Home	17	17	20	17
Media	26	22	18	18
Friends	4	4	1	3
Other	7	9	6	1
Missing	7	9	8	9

Behavioural Intention

During the pretest and posttest students were asked to predict their behaviour in the next couple of years. Questions included whether they expected to (1) engage in intercourse, (2) have more than one partner, (3) use condoms, and (4) inject drugs. Using the chi-square there were no significant differences, at alpha .05, between the two groups with respect to pretest or posttest behavioural intention.

Behavioural intentions changed from pretest to posttest. At the pretest 37.8% of the intervention group said they planned to have sexual intercourse in

the next year. After the AIDS education session the number of students who planned to have intercourse increased to 48.8%. Posttest measurements of the intervention group's behavioural intention did show a decrease in the number of adolescents who planned to have more than one partner 15.2% versus 9.9 %, however, this was not significant.

Another preventive behaviour that was investigated was intent to use condoms in the upcoming year. Eighty-six percent of the students said they would use a condom while having intercourse. On the posttest the valid percent increased by less than 1% for both groups.

The last question regarding behaviour referred to the use of IV drugs. Only one student said he/she planned to inject drugs, this number remained constant in the posttest.

Results of the PRECEDE Questionnaire

The hypotheses were tested using a repeated measures (ANOVA) to detect differences between group mean scores on the PRECEDE composite scale and the individual subscale scores. Means and standard

deviations are presented to highlight the discrepancy between the intervention group (see Tables 5 & 7) and the control group (see Tables 6 & 8) on pretest and posttest scores and to support findings from the test of difference. The level of significance for this research was set at .01 or less as outlined by Altener et al. (1992).

Group by Test

Knowledge

A significance difference ($p < .001$) was found when repeated measures ANOVA was used to compare the change in knowledge of the intervention group with the control group (see Table 9). Thus the hypothesis that there would be a difference was supported.

Attitudes, Beliefs, Values and Perceptions

The first hypothesis proposed that there would be a difference between the students who received the intervention and those who did not on the remaining predisposing factors (attitudes, beliefs, values and perceptions). Using the repeated measures ANOVA this hypothesis was not supported (see Table 9).

Table 5: Intervention Group Means and Standard Deviations by Grade and Test for the PRECEDE Subscales.

	Pre-Test		Post-Test	
	Mean	SD	Mean	SD
Predisposing Factors				
Knowledge				
Grade 7	13.58	3.11	15.50*	2.94
Grade 8	14.17	2.50	15.71*	2.51
Attitudes				
Grade 7	22.21	3.10	23.10	2.49
Grade 8	23.08	4.27	22.68	2.48
Beliefs				
Grade 7	21.64	3.71	20.07	3.39
Grade 8	22.10	3.44	22.68	2.48
Values				
Grade 7	18.19	3.13	18.81	3.21
Grade 8	18.41	2.42	18.32	2.10
Perceptions				
Grade 7	22.08	2.87	27.91	3.13
Grade 8	23.24	3.77	23.02	2.89
Enabling Factors				
Grade 7	20.69	2.88	20.78	2.80
Grade 8	20.00	2.48	20.41	1.88
Reinforcing Factors				
Grade 7	29.88	3.72	29.62	4.56
Grade 8	29.75	6.16	30.96	4.33

Note: * significance $p < .001$

Table 6: Control Group Means and Standard Deviations by Grade and Test for the PRECEDE Subscales.

	Pre-Test		Post-Test	
	Mean	SD	Mean	SD
Predisposing Factors				
Knowledge				
Grade 7	14.21	3.46	14.45	3.50
Grade 8	14.17	2.69	14.73	2.72
Attitudes				
Grade 7	23.88	3.58	23.92	3.10
Grade 8	23.39	3.72	23.25	3.59
Beliefs				
Grade 7	22.00	3.52	21.37	3.66
Grade 8	21.02	3.14	21.06	2.72
Values				
Grade 7	18.94	2.79	18.78	2.81
Grade 8	18.46	2.94	18.31	2.31
Perceptions				
Grade 7	22.66	3.05	23.00	3.14
Grade 8	23.78	2.75	22.34	3.06
Enabling Factors				
Grade 7	21.77	2.56	20.59	3.47
Grade 8	20.56	2.92	21.19	3.07
Reinforcing Factors				
Grade 7	31.74	3.86	30.73	3.94
Grade 8	30.39	4.68	30.53	4.96

Table 7: Intervention Group Means and Standard Deviations by Gender and Test for the PRECEDE Subscales.

	Pre-Test		Post-Test	
	Mean	SD	Mean	SD
Predisposing Factors				
Knowledge				
Male	14.61	2.28	15.86	2.50
Female	13.36	3.03	15.43	2.85
Attitudes				
Male	22.82	4.29	22.83	2.28
Female	22.60	3.43	22.89	2.65
Beliefs				
Male	21.56	3.61	21.09	3.61
Female	22.17	3.52	20.76	3.17
Values				
Male	18.08	2.99	18.40	2.81
Female	18.50	2.55	18.64	2.51
Perceptions				
Male	21.94	3.94	22.23	2.90
Female	23.34	2.87	23.55	2.94
Enabling Factors				
Male	19.36	3.01	20.42	2.61
Female	21.04	2.12	20.70	2.09
Reinforcing Factors				
Male	29.71	6.89	30.62	3.85
Female	29.88	3.42	30.18	4.91

Table 8: Control Group Means and Standard Deviations by Gender and Test for the PRECEDE Subscales.

	Pre-Test		Post-Test	
	Mean	SD	Mean	SD
Predisposing Factors				
Knowledge				
Male	14.76	2.40	15.35	2.50
Female	13.42	3.72	13.57	3.60
Attitudes				
Male	23.98	3.65	23.77	3.65
Female	23.14	3.61	23.36	2.93
Beliefs				
Male	21.02	3.50	20.49	3.00
Female	22.19	3.07	22.19	3.28
Values				
Male	17.78	2.87	18.07	2.74
Female	19.19	2.29	19.93	2.37
Perceptions				
Male	22.79	3.00	22.46	3.09
Female	23.18	2.80	22.97	3.13
Enabling Factors				
Male	21.25	2.76	20.70	3.54
Female	21.09	2.88	21.14	2.92
Reinforcing Factors				
Male	31.44	4.30	30.97	4.07
Female	30.60	4.34	30.17	4.92

Table 9: Repeated Measures ANOVA

Predisposing Factors				
	Knowledge	Attitudes	Beliefs	Values
Group	F=13.64 (p=0.00)	F=0.26 (p=0.70)	F=2.79 (p=0.09)	F=1.13 (p=0.30)
Grade	F=0.00 (p=0.95)	F=1.94 (p=0.16)	F=0.01 (p=0.91)	F=0.80 (p=0.37)
Group x Grade	F=0.94 (p=0.33)	F=0.99 (p=0.32)	F=1.16 (p=0.28)	F=0.87 (p=0.35)
Gender	F=0.28 (p=0.59)	F=0.43 (p=0.51)	F=0.64 (p=0.42)	F=2.47 (p=0.12)
Group x Gender	F=3.04 (p=0.08)	F=0.02 (p=0.90)	F=3.05 (p=0.08)	F=1.23 (p=0.27)

	Perceptions	Enabling Factors	Reinforcing Factors
Group	F=0.04 (p=0.83)	F=1.47 (p=0.23)	F=1.37 (p=0.24)
Grade	F=5.19 (p=0.02)	F=6.18 (p=0.02)	F=2.82 (p=0.09)
Group x Grade	F=0.06 (p=0.80)	F=2.96 (p=0.09)	F=0.04 (p=0.89)
Gender	F=0.00 (p=0.97)	F=0.85 (p=0.36)	F=0.13 (p=0.72)
Group x Gender	F=1.31 (p=0.25)	F=5.21 (p=0.02)	F=0.17 (p=0.68)

Enabling and Reinforcing Factors

Results of the test of difference between the control and intervention group did not indicate a significant change in enabling and reinforcing factors at the posttest (see Table 9). Thus the hypothesis that there would be a difference between the two groups after the intervention was rejected.

Group by Grade by Test

Knowledge

The hypothesis that there would be a difference between pretest and posttest scores for AIDS knowledge between the groups by grade was not supported in this research. Results of the repeated measures ANOVA indicated that students in the intervention group scored significantly higher ($p < .001$) on the knowledge posttest than the control group, but there was no significant difference between the seventh and eighth grade by group (see Table 9).

Attitudes, Beliefs, Values and Perceptions

The AIDS educational session did not have an effect on the intervention group's attitudes, beliefs,

values or perception regarding AIDS. The main interactions of group, grade and test were not significant at alpha .01 (see Table 9). Therefore the hypothesis that there would be a difference among group, grade and these three variables was not supported.

Enabling and Reinforcing Factors

The enabling and reinforcing factors were also examined using repeated measures ANOVA. The intervention group's posttest scores on both variables showed little change from the pretest. The hypothesis that there would be a difference among group, grade and the enabling and reinforcing factors was not supported in the present research (see Table 9).

Group by Gender by Test

Altender et al. (1992) also examined the effect of the educational intervention upon the groups classified according to gender. It was hypothesised that there would be a significant difference among group, gender and the PRECEDE factors.

Knowledge

The hypothesis that there would be a significant difference between pretest and posttest scores for males and females by group was not supported (see Table 9). The males in both groups scored approximately one point higher on the pretest than the females, but the females' scores increased more than the males at the posttest (see Table 7 & 8). Therefore, at the posttest there was no significant difference between the males and females mean knowledge scores.

Attitudes, Beliefs, Values and Perceptions

There was no significant difference between pretest and posttest scores of males and females for attitudes, beliefs, values and perceptions (see Table 9). Mean scores for these variables remained virtually unchanged for gender at the posttest (see Tables 7 & 8).

Enabling and Reinforcing Factors

The remaining two factors of the PRECEDE framework, enabling and reinforcing factors showed no significant difference related to gender of the

students or any interaction between group and gender (see Table 9). Mean scores were similar for gender by test but the standard deviation differed by nearly three points for the males (see Table 7 & 8).

Summary

Students in the treatment group scored significantly higher on the knowledge subscale than students in the control group. With the exception of knowledge, the educational intervention on AIDS did not significantly change the experimental group's attitudes, beliefs, values, perceptions, enabling or reinforcing factors. The results also indicate that there was no significant difference among the groups by gender or grade.

Chapter 5

Discussion

Research is necessary to assess the effects of education on teenagers' knowledge, attitudes and beliefs about AIDS (Tucker & Cho, 1991). Furthermore, investigators recommend research findings be used in developing education curricula (Brown et al., 1990; DiClemente et al., 1986; Strunin & Hingson, 1987; Price et al., 1985). Therefore, the purpose of this study was to evaluate the impact of AIDS education on seventh and eighth grade students' knowledge of AIDS/HIV, attitudes toward people living with AIDS, and beliefs about the transmission of the HIV. The second objective was to examine the components of the educational diagnostic phase of the PRECEDE model. The educational diagnostic phase is divided into three classes of factors, predisposing, enabling and reinforcing. Knowledge, attitudes, beliefs, values and perceptions are concepts of the predisposing category. In this chapter, results of the research will be discussed in terms of what the findings may suggest, possible explanations for the results and a comparison of the results with previous research in this area.

With the exception of knowledge, the intervention did not produce a significant difference in any of the remaining concepts of the PRECEDE framework. There are many possible explanations for why the majority of the findings were not significant. The first reason may be the low reliability and validity of the PRECEDE questionnaire with this population. Reliability analysis of the measurement scale indicated low internal consistency of the attitudes, values and enabling factor subscales. Therefore, the tool may not have been consistent in its measurement of these variables. As well, when a questionnaire is low on reliability, it can also be low on validity so the tool may not have asked questions on the concepts that it was designed to measure.

Another possible explanation for the results is that all of the students may not have taken the research seriously. They may have felt being involved in research and missing three regular school classes was going to be fun. Instead they had to fill out the same questionnaire twice, which many commented was boring. As well, they had to attend a class on AIDS. Although the students were aware of the topic they may

have thought that it would be enjoyable and instead been disappointed with the intensity and seriousness of the intervention.

Adolescents may get conflicting messages, regarding AIDS and the HIV, from the media. Lunin (1987) states that next to physicians, television is the most cited source of health information. Television, radio and magazines are full of information about not getting AIDS, wearing condoms and generally having safer sex. However, on daytime soap operas, evening sitcoms or in movies casual and unprotected intercourse are the norm, so the message adolescents get is inconsistent. On the one hand everyone promotes safer sex but, the entertainment industry does not reinforce the media's AIDS campaign by portraying its leading characters or role models making responsible choices.

The last explanation may be the veracity of self reported questionnaires. Polit and Hungler (1991) state that the major weakness of self reported measurements is the potential for conscious or unconscious distortion of the data. In the present

study five questionnaires were discarded because the responses indicated that they could not be trusted.

No definite conclusions can be drawn about what influenced the students' responses to the PRECEDE questionnaire. However, these suggestions do present some possible explanations to consider when reading the discussion.

Characteristics of the Sample

There were no differences between the intervention and control group in terms of basic demographic information. One area where the students' responses differed slightly was their sources of AIDS information. At the pretest both groups rated school as the setting where they learned the most about AIDS. Posttest percentages for school as the source of AIDS information increased only 1% for the intervention group and 6% for the control. One possible reason for the increased percentage in the control group is that the students were aware that the researcher was in the school to teach them about AIDS. Another plausible explanation is that members of the intervention group

discussed the AIDS educational session with their friends from the control group.

The very small increase in school as the source of AIDS information for the intervention group on the posttest may be related to the increase in the category described as other. A potential explanation for the increase is that medical personnel, doctors and nurses, were counted in the other category and the students in the intervention group had more exposure to the researcher and the AIDS educator and were aware that both people are nurses.

Behavioural Intention

The students' behavioural intentions changed very little throughout the research. The intervention group's intent on engaging in sexual intercourse increased by 10% after the AIDS education session, while the control group's response raised by 2%. A possible explanation for the increase in the number of students who intend to have intercourse is that after the class on AIDS and methods of prevention students in the intervention group may have felt that they had learned how to protect themselves from contracting the

virus. The students who said that they planned to have intercourse with more than one partner in the next year decreased by 5% in the intervention group versus an increase of 2% in the control group. The decrease in number of students who planned to have more than one partner was not statistically significant but it does indicate a more positive trend toward safer sex.

In terms of prevention, both groups of adolescents reported strong intentions (80%-90%) to use condoms in the next year. These numbers are much higher than any of the statistics cited in the literature review on sexual activity. The highest number of respondents reporting that they used condoms was 60% in the study by Walker (1992). This makes one question whether the students responded honestly, or whether they gave the socially acceptable answer.

The last question on behavioural intention dealt with IV drug use. Only one student responded that he/she planned to use IV drugs in the next year and that remained constant in the posttest.

It appears that the AIDS educational session did not have an impact on adolescents' intent to engage in sexual intercourse, but the responses do indicate a

slightly safer attitude toward prevention. When dealing with a topic as sensitive as sexuality, students may not always respond honestly or seriously and this must be considered when analyzing the results.

Components of the PRECEDE Model

The only component of PRECEDE model where there was a significant difference was in knowledge. Results from the current research are similar to the findings of Alteneider et al. (1992). Since the purpose of this research was to replicate their study, an obvious question is how results of the present research compare with findings from the original study.

Knowledge

A greater understanding of the determinants of risk related behaviours in the adolescent population is an important precursor to development of successful AIDS prevention programs (Walter et al., 1992). Although knowledge of the disease does not insure a behavioural change, providing adolescents with accurate knowledge of AIDS and the HIV transmission should be

the first step in the development of educational interventions (Friedman & Goodman, 1992).

Alteneider et al. (1992) did not find a significant three way interaction among group, grade and the knowledge component of the PRECEDE questionnaire. But, they did have an interaction between test and group. All of the other quasi-experimental and experimental investigations cited in the literature review found significant changes in knowledge in the intervention group (Brown et al., 1989; Gill & Beazley, 1993; Huszti et al., 1989; Kipke et al., 1993; MacDonald, 1993; Main et al., 1994; Miller & Downer, 1988; Rickert et al., 1990; Walter & Vaughn 1993).

The question that was answered incorrectly quite often in the surveys cited in the literature review was on contracting AIDS from giving blood. That was not the case in the current research. A high majority of students from both groups answered the question correctly on both tests.

The issue of gender differences is evident in the research on AIDS education. In the present study the males scored slightly higher on the knowledge component of the questionnaire. Dolan, Corber and Zacour (1990)

noted in their survey of grades seven and eight adolescents that males knew more than females. However, Alteneider et al. (1992) found that females scored significantly higher than the males and their findings are more consistent with the existing literature. Huszti et al. (1989) and MacDonald (1993) found that females scored significantly higher on knowledge scales and had more positive attitudes toward people with AIDS.

There is no obvious explanation why the males scored higher than the females in this study. It could be a characteristic of the population. Alternatively, it could be related to the fact that males are sexually active at younger ages than females. Therefore, males may know more about AIDS, because they feel more susceptible to contracting the HIV, because of their high risk activities, or because they may have made an effort to learn more about protection.

Attitudes

The second hypothesis that there would be a difference among group, grade and attitude scores was not supported and no interactions were significant.

Alteneder et al. (1992) did not find a three way interaction among the variables. But, they did find a significant difference in the posttest scores for students in grade eight who received the AIDS educational session.

The results of the attitude component of the scale may have differed from Alteneder et al.'s (1992) for many reasons. The first may be the low statistical reliability of the attitude component, alpha .05, of the PRECEDE questionnaire with this population.

A second possible explanation for the failure to change the attitude score of the questionnaire is that it may take more than a one hour educational intervention to change attitudes. Previous research on adolescent's attitudes toward people with AIDS is less consistent. Of the studies that had a one hour intervention, the results are divided. Seymore et al. (1992) and Rickert et al. (1990) found no significant change in attitudes after their intervention while Huszti et al. (1989) and Miller and Downer (1988) reported significant increases in tolerance toward people with AIDS.

The studies that included interventions lasting for more than one hour all found significant change in attitudes (Brown et al., 1989; Chandarana et al., 1990; Gill & Beazley, 1993; Kipke et al., 1993; MacDonald, 1993; Walter & Vaughan, 1993). The research seems to support that it takes longer to affect attitudes than it does knowledge.

The last possible explanation for the insignificant finding may be related to the mechanism of changing attitudes. The literature states that changing attitudes can be a difficult process that includes many different variables such as the message, messenger and the audience recipient (Baron & Byrne, 1987). In this present study, the message was to prevent contracting AIDS by altering high risk behaviours and the messenger was a qualified public health nurse who was knowledgeable about AIDS. The problem in this research may have been with the audience or the method of presentation. Adolescents may have become tired of hearing about AIDS because they are bombarded with information commercials and television programs about AIDS. An alternative explanation, from social psychology, is that the

students may have reacted negatively to the topic because they were aware that the researchers were trying to change their attitudes and resisted changing their attitudes because they viewed it as an attempt to limit their personal freedom (Baron & Byrne).

Beliefs

The second hypothesis that there would be a difference among beliefs, group and grade was not supported in this study. Altender et al. (1992) did not find a three way interaction but, they did find that members of the experimental group showed significant improvement in their belief scores after the intervention. In the current research there was no significant difference in beliefs with either group or gender. The findings indicate that there was virtually no change in the pretest-posttest scores.

Only two research studies were found that examined the effects of an AIDS educational session on beliefs about AIDS. In these investigations, beliefs were defined as beliefs about the transmission of AIDS (Chandarana et al., 1990), or the student's perceived susceptibility of acquiring AIDS and the physical,

psychological or social benefits of engaging in AIDS preventive behaviours (Walter & Vaughan, 1993). In the present research, beliefs refer to the transmission of AIDS with two questions on perceived susceptibility.

Both Chandarana et al. (1990) and Walter and Vaughan (1993) found significant changes between the intervention and control groups. However, both studies conducted longer intervention sessions which may have contributed to their significant results. In the current study there was no significant interaction between the control or intervention group in comparison with the student's grade or gender and these hypotheses were rejected. The insignificant results may be related to the reliability and validity of the tool or that the intervention did not increase the adolescents' beliefs about AIDS transmission.

Values and Perceptions

Results for the last two predisposing factors, values and perceptions, in the existing study were comparable to Alteneider et al.'s (1992). There were no significant differences between pretest and posttest

values or perceptions and the hypotheses were not supported. However, the repeated measures ANOVA did indicate a change in perceptions ($p < .05$) in students from grade seven in the intervention group. Mean scores showed an increase of almost six points on their posttest perception subscale. This may indicate more positive feelings or impressions of people with AIDS or about preventive behaviour. There is no explanation why this grade showed a change in perceptions versus students in grade eight. With this population values and perceptions, like attitudes, may be difficult to change and may require a longer, more intensive type of intervention.

Enabling and Reinforcing Factors

The last two components from the PRECEDE model to be tested were enabling and reinforcing factors. Enabling factors are defined as the availability of resources, accessibility to referrals and skills. Reinforcing factors include attitudes, behaviour and feedback from parents, teachers and peers. However, the problem with measuring these components of the PRECEDE framework is that they were not addressed in

the AIDS educational session. There was no attempt to increase the availability of condoms, the curriculum outline did not include information on where to go for help, or deal with parents' or teachers' knowledge or attitudes toward supporting the adolescents. Despite the fact that enabling factors were not specifically dealt with, there was a change in posttest measurements ($p < .05$) for members of the control versus the intervention group and there was an interaction ($p < .05$) between the two grades by group, and males and females by group. These differences may be related to the fact that condoms were discussed and the presenter exhibited a supportive attitude toward their use for protection. However, the differences were not significant at alpha .01 and the hypotheses were not supported.

Chapter 6
Implications for Nursing
Nursing Practice

The most important implications of this research are its ramifications for health promotion, prevention and education in the adolescent population. While the results were not as hypothesised, the reasons may be related to the low reliability and validity of the questionnaire, or the length and content of the intervention, or the students. Other research that included more rigorous tools and had longer interventions had more promising results.

Since there were no changes in attitudes, values and beliefs, perhaps nurses ought to question their practice in how they present information about topics such as AIDS to adolescents. Research may facilitate health promotion in this area by giving nurses information as to what has been effective and what has not. If education is to be effective in reducing the transmission of AIDS/HIV it must be sufficiently relevant to create and maintain changes in behaviour. It is also important to aim education programs at young

people before they have established patterns of behaviour.

Nurses have access to adolescents in the community, especially within the school system. Therefore, nurses have a responsibility to use their access to this population for health promotion, education and research. Public health nurses have been involved in community health within the school system in the role of educator, advocate, counsellor, role model and researcher. These roles could be expanded to include program planning, which may involve designing and implementing an AIDS/HIV prevention program targeted at adolescents.

AIDS education is thought to be effective in increasing students' AIDS knowledge. However, high levels of knowledge do not necessarily ensure a change in adolescents' high risk behaviours (Tucker & Cho, 1991). The prevalence of the HIV and AIDS can be seen as an indicator that students are not putting their knowledge to practical use through prevention.

The prevalence of AIDS/HIV indicates that education programs have not been effective in reducing adolescents' high risk behaviours. A more effective

approach to reducing adolescents' behaviour may require longer or different types of interventions. One method is to help teenagers to say no to high risk behaviours through self empowerment, assertiveness training, and increasing self-efficacy (Kasen et al., 1992; Walter et al., 1992).

Other important interventions are skill building techniques such as teaching students how to question sexual partners and improving their decision making skills. The basis of these educational techniques is communication. Teenagers need instruction and modelling exercises to help them improve their communication skills and become more assertive. These skills may be used to reduce risk by negotiating the use of condoms and resisting the various risk filled behaviours (Tucker & Cho, 1991).

Alternative strategies for affecting adolescents' knowledge and attitudes about AIDS is peer educating, counselling, modelling and support. One project in Newfoundland that utilizes peer education as a preventive approach is the Community HIV Prevention Project in Conception Bay North (Donovan, 1994). Public health nurses trained teenagers and younger

adults to provide basic information about the HIV, resource materials and condoms to the youth of the community. The peer educators also refer individuals to public health nurses or other health care professionals when necessary. The services are offered in an informal unstructured manner in local hangouts, bars and malls. Results of this project have not been published so the efficacy of the program is unknown.

AIDS education programs need to be planned with specific goals and objectives for adolescents. The PRECEDE framework is a comprehensive model for program planning but programs must address the needs of adolescents. Gillis (1988) stated that a health promotion program for teenagers must include health behavioural goals and deal with the natural development process of the adolescent. She developed a model for adolescent health promotion based on environmental influences outlined by Perry and Murray (1982). This framework can be used in conjunction with the PRECEDE model. Gillis' model is comprised of seven areas that include personality structure, behaviour repertoire, model structure, the social system, the community structure, environmental perception and the

adolescents' network. She also believes that the program should be implemented by adolescent advocates and that the most appropriate setting for this type of program is in the school.

Many other researchers agree with Gillis' (1988) opinion that schools are the most appropriate setting for health promotion, for example AIDS education. King et al. (1989) found that most Canadian teens learned about STDs from school and pamphlets. Walker (1992) and Beazley et al. (1989) noted that adolescents preferred receiving information in the school. This research also found that adolescents identified school as the setting where they learned most about AIDS.

Another observation from conducting this research is that young adolescents are not always comfortable discussing issues such as sexuality and AIDS. Although not measured in any systematic way, from some of the comments on the questionnaires that were not used and in observing the adolescents in class, they were not comfortable. Education on sexuality in Newfoundland begins in grade six as part of a general health program. In grade seven they have a more explicit textbook dealing with issues surrounding sexuality.

Despite previous exposure to the topic, the students involved in the research seemed uncomfortable with the topic of AIDS and sexuality. Discomfort with the topics of sexuality and AIDS is not uncommon. Many adults find these subjects awkward and embarrassing. We as nurses need to nurture more positive attitudes toward sexuality by emphasizing that sexuality is a natural aspect of life and by accepting the audience's lifestyle choices.

Adolescents want more information on AIDS and the HIV (Beazley et al., 1989; King et al., 1989; Walker, 1992) and need to improve their communication skills to put their newly acquired knowledge to use (Tucker & Cho, 1991). If education is to be the key to prevention, then it must motivate behavioural change and provide adolescents with not only basic AIDS knowledge, but also the skills to affect this change.

The major nursing implications from the results of this thesis are:

1. Short term programs may not be successful in changing attitudes, values and beliefs. In the present research, the one hour intervention was not effective in changing attitudes, values or beliefs. Other

research that included information sessions from two to four hours showed significant changes in the variables (Brown et al., 1989; Chandarana et al., 1990; Gill & Beazley, 1993; Kipke et al., 1993; MacDonald, 1993; Walter & Vaughan, 1993).

2. To affect enabling and reinforcing factors parents and teachers must be involved. The PRECEDE instrument measured these two variables but the curriculum outline does not address support systems.

3. More comprehensive programs will be required for long term changes in behaviour. To change adolescents' high risk behaviour, an education program must deal with a multitude of issues as outlined by Gillis (1988). While knowledge is the cornerstone of any program, it is not enough to change behaviour.

Nursing Research

Findings from this investigation have numerous implications for nursing research on adolescents. But before replication is suggested, the PRECEDE questionnaire must be refined, reviewed and pilot tested with a similar population. One of the major weaknesses in the current investigation is the low

reliability and validity of the PRECEDE questionnaire. Before the AIDS education program outlined in this thesis could be used to develop a curriculum, the questionnaire must be refined and topics such as enabling and reinforcing factors must be addressed. The PRECEDE conceptual framework is a viable model for such a program and could act as a design for assessment, planning, implementation and evaluation of an adolescent education program.

After the tool has been refined, the following are suggestions for future research:

1. Replication of the study using a longer and more specialized intervention.
2. Replication including a parent/teacher component to evaluate enabling and reinforcing factors.
3. Replication with follow up measurements to examine long term retention.
4. Replication using a larger population and including urban and rural adolescents.
5. Intervention research to investigate the most effective education strategies (i.e. peer educators, lecture, presenters who have the HIV) to prevent and reduce AIDS/HIV.

Another important implication from the current investigation is the need for qualitative research. In order to plan effective educational interventions for adolescents, nurses need to learn more about how adolescents think and feel. The research could examine more fully the determinants of risk taking behaviour, attitudes, values and beliefs about sexuality.

Limitations

There were a number of limitations associated with the present study and these ought to be considered in examining the findings. Limitations of the study include:

1. The study was conducted in one school in St. John's, Newfoundland, therefore, the results may not be generalizable to the adolescent population of St. John's or Newfoundland.
2. I.J. Samson Junior High School requested the research and the AIDS educational session. This may indicate a greater or lesser need for AIDS education than other schools in the area.
3. The low reliability and validity of self-reported data is a limitation of the present study. Assuring

the students that their responses will be anonymous and confidential is one method of minimizing the threat of participants giving inaccurate responses.

4. Low reliability and validity of the subscales of the PRECEDE instrument is a limitation in the current research.

5. The short amount of time for follow-up minimizes the ability to examine long term effects of the program.

6. The relatively short length of the intervention did not allow time for discussion or questions from the students.

7. The questionnaire measured enabling and reinforcing factors but these topics were not addressed in the curriculum.

8. Cross contamination between the groups threatened the validity of the findings. Isolation of the two groups was impossible because all of the students involved in the research were attending the same school and members of the intervention may have discussed the content of the AIDS educational intervention with their friends in the control group.

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Appendix A
A SURVEY ON AIDS
FOR JUNIOR HIGH SCHOOL STUDENTS

Dear Student,

This is a survey to find out what you know and how you feel about AIDS. Please answer all of the following questions as best as you can. No one will be able to identify you with your answers. Your completing this questionnaire, indicates that you have consented to take part in the survey. Please try to finish the whole survey and be honest with your answers.

When you are finished with the questions please pass the answer sheet to your teacher. If you choose not to answer this survey just pass it to your teacher when the other students do.

Thank you for your help.

DO NOT PUT YOUR NAME ON THIS PAPER OR THE ANSWER SHEET

In the first and second sections, please circle the answer on the answer sheet that best describes your opinion on each of the following statements.

A = AGREE with the answer
D = DISAGREE with the answer
NS = NOT SURE of the answer

SECTION I. HOW THE AIDS VIRUS IS SPREAD

The virus that causes AIDS is spread by:

1. Giving blood at a blood bank.
2. Receiving a blood transfusion at a hospital.
3. Holding hands with someone who has the AIDS virus.
4. Sharing needles used to inject or shoot up drugs.
5. Being bitten by mosquitos.
6. Having sex with someone who has the AIDS virus.
7. Sharing a glass of water with someone who has the AIDS virus.
8. Using public toilets.
9. Anytime a child is born from a mother who is infected with the virus.
10. French kissing (deep throat kissing).
11. Smoking drugs like marijuana.

SECTION II. FACTS ABOUT AIDS

12. Today there is a cure for AIDS.
13. AIDS is a major health crisis for our nation.
14. Deaths from AIDS are usually caused by certain cancers or infections.
15. The rate of new AIDS cases is decreasing.

16. Once a person gets the AIDS virus they will always have it.
17. Blacks and hispanics are more likely to get AIDS than others.
18. A person can be infected with the AIDS virus and not have the disease AIDS.
19. The AIDS virus can be passed by an infected person even though they do not feel sick.
20. AIDS is a disease in which your body can not fight illness.

SECTION III. YOUR FEELINGS ABOUT AIDS

In this section, please circle the response on your answer sheet which best describes your opinions on each of the following statements.

SA	=	STRONGLY AGREE with the statement
A	=	AGREE with the statement
NS	=	NOT SURE how you feel about the
statement		
D	=	DISAGREE with the statement
SD	=	STRONGLY DISAGREE with the statement

21. If a student in my class had AIDS, I wouldn't want the school to treat them any differently than me.
22. I believe someone who has AIDS should continue in school.
23. I would feel sorry for someone who had AIDS.
24. People just like me can get AIDS.
25. People with AIDS deserve to be treated like human beings.
26. I would be afraid to be in class with someone who has AIDS.

27. If people want to shoot drugs and not get AIDS, they should not share needles with someone else.
28. If you take oral birth control pills, you are protected against AIDS.
29. People should know that the safest way of avoiding AIDS is not to have sex.
30. I am afraid about AIDS because I don't know much about it.
31. You can tell that someone has the AIDS virus by looking at them.
32. If a friend of mine had AIDS, my parents would treat them like any of my friends.
33. My parents would like me to be friends with someone who had AIDS.
34. People who use condoms correctly are smart.
35. You are completely safe from AIDS if you use a condom.
36. It is cool to have more than one sexual partner.
37. People who shoot drugs are dumb.
38. People often begin to shoot drugs because their friends want them to.
39. If someone I knew had AIDS, I would no longer be friends with them.
40. If I was dating someone and they told me they had the AIDS virus, I would stop going out with them.
41. If I had the AIDS virus, I would tell my boy/girl friend.
42. If I got AIDS in the future, I would tell my Mom and Dad.
43. I would be upset if a friend of mine got AIDS.

44. People who care about me would be disappointed if they found out I was shooting drugs.
45. If my girl/boy friend did not want me to use a condom, I would not use it.
46. Only homosexuals can get AIDS.
47. Anyone can get AIDS.
48. People who get the AIDS virus will die from its effects unless a cure is discovered.
49. If people have safe sex and don't do drugs, they're less likely to get AIDS.
50. We should make free needles available to everyone.
51. Condoms should be available for everyone.
52. I can control whether I am protected against getting AIDS.
53. AIDS research is necessary and important.
54. I believe that it is possible I will get AIDS in my lifetime.
55. Condoms are easy to find in the store.
56. I am embarrassed to buy condoms.
57. Some of my friends are sexually active with several different people.
58. Clean needles, syringes and drugs are easy to get.
59. AIDS education programs in school are a waste of time.
60. Everyone should take advantage of testing to see if they have the AIDS virus.
61. If I was sexually involved, I could get condoms from my relatives.

62. My parents have taught me what I need to know to protect myself from AIDS.
63. I have someone to go to if I need help about my thoughts about AIDS.
64. My parents would be upset with me if I got AIDS.
65. My girl/boy friend would quit dating me if I tested positive for the AIDS virus.
66. My parents do not want me to become sexually active now.
67. My parents have never talked to me about AIDS.
68. My teachers say I should use condoms.
69. My teachers say I should not have sex.
70. My girl/boy friend encourages me to have sex.
71. My parents have talked to me about using condoms.
72. My parents do not want me to use drugs.
73. My parents have told me to avoid getting AIDS.

PLEASE COMPLETE THE ANSWERS ON ALL THREE OF THE ANSWER SHEETS.

THANK YOU VERY MUCH FOR YOUR TIME AND HONESTY.

AIDS SURVEY ANSWER SHEET

Section I AIDS Virus

Section II Facts about AIDS

1. A D NS
 2. A D NS
 3. A D NS
 4. A D NS
 5. A D NS
 6. A D NS
 7. A D NS
 8. A D NS
 9. A D NS
 10. A D NS
 11. A D NS

12. A D NS
 13. A D NS
 14. A D NS
 15. A D NS
 16. A D NS
 17. A D NS
 18. A D NS
 19. A D NS
 20. A D NS

Section III Feelings about AIDS

21. SA A NS D SD
 22. SA A NS D SD
 23. SA A NS D SD
 24. SA A NS D SD
 25. SA A NS D SD
 26. SA A NS D SD
 27. SA A NS D SD
 28. SA A NS D SD
 29. SA A NS D SD
 30. SA A NS D SD
 31. SA A NS D SD
 32. SA A NS D SD
 33. SA A NS D SD
 34. SA A NS D SD
 35. SA A NS D SD
 36. SA A NS D SD
 37. SA A NS D SD
 38. SA A NS D SD
 39. SA A NS D SD
 40. SA A NS D SD
 41. SA A NS D SD
 42. SA A NS D SD
 43. SA A NS D SD
 44. SA A NS D SD
 45. SA A NS D SD
 46. SA A NS D SD
 47. SA A NS D SD
 48. SA A NS D SD
 49. SA A NS D SD
 50. SA A NS D SD
 51. SA A NS D SD
 52. SA A NS D SD
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 54. SA A NS D SD
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 56. SA A NS D SD
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 58. SA A NS D SD
 59. SA A NS D SD
 60. SA A NS D SD
 61. SA A NS D SD
 62. SA A NS D SD
 63. SA A NS D SD
 64. SA A NS D SD
 65. SA A NS D SD
 66. SA A NS D SD
 67. SA A NS D SD
 68. SA A NS D SD
 69. SA A NS D SD
 70. SA A NS D SD
 71. SA A NS D SD
 72. SA A NS D SD
 73. SA A NS D SD

PLEASE GO TO THE NEXT PAGE TO ANSWER QUESTIONS ABOUT YOURSELF

This section of the survey asks questions about you.
Please fill in the blank that best describes yourself.

74. In what grade are you?

7th _____
8th _____

75. What is your sex?

Male _____
Female _____

76. How old were you on your last birthday?

77. What is your race or ethnic group?

Asian _____
Black _____
Hispanic or Latino _____
White _____
Other _____

78. Have you had a class about AIDS?

Yes _____
No _____

79. Do you know someone who has AIDS?

Yes _____
No _____

80. In the next couple of years:

a. There is a good chance I will be involved in having sex.

_____Yes _____No _____Not sure

b. There is a good chance that I will be involved in having sex with more than one partner.

_____Yes _____No _____Not sure

c. There is a good chance I will use a condom or have a sexual partner use a condom if I have sex.

_____Yes _____No _____Not sure

d. There is a good chance I will inject drugs.

_____Yes _____No _____Not sure

81. I have learned about AIDS from: (check all that apply)

- _____ Teachers or class in school
- _____ Coaches
- _____ Friends
- _____ Parents
- _____ Brothers or sisters
- _____ Television
- _____ Radio
- _____ Newspapers/magazines
- _____ Doctors
- _____ Other places or people not listed

82. I have learned the most about AIDS from

THANK YOU VERY MUCH FOR YOUR TIME IN ANSWERING THE SURVEY

AIDS Curriculum Outline**I. Epidemiology****A. Virus**

1. Nomenclature
2. Susceptible Host

B. Disease Spectrum

1. Carrier
2. Patient with AIDS
3. Reservoir
4. Morbidity/Mortality

II. Transmission**A. Contaminated Body Fluids****B. Means of Transmission**

1. Blood to Blood
2. Mucous Membrane Structures

C. Inoculum**D. Myths**

1. "If I am not gay and don't use IV drugs, then I am safe."
2. "If I have sex with only one person, I am Safe."
3. "If I use the bathroom of a person with AIDS, I can get AIDS..."
4. "If I donate blood, I can get AIDS..."

III. Attitudes

- A. Stigma of disease for individuals, family and friends
- B. Fears

IV. Prevention

- A. For those who have not engaged in sexual intercourse
For those who have not used illicit drugs
- B. For those who have engaged in sexual intercourse
For those who have injected illicit drugs
- C. How to reduce risk if do not wish to follow recommendations

Final Questionnaire Items

Instrument Subscale	Item Numbers
<hr/>	
Predisposing Factors	
Knowledge	20 items 1 - 20
Attitudes	10 items 21 - 30
Perceptions	8 items 31 - 38
Values	7 items 39 - 45
Beliefs	9 items 46 - 54
Enabling Factors	7 items 55 - 61
Reinforcing Factors	12 items 62 - 73
Demographic Information	10 items 74 - 79
Behavioural Intention	1 item four sections 80
Sources of Knowledge	2 items 81 - 82

Medical College of Ohio

School of Nursing

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Mailbox Address PO Box 10000
Toledo, Ohio 43629 0000



January 13, 1994

Ms. Creina Twomey
Apt 14 Linden Court
St. John's
Newfoundland, Canada
A1b 2X1

Dear Creina:

I am pleased that you are interested in duplicating the AIDS study used in my dissertation. I am enclosing the final copy of the questionnaire that was used. Please remember this study was completed in 1990 so some of the questions may need to be revised in relation to the impact of Magic Johnson and other well known personalities revealing positive HIV testing. I was glad that I had collected my data prior to the death of Ryan White in this area as some students were exposed to details of his life. The tool was developed following an open-ended survey of similar students from this region. The PRECEDE Model was the basis for the questions and they follow the model in organization.

I am sending the basic outline used in the study. Judy Didion, who was the AIDS educator, did the instruction and any other information you particularly want about the education, you can get from her. I believe her address is in the article.

I would request that you send me any citations you use from the article. This is my dissertation topic and the entire research is listed with Dissertation Abstracts and you can get a copy of the dissertation either from that source or through intralibrary loan from the University of Toledo. Your comments would be appreciated. Best of luck in your graduate study.

Sincerely,

A handwritten signature in cursive script that reads "Ruth R. Altenecker".

Ruth R. Altenecker, Ph.D., C.N.M.
Associate Professor



The Avalon Consolidated School Board

P.O. BOX 1980, ST. JOHN'S, NEWFOUNDLAND A1C 5R5
 TELEPHONE (709) 754-0710 FAX (709) 754-0122

February 2, 1994

Ms. Creina Twomey, R.N., B.N.
 Masters In Nursing Candidate
 Memorial University of Newfoundland
 St. John's, Newfoundland
 Phone # 753-3156

Dear Ms. Twomey,

I write in response to your request to conduct a research study on AIDS Education at I.J. Samson Junior High in St. John's.

I have read your proposal to implement an AIDS Education Program with Grades VII and VIII students at that school. You have obviously gathered a great deal of literature on the AIDS virus, its spread and consequences. I have perused your permission forms which will be signed by parents/guardians and students in the experimental or comparison groups of your study.

I therefore grant your permission to conduct this study at I.J. Samson Junior High with the following provisions:

- i) Please forward to me a final copy of your proposal, including any changes suggested during our meeting on February 2, 1994.
- ii) Please contact Mr. Fred Tulk, Principal of I.J. Samson, to ensure that your study is completed before students there commence the prescribed units on "Relationships" and "Human Sexuality" in the New curriculum, Adolescence: Healthy Lifestyle for intermediate school students in late March. Your study should also be completed on or before students participate in an AIDS Awareness Day scheduled for that school in the spring.
- iii) This approval to carry out your research is contingent on the acceptance of your project by the Human Investigation Committee, Faculty of Medicine, Memorial University.
- iv) Please ensure that a thorough explanation of the project is provided to parents and that all permission forms are returned for the particular students involved in the study.

- v) Please forward results of your study to this office when your research is complete.

The Avalon Consolidated School Board wishes you every success in this endeavour. We hope your course work and your thesis writing will provide data to help students, teachers and parents increase their awareness and understanding of AIDS as a social and medical issue. Thank you for choosing one of our schools for this worthwhile research.

Yours truly,



Robert T. Dawe,
Assistant Superintendent

RTD/rs

- c.c. - Mr. W.C. Lee, Superintendent
- Ms. Ruth Dawe, Assistant Superintendent (Acting)
- Mr. F. Tulk, Principal, I.J. Samson Junior High School

Appendix D

Cover Letter

Information for Parents/Guardians of Adolescents

My name is Creina Twomey and I am a registered nurse. I am presently doing my Masters degree in Nursing at Memorial University, where I am developing an AIDS education program. I would like to implement this program during two health education classes in grades seven and eight. Your child is invited to participate in the education program to enhance his/her knowledge about AIDS.

The objectives of this program are to:

- alleviate fears adolescents may have about getting AIDS;
- provide adolescents with factual and reliable information;
- answer their questions about AIDS;
- help them develop caring attitudes toward people living with AIDS;

This program involves your child completing two questionnaires on AIDS and attending one class on AIDS either during the study or at a later date. The program has been approved by the district office of the Avalon Consolidated School Board, the principal Mr. Tulk, and will not interfere with your child's regular class work. Results of the study will be made available to you, upon request. As well a copy of the final report (thesis) will be available in the Health Science Library. Thank you for your attention.

If you have any further questions, please contact me at 753-3156, or Mr. Tulk at 579-9434.

Sincerely,

Creina Twomey, R.N., B.N.

FACULTY OF MEDICINE
MEMORIAL UNIVERSITY OF NEWFOUNDLAND
ST. JOHN'S, NEWFOUNDLAND A1B 3V6

CONSENT TO PARTICIPATE IN HEALTH RESEARCH

Title: The Impact of AIDS education on Seventh and Eighth Grade Adolescents' Knowledge, Attitudes and Beliefs about AIDS.

Investigator: Creina Twomey, R.N., B.N.

Your son/daughter is asked to participate in a research study. Participation in this study is entirely voluntary. You may decide not to let him/her participate or to withdraw from the study at any time without affecting his/her education.

Confidentiality of information concerning participants will be maintained by the investigator. The investigator will be available during the study at all times should you have any problems or questions about the study.

Purpose of the study: The purpose of the study is to determine the impact of AIDS education on seventh and eighth grade students' knowledge of AIDS, attitudes toward people living with AIDS and beliefs about the transmission about AIDS.

Description of procedures: The study will involve your child completing two 15 minute questionnaires and attending one class on AIDS either during or after the study. Students who are not chosen for the AIDS

education program for the purpose of this study will be offered the same class at a later date.

Duration of the study: The pretest will be completed by all students, and should take approximately 15 minutes. Two days later, students in the education group will receive the AIDS education session during one class period. The following week all students will complete the 15 minute posttest.

Foreseeable Risks or Discomforts: There are no foreseeable risks in having your son/daughter participate in the study.

Benefits of Participating in the Study: The study will be of benefit to the students by providing them with factual information about AIDS, its transmission and helping them develop caring attitudes toward people living with AIDS.

Alternative procedures: Parents/guardians or students who choose not to participate in the research will in no way be penalized, and alternate activities will be provided for students.

I, _____, the undersigned, agree to the participation of _____ (my child, ward, relative) in the research study described.

Any questions have been answered and I understand what is involved in the study. I realise that participation is voluntary and that there is no guarantee that my son/daughter will benefit from involvement. I acknowledge that a copy of this form has been offered to me.

Signature of
Parent/Guardian _____

Date _____
_____ To be signed by

investigator

To the best of my ability I have fully explained to the subject the nature of this research study. I have invited questions and provided answers. I believe that the parents and the students fully understand the implications and voluntary nature of the study.

Investigator _____

_____ Date _____ Phone

Number _____

Signature of
Student _____

Age _____

Date _____

Relationship to Participant Named Above

Appendix E
Instructions for Administration of Pretest
Questionnaires

1. All teachers or research assistants please write the following information on the on the board.

In Sections I and II A = Agree D = Disagree and NS = Not Sure.

In Section III SA = Strongly Agree A = Agree NS = Not sure D = Disagree and SD = Strongly Disagree.

2. Give each student, whose name is checked on the attendance list, two answer sheets with identical numbers, one questionnaire and one envelope. Ask the students to take one answer sheet, place it in the envelope and write their name and their homeroom teacher's name on the front.

3. Inform the students that they will have the entire 40 minutes to complete the questionnaire. Approximately ten minutes before the class ends please notify the students about remaining time.

4. If a students asks a question about the meaning of a word, please explain in brief concise terms without helping the student answer the question.

5. At the end of the class collect all answer sheets and envelopes and please bring them to the office.

Thank You for your assistance.



